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**Does Inmate Behavior Affect Post-Release Offending?
Investigating the Misconduct-Recidivism Relationship among Youth and Adults***

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Investigating the Misconduct-Recidivism Relationship among Youth and Adults

ABSTRACT

Recent scholarship has highlighted the potential implications of in-prison experiences for prisoner reentry and, in particular, recidivism. Few penological or reentry studies, however, have examined the relationship between one experience that may be especially consequential, inmate misconduct, and recidivism. The goal of this study is to address this gap in the literature by employing a matching design that estimates the effect of inmate misconduct on reoffending, using data on a release cohort of Florida prisoners. The results indicate that inmates who engage in misconduct, violent misconduct in particular, are more likely to recidivate. Consistent with prior scholarship, we find that this relationship holds only for adult inmates. These findings underscore the importance of prison experiences for understanding recidivism, examining youthful and adult inmate populations separately, and devising policies that reduce misconduct.

KEYWORDS: prison misconduct reentry recidivism

INTRODUCTION

The emergence of mass incarceration during the last three decades has led to considerable interest in understanding the factors that promote successful reentry outcomes, such as decreased recidivism. Scholars have, for example, investigated how housing, employment, education, and mental and physical health—and programs targeting them—may affect the likelihood of ex-prisoner offending (see, generally, Petersilia 2003; Travis 2005; Lattimore et al. 2010; Visher and Travis 2011). They also have investigated the extent to which incarceration, as a sanction, may affect the behavior of inmates after release from prison (Nagin et al. 2009; Cullen et al. 2011). This work emphasizes the critical need to understand how prison experiences influence inmate offending and, more generally, how research on such experiences may help to improve the ability to predict recidivism (Adams 1992; Bottoms 1999; Mears and Mestre 2012).

Many dimensions of the prison experience may influence recidivism, but one—inmate misconduct—bears particular attention for several reasons. First, prison misconduct may stand as a proxy measure of a propensity to offend (Trulson et al. 2011) or of the factors that contributed to pre-incarceration offending. Second, misconduct may stem from exposure to a criminogenic environment, one that may induce misconduct and the perception that prison authority operates in an illegitimate manner (see, e.g., Reisig and Mesko 2009). These effects in turn may increase the likelihood of recidivism. For example, misconduct may result in perceptions of injustice, strains, or the labeling of inmates as “bad apples,” which, in accordance with defiance, strain, and labeling theories, respectively, would increase offending (Sherman 1993; Agnew 2006; Bernburg 2009; Nagin et al. 2009).

Under either scenario, prisoners’ misbehavior may provide valuable information for improving the management and effectiveness of prisons, and for understanding the prospects of released prisoners’ for desisting from offending upon release. Even so, few studies have investigated the link between prison misconduct and recidivism. Those that do exist typically have focused only on juvenile or adult samples and individuals released from one institution.

They also typically have not employed methodologies that directly addressed potential selection effects that might influence the estimated association between misconduct and recidivism.

Accordingly, the goal of this study is to build on recent scholarship aimed at understanding how prison experiences and recidivism are related, and, in particular, to examine whether inmate misconduct is associated with recidivism. In so doing, this paper contributes to efforts to explain whether and how prison experiences influence prisoner reentry and, more generally, desistance from offending (Nagin et al. 2009; Bushway and Apel 2012; Mears and Mestre 2012). To this end, the paper discusses prisoner reentry and prior research on prison misconduct and recidivism. It then describes the theoretical arguments for why misconduct may contribute to recidivism and the relevance of using information about misconduct to improve risk prediction efforts. To assess the proposed relationship, we use data from the Florida Department of Corrections. These data provide a unique opportunity to examine youthful and adult inmates from the same prison system and from a wide range of facilities and to employ propensity score matching analyses to determine if, after matching on potential confounders, misconduct and recidivism are associated.

BACKGROUND

The motivation for this paper stems from the relative inattention in scholarship to date to how in-prison experiences such as misconduct may contribute to or provide additional information about prisoner reentry outcomes. Accordingly, we begin first by describing the salience of prisoner reentry as a social problem. We then focus on prisoner misconduct and its potential association with recidivism. Specifically, we discuss prior empirical research on this association, theoretical accounts of it, and how misconduct may provide useful information about recidivism risk even if the association between the two is not causal.

Prisoner Reentry

The growth in prison populations in recent decades is historically unprecedented (Gottschalk

2010) and has created a situation in which over 730,000 inmates are released from state and federal prisons annually (West et al. 2010:4). The risk of recidivism is considerable—national estimates suggest that over two-thirds of prisoners will be rearrested within 3 years of release (Langan and Levin 2002). These prisoners typically have poor educational backgrounds, histories of drug abuse and physical and mental illness, unemployment, and homelessness, and, concomitantly, face such barriers to reentry as restrictions on housing and employment and a return to areas of concentrated disadvantage (Petersilia 2003; Travis 2005; Clear 2007; Lattimore et al. 2010; Mears and Mestre 2012). The risk of recidivism thus is high, and so, too, is the risk that ex-prisoners will create further harm to the communities to which they return.

Set against such considerations is the fact that little remains known about how in-prison experiences may affect recidivism. Certainly, a large and emerging body of scholarship on prisoner reentry suggests that a range of programs and policies may improve life outcomes of released inmates (see, e.g., Cullen and Gendreau 2000; MacKenzie 2006; Pratt 2009; Mears 2010; Wilson and Petersilia 2011). Similarly, improvements in risk prediction have enabled corrections officials to improve classifications of released prisoners based on their likelihood of future offending (Gottfredson and Moriarty 2006; Andrews et al. 2011; Rhodes 2011). Yet, basic questions remain about the ways in which prison experiences may influence recidivism and how information about them may create opportunities to improve risk prediction (Nagin et al. 2009; Cullen et al. 2011; Brennan 2012; Bushway and Apel 2012; Latessa 2012; Mears and Mestre 2012; Piquero 2012). Thus, there is a need for research that unpacks different dimensions of the prison experience and that examines how they may be related to recidivism.

Prison Misconduct and Recidivism

Although inmate experiences are heterogeneous (Adams 1992), misconduct has emerged as a prominent focus in scholarly studies for several reasons. One is that it provides a direct reflection of the extent to which social order exists in prisons (Sykes 1958; Toch 1977; Adams

1992; Gendreau et al. 1997; Bottoms 1999; Irwin 2005; Useem and Piehl 2008). It thus provides an avenue not only for investigating rule violations in prison settings, it also allows more broadly for the investigation of the conditions under which social order arises and is maintained. For example, scholars have devoted substantial attention to investigating such issues as whether inmate misconduct stems from the importation of behavior into prisons or from the deprivations associated with incarceration (see, e.g., Sykes 1958; Reisig 1998; see, generally, Bottoms 1999). Misconduct is of interest for other reasons as well. In particular, it constitutes an experience that (1) may contribute to recidivism or (2) may provide additional information about recidivism risk (Bushway and Apel 2012). It therefore holds the potential to inform efforts aimed at understanding and improving desistance from offending.

Empirical Research on the Misconduct and Recidivism Relationship

Empirical studies on misconduct and recidivism have produced mixed results. A review conducted by O'Leary and Glaser (1972) suggested that there was little to no association between in-prison misconduct and parole success or failure. Recent research, such as Trulson et al.'s (2011) study of violent juvenile offenders, reinforces that assessment. Hill's (1985) review found that several studies reported a modest association between misconduct and recidivism. Yet, the studies typically did not adjust for the fact that infractions usually were associated with other predictors of recidivism, including age and prior record. Hill's review also found that many studies, including ones by Glueck and Glueck (1930) and Ohlin (1951), identified no significant misconduct-recidivism association. Collectively, this scholarship suggests that there may be no significant link between misconduct and recidivism.

Juxtaposed against such work are studies that suggest that misconduct does in fact predict recidivism even after controlling for a range of confounding influences. Gottfredson and Adams (1982), for example, found that, net of other criminal risk factors, misconduct was significantly related to parole infractions. And Lattimore et al. (1995) found that juveniles who were

aggressive while confined were subsequently more likely to recidivate for a violent offense. These two studies and several others (see, e.g., Lattimore et al. 2004; Trulson et al. 2005; Spivak and Damphousse 2006; Huebner et al. 2007; Trulson et al. 2007; Heil et al. 2009) lend support to arguments that misconduct predicts offending (Gendreau et al. 1997). French and Gendreau's (2006) meta-analysis of correctional programs found that interventions that reduced prison misconduct also reduced recidivism. That assessment lends further, if indirect, support to the view that misconduct is positively associated with reoffending after release from prison.

Existing research thus provides inconsistent evidence concerning the misconduct-recidivism association. In addition, there have been, as Mooney and Daffern (2011:57) have emphasized, relatively few rigorous empirical investigations of this association. Trulson et al. (2011:712) recently echoed this assessment, noting the "paucity of research" that exists on it. The limited number of studies is a concern because of the mixed findings to date. Another concern is that studies typically have been divided between those that focus on juveniles or on adults or have focused only on individuals released from one or two facilities. This divide in turn raises questions about the comparability of results across studies and their generalizability. A final concern is that few studies to date have employed methodological approaches that can address factors that confound the estimation of the misconduct and offending relationship.

How Misconduct May Cause Recidivism

Prior theory and research suggests that misconduct may result from several factors, and these factors may also contribute to offending. It may, for example, be "imported" into prison settings or it may stem from the deprivations associated with incarceration (see, e.g., Sykes 1958; Thomas 1977). In the former view, inmates who engage in misconduct do so because of their nature or the experiences that they have had prior to prison. In the latter view, the "pains of imprisonment" that Sykes (1958) identified produce inmate misconduct.

Other theoretical perspectives suggest the potential for misconduct to be associated with

recidivism. For example, misconduct may stem from deviant behavior learned as a result of being incarcerated (Adams 1992; Gendreau et al. 1999). From a social learning theory perspective, such learning can be anticipated to exert an effect that results in continued offending after release from prison (Akers and Sellers 2009).

Misconduct also may result from the way in which prisons are operated and the general conditions within them (Adams 1992; Reisig 1998; Bottoms 1999). For example, prisons represent social ecological contexts, with some promoting more vigilant rule enforcement or more punitive sanctioning of inmates, and others allowing greater officer abuse of inmates (Toch 1977; Bottoms 1999; Irwin 2005). As a result, inmates may feel that prison authorities, including officers, apply rules inconsistently or unfairly, and so act defiantly (e.g., Tyler 2003; Reisig and Mesko 2009). These perceptions of injustice may extend beyond the prison walls. In some studies, for example, interviews with ex-prisoners suggest that their perceptions of how they were treated while incarcerated exerted lasting, post-incarceration effects (see, e.g., Maruna 2001). By extension, and consistent with Sherman's (1993) defiance theory, misconduct may result from the prison experience and in turn produce feelings of injustice that persist after release and so increase the likelihood of offending.

Apart from such factors, there is the possibility that prison system reactions to misconduct—such as segregating inmates, prohibiting visitation, limiting access to programs or services—may create strains that themselves are criminogenic (see, generally, Bottoms 1999; Agnew 2006; Nagin et al. 2009; Listwan et al. 2011; Morris et al. 2012). These strains, as with perceptions of injustice, may be enduring (Listwan et al. 2011; Morris et al. 2012). For example, reduced visitation may adversely affect ties to family and friends, creating strains that continue during and after incarceration (Mears et al. 2012). In a similar vein, prison system reactions may result in labeling certain inmates as “bad apples,” that is, as individuals who are somehow incorrigible. These inmates in turn may act in ways that conform with such labels and may continue to do so both during and after release from prison (see, e.g., Maruna 2001; Rhodes 2004).

Misconduct as an Indicator of Recidivism Risk

In contrast to these possibilities, prison misconduct in fact may not be criminogenic. Even then, however, it may provide important information about recidivism risk. In so doing, it could improve risk classification efforts, especially if an association between misconduct and recidivism exists that is not fully captured by such traditionally used risk factors as prior record. Recently, scholars have emphasized the need to improve risk prediction by incorporating information about inmate experiences (Visher and Travis 2003; Nagin et al. 2009; Mears and Mestre 2012). The reasoning in part is that the period of incarceration is one in which events, experiences, and behaviors unfold that may affect recidivism (DeLisi 2003; Trulson et al. 2010). Thus, if misconduct in prison predicts recidivism, it provides a convenient, readily available source of information for improving risk classification. Indeed, as Trulson et al. (2011:210) have argued, “indicators of institutional misconduct are often the most proximate recorded behaviors demonstrated by delinquent offenders at their point of release from institutionalization.” Accordingly, they may provide more relevant, up-to-the-minute information about the risk of offending upon release from prison. As such, prison misconducts may indicate changes in the likelihood of offending that are not well-captured by such static risk measures as prior record (Mooney and Daffern 2011) and may, for example, capture inmate willingness, or a lack of willingness, to change (Maruna 2012). In a related vein, misconducts may provide information about a propensity to offend, one that, per importation theory, is brought into prisons and by extension carried back into society upon release (Poole and Regoli 1983; Trulson 2007).

DATA AND METHODS

This study seeks to add to the growing body of research on ways in which prison experiences may affect prisoner reentry and recidivism. Prior research suggests that misconduct, violent misconduct in particular, may predict recidivism, but there remains a need to determine whether this association holds among youth and adults, if indeed violent misconduct is more strongly

associated with recidivism, and if any estimated association holds after addressing potential confounding factors that might bias such estimates. Accordingly, this study examines data on all individuals, including male and female inmates, released from the Florida Department of Corrections (FDOC) from November 1, 2000 to April 30, 2002 (N = 19,594) and uses propensity score matching (PSM) to estimate whether individuals who commit misconduct while in prison are more likely to recidivate during the three years after their release from prison, to assess whether the effect is more pronounced for violent misconduct, and to determine whether the misconduct-recidivism association varies among youthful offenders and adult offenders.¹ The data are unique in that they provide a sufficiently large sample of cases to undertake the more robust estimation provided through PSM analyses. They also include a large number of young inmates, thus allowing comparison of the misconduct-recidivism association for these individuals as compared to older inmates. The specific measures for each inmate come from the Florida Department of Corrections' Offender-Based Information System (OBIS), which provides information on each individual's demographic characteristics, disciplinary actions, and prior criminal events. Each of the measures is described below.

Measures

Misconduct. We employ a propensity score matching methodology (described below), using covariates to match individuals on their propensity to engage in prison misconduct. Prison misconduct is measured as officially recorded disciplinary infractions recorded by the FDOC; consistent with most prior research, these are reported, and not only convicted or sanctioned, infractions. These events, recorded through OBIS, include all incidents in which inmates were reported to have engaged in any of a wide range of rule violations during their entire term of incarceration up to release, including violence (e.g., fighting, assault) and other acts (e.g., disobeying orders, possessing contraband, being in an unauthorized area). Officially recorded misconduct is commonly used in prison studies; even so, infractions, especially non-violent ones,

may not always be recorded (Reisig 1998) and so the results should be interpreted with caution. Our main focus is on estimating the effect of general misconduct (1 = misconduct, 0 = no misconduct) and violent misconduct (1 = violent misconduct, 0 = no misconduct), respectively.

Recidivism. Recidivism is measured as a binary outcome, with “1” indicating a felony reconviction for a new offense that led to a criminal sanction within three years of release from prison. The Killias et al. (2006) review, conducted for the Campbell Collaboration, indicated that recidivism studies most frequently use this measure because it ensures a focus on more serious types of offending. In some cases, multiple measures of recidivism can be used (Maltz 1984), but there is little evidence that recidivism studies produce substantially different predictive results when using different recidivism measures. A full three-year window after release is used to ensure that the analyses do not include only those individuals most likely to fail within a year or two of release (Kurlychek et al. 2006; Langan and Levin 2002). Survival analyses can address this issue in part, but still do not well address the selection effects associated with including primarily those inmates who fail early in the post-release period. For the analyses, we examine any recidivism and four categories of recidivism, including violent, property, drug, and other reconviction.

Matching covariates. As with any analysis, the ability to address selection bias depends on the quality of the matching variables. Here, we include a wide range of matching variables derived from the FDOC’s OBIS database and focus particularly on factors that have been highlighted previously in prior research as important confounders (see, e.g., Steiner and Wooldredge 2008; Loughran et al. 2009; Nagin et al. 2009; Steiner and Wooldredge 2009; Trulson et al. 2010; Morris et al. 2012). These measures consist of factors typically associated with misconduct and with recidivism (see, e.g., Visher and Travis 2003; French and Gendreau 2006; Kubrin and Stewart 2006). They include age (years), sex (1= male, 0 = female), race (Black, Hispanic, and White dummy variables), sentence length (count, in months), the amount of time inmates served in prison (count, in days), and prior record, including prior prison commitments (count) and counts of prior convictions by type (violent, sexual, property, drug,

other). We also include a measure of inmate visitation to account for inmate social support and community connections, as suggested in prior research on prison experiences and prisoner reentry (see, e.g., Gordon and McConnell 1999; Wolff and Draine 2004; Jiang and Winfree 2006; Mears et al. 2012). In addition, we include dummy variables for each individual's county of offense to account for contextual factors that might affect misconduct and recidivism.

Research Design

This study uses a quasi-experimental research design, propensity score matching, to estimate the effect of prison misconduct on recidivism. The fundamental idea is to address potential selection effects through the matching procedure. More technically, the counterfactual approach, increasingly common in the social and medical sciences, provides a next-best approach to an experiment by matching individuals on the propensity of a given “treatment,” whether an intervention or an event such as an infraction, to occur and then comparing outcomes for treated and matched groups (see, generally, Rosenbaum and Rubin 1983; Apel and Sweeten 2010; Guo and Fraser 2010). For the analyses below, we estimate average treatment effects on the treated (ATT) where misconduct represents the treatment and where the counterfactual being assessed is: “What would the likelihood of recidivism have been had inmates who engaged in or been reported for misconduct instead not engaged in or not received a report of misconduct?” To this end, we first created propensity scores using logistic regression and the matching covariates described above to predict the conditional probability of engaging in misconduct, for the first set of matching analyses, or violent misconduct, for the second set of analyses. The propensity score models for the two types of misconduct, respectively, are provided in the Appendix A.²

Second, individuals who engaged in misconduct were matched based on propensity scores to individuals who did not engage in misconduct.³ The matching algorithm was implemented using Stata 12's PSMATCH2 command. An important consideration in this second stage of matching is whether balance between the two groups (i.e., the misconduct group and the matched

no misconduct group) is achieved. The goal is to create matches such that the two groups are similar with respect to the covariates, which in turn allows for the approximation of an experimental design in which assignment to treatment is random. It does not eliminate the problem of unobserved confounding but rather reduces the potential for confounding to bias estimated treatment effects (Smith 1997; Winship and Harding 1999). The models are presented in Appendix A⁴ and the pre-balance and post-balance statistics, as well as the differences in recidivism, are discussed below.

FINDINGS

We begin first by using propensity score matching to investigate the question of whether misconduct is associated with recidivism. A central goal in conducting propensity score matching analyses is to ensure that any differences between the treatment group and the comparison group along dimensions other than treatment and the outcome are eliminated. The goal, in short, is to eliminate confounding—covariate imbalance—that may bias estimated treatment effects. Inspection of table 1 highlights that, prior to matching, there was substantial covariate imbalance between the misconduct group and the unmatched prisoners who committed no infractions, as reflected in the *t* test comparisons. For example, the misconduct group was younger, served more time in prison, and was more likely to be convicted of robbery or burglary. It also was more likely to be reconvicted of a new crime.⁵

Insert table 1 about here

After matching, we can see that balance was achieved across all covariates. That is, no statistically significant differences between the misconduct group and the matched group emerged for any of the matching variables. The improvement yielded by the matching is reflected in the final two columns, which present standardized bias (SB) reduction statistics. As Apel and Sweeten (2010:549) have observed, “the degree to which the SB is attenuated by

conditioning on the propensity score provides some indication of the degree to which the conditional independence assumption is satisfied.” For each covariate, bias was reduced considerably, and the remaining bias was, as the next-to-last column highlights, trivial.

What, then, is the effect of misconduct on recidivism? Inspection of the top row indicates that, even after adjusting for differences in the two groups by creating a matched sample, there remains a statistically significant difference in recidivism. Specifically, 48 percent of ex-prisoners who had engaged in misconduct recidivated compared to 41 percent of ex-prisoners who had no history of misconduct. Smaller but still statistically significant differences between inmates who engaged in misconduct and those who did not, respectively, surfaced for each type of recidivism, including violent (10 percent vs. 7 percent), property (19 percent vs. 15 percent), drug (23 percent vs. 20 percent), and other (15 percent vs. 13 percent). To assess the robustness of these results, we conducted analyses using alternate caliper settings (e.g., .05, .001), alternate matching specifications (1:1 and 2:1 with replacement), and different matching estimators (e.g., kernel-based). In each instance, the findings were substantively and statistically the same.⁶

When we focus our attention on violent misconduct, a similar pattern emerges, only the effect of the misconduct on recidivism is more pronounced. Prior to matching, the group of inmates who engaged in violent misconduct differed greatly from the inmates who did not do so with respect to almost every covariate and also to recidivism. By contrast, the matching resulted in a comparison group that was nearly identical to the misconduct group. For the violent misconduct group and its matched counterpart, for example, no covariate imbalance remains, as reflected in the lack of statistically significant covariate differences, the reduction in bias, and the minimal remaining bias.

After matching, we can see that 54 percent of ex-prisoners who engaged in violent misconduct recidivated compared to 42 percent of ex-prisoners who engaged in no misconduct.⁷ Here, again, smaller but still statistically significant differences surfaced for each type of recidivism excepting drug reconviction. The differences in recidivism between inmates who engaged in misconduct and those who did not, respectively, were as follows: violent (14 percent

vs. 8 percent), property (22 percent vs. 14 percent), drug (25 percent vs. 22 percent), and other (16 percent vs. 13 percent). In short, violent misconduct appears to be more strongly associated with recidivism in general and for violent, property, and other offending.⁸

Insert table 2 about here

One method for testing the robustness of the effect estimated using propensity score matching is to conduct sensitivity analyses (Becker and Caliendo 2007).⁹ A commonly used approach consists of estimating Rosenbaum bounds, which indicate how large unobserved bias would have to be to alter the results (Caliendo and Kopeinig 2008; DiPrete and Gangl 2004; Morgan and Harding 2006). The measure, gamma, is an odds ratio. Sensitivity analyses for each of the matching estimates described here revealed gamma scores ranging from 1.3 to 1.5. Thus, the results are insensitive to bias that would increase the odds of misconduct by these amounts, but are sensitive to bias that would increase the odds of misconduct by larger amounts (Becker and Caliendo 2007:78). This assessment assumes that the omitted confounder would have a strong effect on the outcome; if the effects on the outcome were weak, then there would be little change in the estimated effect (DiPrete and Gangl 2004:291). Given that the Rosenbaum bounds provide conservative estimates of sensitivity¹⁰, the results of the sensitivity analyses, and the range of confounders included in the analyses, the estimated effects appear to be robust. Ultimately, however, as with other assessments of causal effects, unobserved confounding might, if addressed, alter the assessment.

Another way of investigating the robustness of the results is to examine a count measure of misconduct. Here, the focus is not whether any misconduct is associated with recidivism. Rather, the focus is on a related question: Does the amount of misconduct have an effect on recidivism? To answer it, we undertook three separate sets of analyses. Because our focus here is to assess whether the main conclusion from the analyses of the binary measure of misconduct is robust, we summarize the results of these different analyses. First, we used logistic regression

and regressed recidivism on a count measure of misconduct and, separately, a series of misconduct dummy variables (e.g., 0, 1, 2, 3, 4+), with the 0 misconduct group excluded as the reference group. The results of these analyses consistently identified a statistically significant, positive effect of misconduct on recidivism, with greater amounts of misconduct associated with greater likelihoods of recidivism.

Second, we employed propensity score analyses in which we matched individuals based on how many acts of misconduct they had committed, with matches drawn from those inmates who engaged in no misconduct. The results, summarized in Appendix B, indicated again that individuals who engage in greater amounts of misconduct recidivate more. Specifically, the differences in recidivism among the matched groups were as follows (the treatment/misconduct group percentage recidivism is shown first): one misconduct vs. none (46 percent vs. 41 percent), two misconducts vs. none (48 percent vs. 40 percent), three misconducts vs. none (49 percent vs. 41 percent), and four or more misconducts vs. none (57 percent vs. 44 percent).

Finally, we conducted generalized propensity analyses, which consist of an extension of propensity score matching that allows for a count measure of treatment. This approach has been used previously in studies of recidivism to account for potential selection bias related to a non-binary treatment variable (e.g., Mears et al. 2012). We conducted analyses using a count measure of all misconduct events and another set of analyses using a variety score measure based on summing each type of misconduct in which a prisoner engaged. The results revealed substantively identical findings to those discussed above. That is, inmates who engage in misconduct are more likely to recidivate and the effect is greater among inmates who engage in greater amounts or types of misconduct.¹¹

To this point, the results indicate that prisoners who engage in misconduct are more likely to recidivate and that this effect is more pronounced among prisoners who engage in violent misconduct. The ancillary analyses serve to highlight that the identified effects hold regardless of whether misconduct is coded as a binary measure or a count measure. We next turn to the remaining question of whether the effect holds equally for younger inmates and for adult

inmates. Recall that some prior studies (e.g., Trulson et al. 2011) suggest that misconduct is not linked to recidivism or that the association is weak. To investigate this issue, we divided the matched samples into two groups, using the typical upper age of juvenile correctional system jurisdiction, age 21 (Snyder and Sickmund 2006), as a dividing point. A particular advantage of this approach is that it enables a more direct comparison to studies that have focused on juvenile offender samples (e.g., Lattimore et al. 2004; Trulson et al. 2011). For each group, logistic regression models were employed to determine if any misconduct (table 3) or violent misconduct (table 4), respectively, predicted recidivism. Inspection of tables 3 and 4 indicate that there was no statistically significant association between misconduct and recidivism for youth in the adult prison system. However, there was a statistically significant association between the infractions and recidivism for adult offenders both for any misconduct (odds ratio = 1.354, $p < .001$) and for violent misconduct (odds ratio = 1.732, $p < .001$).

Insert table 3 about here

Insert table 4 about here

CONCLUSION

The large-scale increase in prisoner reentry as a social problem has led to a growing body of research aimed at understanding the reentry process and the factors that give rise to such outcomes as reduced recidivism. Recently, scholars have emphasized that despite the substantial progress that has been made, there remains a pressing need to identify how prison experiences may contribute to or be associated with recidivism (Nagin et al. 2009; Visser and Travis 2011). One such experience, prison misconduct, remains understudied, as Trulson et al. (2011) and others (e.g., Mooney and Daffern 2011) have emphasized. Prior scholarship suggests that misconduct may create strains that in turn increase recidivism or that it reflects a change, one not well-captured by static risk measures, such as prior record, in the likelihood of offending.

However, previous studies have provided mixed evidence about the misconduct-recidivism link and have not employed matching methodologies for addressing confounding. In addition, many studies have focused only on youth or adults or on individuals released from a single facility.

The contribution of this research was to remedy these limitations in part and, in so doing, provide a more robust test of the extent to which prison misconduct is associated with recidivism and whether the effect varies between youth and adults. To this end, propensity score matching analyses were undertaken with data on individuals released from Florida prisons. A central strength of the study consisted of having access to a considerably larger sample of prisoners than has been used in prior research and the attendant ability to undertake these types of analyses.

The results showed that, after matching, misconduct was associated with recidivism, and that this effect was stronger for violent misconduct. The effect did not appear to be appreciably different for specific types of recidivism. That is, by and large, misconduct contributed to all types of recidivism, including violent, property, and other recidivism. Ancillary analyses indicated that inmates who engage in greater amounts of misconduct are more likely to recidivate even after matching. Finally, the results showed that adult offenders, but not youthful offenders, who engaged in misconduct, violent misconduct in particular, were more likely to recidivate than inmates who did not. Additional analyses indicated that the results were only modestly sensitive to omitted variable bias and that the identified association arises net of other risk factors. The study thus lends support to those studies and reviews that have identified a positive association between inmate infractions, especially violent misconduct, and recidivism (e.g., O'Leary and Glaser 1972; Hill 1985; Lattimore et al. 1995; Huebner et al. 2007). It also reinforces the results of studies that have failed to identify significant or appreciable associations between the two in samples of youth offenders (e.g., Trulson et al. 2011).

Taken together, results from this study and prior research suggest that the misconduct-recidivism association bears further scrutiny. Several avenues of additional investigation warrant particular attention. One consists of studies that examine how variation in the causes of misconduct may affect the misconduct-recidivism relationship. For example, misconduct that

arises from inmate perceptions that prison officers enforce rules unfairly or inconsistently may involve more strain and frustration than misconduct that stems from conflict with other inmates. The different types of sanctions associated with particular types of misconduct, too, may exert different effects on recidivism. To investigate such possibilities will require data that provide more detail—such as information about the events and strains leading up to, during, and following infractions—than are typically available in correctional information systems (see, however, Listwan et al. 2011). Even so, carefully designed inmate survey studies may allow for closer investigation of the causal mechanisms that may give rise to the misconduct-recidivism association. Such studies also hold the potential for determining whether the association is causal or whether it stems from changes in individuals for which misconduct serves as a measure. In the latter case, the studies will want to examine the precise changes, such as exposure to criminogenic peers or cultures or to strains, that are associated with engaging in misconduct and, in turn, recidivism (see, e.g., Morris et al. 2012). For example, inmates who engage in violent misconduct may engender more hostility or mistreatment from prison officers, creating a greater likelihood of strain and offending.

Another avenue for future research bears mention. This study examined youthful and adult prisoners and found, consistent with several prior studies, little evidence of an association between infractions and recidivism among younger offenders. The results here and in these studies raise the question of whether correctional systems either treat or respond differently to younger offenders. Research has established that younger prisoners are more likely to engage in misconduct (Adams 1992; Gendreau et al. 1997). In the juvenile justice system, the greater emphasis on rehabilitation (Feld and Bishop 2011) may function to minimize perceptions of or actual unfairness during and after infractions and to lead to a greater focus on minimizing the strains and frustrations that may follow from officially recorded misconduct. In the adult system, younger inmates may receive similar treatment to that of their counterparts in the juvenile justice system. In both cases, then, we would anticipate that there would be little to no relationship between misconduct and recidivism. The assumption that younger offenders in adult prisons

receive more preferential or rehabilitative treatment is not, however, supported by the few studies of this population (see, e.g., Austin et al. 2000; Bishop and Frazier 2000). Even so, as Mulvey and Schubert's (2012) recent review found, little is known about the conditions of incarceration for and the prison experiences of younger inmates. There is, accordingly, a need for studies that can shed light on these different possibilities.

Finally, from a policy perspective, the findings here point to the potential importance of using information about prison experiences, misconduct in particular, to assess recidivism risk. Bushway and Apel (2012) recently argued for the importance of identifying signals that inmates and ex-prisoners provide that can increase the ability of corrections officials to identify individuals who are most likely to persist in offending. Misconduct may serve as one such signal. As Trulson et al. (2011:726) have argued: "Involvement in institutional misconduct may signal a risk for continuity in offending postrelease and, at the least, the need for heightened attention to such offenders." There is, in addition, the potential benefit of targeting the factors that give rise to misconduct or the responses to misconduct (Adams 1992; Gendreau et al. 1997; Bottoms 1999), which themselves may be criminogenic. Doing so through behavioral or educational and vocational programs may reduce misconduct and disorder in prisons and at the same time reduce recidivism (French and Gendreau 2006). Programming efforts alone may not be necessary. Rather, administrative efforts to operate facilities in ways that promote inmate perceptions of prison system legitimacy may reduce misconduct (Bottoms 1999; Reisig and Mesko 2009). Regardless, it remains clear that prison misconduct stands as an important dimension of the prison experience that merits closer attention.

NOTES

¹ We excluded inmates who served one month or less in prison (e.g., 1 or 2 days) because the first month typically constitutes a transition period for screening and assessment prior to a final prison placement. Ancillary analyses that included all of the inmates in the sample (i.e., did not include this restriction) produced results that were substantively identical to those shown here.

² We include, as an added control, fixed effects for the 67 counties in Florida but, to conserve space and because they are not central to the discussion, do not report results for them here.

³ We used a .005 caliper and 1:1 nearest neighbor matching without replacement. Using a narrow caliper setting ensured that treated individuals were matched to subjects from the comparison pool who had nearly identical probabilities of having engaged in misconduct (DiPrete and Gangl 2004). In addition, we used the non-replacement option to ensure that only unique pairings were allowed.

⁴ As recommended in the propensity score literature (see, e.g., Rosenbaum and Rubin 1983, 1984; Becker and Ichino 2002), we incorporated polynomial specifications in the propensity models to attain balance on the covariates.

⁵ Prevalence estimates for prisoner misconduct in this study are 40 percent for any misconduct (7,810/19,594) and 9 percent for violent misconduct (1,782/19,594). These estimates accord with those in other studies (see, e.g., Steiner and Wooldredge 2008; Sorensen 2010; Bales and Miller 2012; see also Wolff et al. 2009; Sorensen et al. 2011).

⁶ These analyses are available upon request.

⁷ In ancillary analyses, we created a matched group from individuals who committed a non-violent infraction to determine if using a different counterfactual would alter the results. The findings were similar to those here, save that the effect was not quite as large. For example, prior to matching, the general recidivism rates of the violent misconduct group and the matched non-violent misconduct group were 54 percent and 48 percent, respectively. After matching, they were 54 percent and 49 percent, respectively. The analyses are available upon request.

⁸ The reviewers suggested conducting analyses that examined other types of misconduct. To this end, we examined several other types, including property, disorderly, drug, other, and a variety score that included these types and also violent misconduct. The matching analyses produced findings that were substantively similar to those shown in the paper—that is, they consistently found a positive and significant effect of misconduct on recidivism. Because of the literature’s focus on the possibility that violent misconduct may exert a stronger effect on recidivism and the consistent findings regardless of type of misconduct, we present only the results shown in the paper. The additional results are available upon request.

⁹ One reviewer suggested examining the approach used by Spivak and Damphousse (2006). This approach consisted of creating a percentage of time served versus assigned sentence length. Ex-prisoners with smaller percentages could be inferred to have behaved better while in prison because of reduced time due to “good conduct.” This approach may be useful in contexts where information about inmate misconduct is not directly available. However, in this study, the association between misconduct and this percentage-of-time-served measure was weak ($r = .25$), suggesting that the direct measure of misconduct may be preferable to this indirect measure.

¹⁰ DiPrete and Gangl (2004:291) have emphasized that a gamma of any given value “does not mean that there is no true effect.” Instead, it “means that the confidence interval would include zero if an unobserved variable caused the odds ratio of treatment assignment to differ between treatment and control groups by [gamma] *and if this variable’s effect on [the outcome] was so strong as to almost perfectly determine whether the [outcome] would be bigger for the treatment or control case in each pair of matched cases in the data*” (p. 291; emphasis in the original).

¹¹ We thank an anonymous reviewer for the recommendation to pursue this line of analysis. Results for the full set of models for the three analyses are available upon request.

REFERENCES

- Adams, Kenneth. 1992. "Adjusting to Prison Life." Pp. 275-359 in Crime and Justice, edited by Michael H. Tonry. Chicago, IL: University of Chicago Press.
- Agnew, Robert. 2006. "General Strain Theory: Current Status and Directions for Further Research." Pp. 101-123 in Taking Stock: The Status of Criminological Theory, edited by Francis T. Cullen, John P. Wright, and Kristie R. Blevins. New Brunswick, NJ: Transaction.
- Akers, Ronald L., and Christine S. Sellers. 2009. Criminological Theories: Introduction, Evaluation, and Application. 5th edition. New York: Oxford University Press.
- Andrews, Donald A., James Bonta, and J. Stephen Wormith. 2011. "The Risk-Need-Responsivity (RNR) Model: Does Adding the Good Lives Model Contribute to Effective Crime Prevention?" Criminal Justice and Behavior 38:735-755.
- Apel, Robert J., and Gary Sweeten. 2010. "Propensity Score Matching in Criminology and Criminal Justice." Pp. 543-562 in The Handbook of Quantitative Criminology, edited by Alex R. Piquero and David Weisburd. New York: Springer.
- Austin, James, Kelly D. Johnson, and Maria Gregoriou. 2000. Juveniles in Adult Prison and Jails: A National Assessment. Washington, D.C.: Bureau of Justice Assistance.
- Bales, William D. and Courtenay H. Miller. 2012. "The Impact of Determinate Sentencing on Prisoner Misconduct." Journal of Criminal Justice 40:394-403.
- Becker, Sascha, and Andrea Ichino. 2002. "Estimation of Average Treatment Effects Based on Propensity Score." The Stata Journal 2:358-377.
- Becker, Sascha O., and Marco Caliendo. 2007. "Sensitivity Analysis for Average Treatment Effects." The Stata Journal 7:71-83.
- Bernburg, Jón G. 2009. "Labeling Theory." Pp. 187-207 in Handbook on Crime and Deviance, edited by Marvin D. Krohn, Alan J. Lizotte, and Gina P. Hall. New York: Springer.
- Bishop, Donna M., and Charles E. Frazier. 2000. "Consequences of Transfer." Pp. 227-276 in The Changing Boundaries of Juvenile Justice: Transfer of Adolescents to the Criminal

- Court, Jeffrey Fagan and Franklin E. Zimring. Chicago: University of Chicago Press.
- Bottoms, Anthony E. 1999. "Interpersonal Violence and Social Order in Prisons." Pp. 205-281 in Prisons, edited by Michael H. Tonry and Joan Petersilia. Chicago: University of Chicago Press.
- Brennan, Tim. 2012. "Signaling and Meta-Analytic Evaluations in the Presence of Latent Offender Groups: The Importance of Coherent Target Group Specification." Criminology and Public Policy 11:61-72.
- Bushway, Shawn D., and Robert Apel. 2012. "A Signaling Perspective on Employment-Based Reentry Programming: Training Completion as a Desistance Signal." Criminology and Public Policy 11:21-50.
- Caliendo, Marco, and Sabine Kopeinig. 2008. "Some Practical Guidance for the Implementation of Propensity Score Matching." Journal of Economic Surveys 22:31-72.
- Clear, Todd R. 2007. Imprisoning Communities: How Mass Incarceration Makes Disadvantaged Neighborhoods Worse. New York: Oxford University Press.
- Cullen, Francis T., and Paul Gendreau. 2000. "Assessing Correctional Rehabilitation: Policy, Practice, and Prospects." Pp. 109-175 in Policies, Processes, and Decisions of the Criminal Justice System, edited by Julie Horney. Washington, D.C.: National Institute of Justice.
- Cullen, Francis T., Cheryl L. Jonson, and Daniel S. Nagin. 2011. "Prisons Do Not Reduce Recidivism: The High Cost of Ignoring Science." The Prison Journal 91:48S-65S.
- DeLisi, Matt. 2003. "Criminal Careers Behind Bars." Behavioral Sciences and the Law 21:653-669.
- DiPrete, Thomas A., and Markus Gangl. 2004. "Assessing Bias in the Estimation of Causal Effects: Rosenbaum Bounds on Matching Estimators and Instrumental Variables Estimation with Imperfect Instruments." Sociological Methodology 34:271-310.
- Feld, Barry C., and Donna M. Bishop, eds. 2012. The Oxford Handbook of Juvenile Crime and Juvenile Justice. New York: Oxford University Press.
- French, Sheila A., and Paul Gendreau. 2006. "Reducing Prison Misconducts: What Works!"

- Criminal Justice and Behavior 33:185-218.
- Gendreau, Paul, Claire E. Goggin, and Moira A. Law. 1997. "Predicting Prison Misconducts." Criminal Justice and Behavior 24:414-431.
- Gendreau, Paul, Claire E. Goggin, and Francis T. Cullen. 1999. The Effects of Prison Sentences on Recidivism. Ottawa, Ontario: Public Works and Government Services Canada.
- Glueck, Sheldon, and Eleanor T. Glueck. 1930. Five Hundred Criminal Careers. New York: Knopf.
- Gordon, Jill, and Elizabeth H. McConnell. 1999. "Are Conjugal and Familial Visitations Effective Rehabilitative Concepts?" The Prison Journal 79:119-135.
- Gottfredson, Michael R., and Kenneth Adams. 1982. "Prison Behavior and Release Performance." Law and Policy Quarterly 4:373-391.
- Gottfredson, Stephen D., and Laura J. Moriarty. 2006. "Statistical Risk Assessment: Old Problems and New Applications." Crime and Delinquency 52:178-200.
- Gottschalk, Marie. 2010. "Cell Blocks and Red Ink: Mass Incarceration, the Great Recession and Penal Reform." Daedalus 139:62-73.
- Guo, Shenyang, and Mark W. Fraser. 2010. Propensity Score Analysis: Statistical Methods and Applications. Thousand Oaks, CA: Sage.
- Heil, Peggy, Linda Harrison, Kim English, and Sean Ahlmeyer. 2009. "Is Prison Sexual Offending Indicative of Community Risk?" Criminal Justice and Behavior 36:892-908.
- Hill, Gillian. 1985. "Predicting Recidivism Using Institutional Measures." Pp. 96-118 in Prediction in Criminology, edited by David P. Farrington and Roger Tarling. Albany: State University of New York Press.
- Huebner, Beth M., Sean P. Varano, and Timothy S. Bynum. 2007. "Gangs, Guns, and Drugs: Recidivism Among Serious, Young Offenders." Criminology and Public Policy 6:187-222.
- Irwin, John. 2005. The Warehouse Prison: Disposal of the New Dangerous Class. Los Angeles: Roxbury.
- Jiang, Shanhe, and Thomas Winfree Jr. 2006. "Social Support, Gender, and Inmate Adjustment

- to Prison Life.” The Prison Journal 86:32-55.
- Killias, Martin, Patrice Villettaz, and Isabel Zoder. 2006. The Effects of Custodial versus Non-Custodial Sentences on Re-offending: A Systematic Review of the State of Knowledge. Report to the Campbell Collaboration Crime and Justice Group. Lausanne, Switzerland: University of Lausanne, Institute of Criminology and Criminal Law.
- Kubrin, Charis E., and Eric A. Stewart. 2006. “Predicting Who Reoffends: The Neglected Role of Neighborhood Context in Recidivism Studies.” Criminology 44:165-198.
- Kurlychek, Megan C., Robert Brame, and Shawn D. Bushway. 2006. “Scarlet Letters and Recidivism: Does an Old Record Predict Future Offending?” Criminology and Public Policy 5:483-504.
- Langan, Patrick A., and David J. Levin. 2002. Recidivism of Prisoners Released in 1994. Washington, D.C.: Bureau of Justice Statistics.
- Latessa, Edward. 2012. “Why Work Is Important, and How to Improve the Effectiveness of Correctional Reentry Programs that Target Employment.” Criminology and Public Policy 11:87-91.
- Lattimore, Pamela K., John M. MacDonald, Alex R. Piquero, Richard L. Linster, and Christy A. Visher. 2004. “Studying the Characteristics of Arrest Frequency Among Paroled Youthful Offenders.” Journal of Research in Crime and Delinquency 41:37-57.
- Lattimore, Pamela K., Christy A. Visher, and Richard L. Linster. 1995. “Predicting Rearrest for Violence among Serious Youthful Offenders.” Journal of Research in Crime and Delinquency 32:54-83.
- Lattimore, Pamela K., Christy A. Visher, and Danielle M. Steffey. 2010. “Prisoner Reentry in the First Decade of the 21st Century.” Journal of Victims and Offenders 5:253-267.
- Listwan, Shelley J., Christopher J. Sullivan, Robert Agnew, Francis T. Cullen, and Mark Colvin. 2011. “The Pains of Imprisonment Revisited: The Impact of Strain on Inmate Recidivism.” Justice Quarterly (forthcoming). Available on-line: www.tandfonline.com/doi/abs/10.1080/07418825.2011.597772 (accessed 09/11/12).

- Loughran, Thomas A., Edward P. Mulvey, Carol A. Schubert, Jeffrey Fagan, Alex R. Piquero, and Sandra H. Losoya. 2009. "Estimating a Dose-Response Relationship between Length of Stay and Future Recidivism in Serious Juvenile Offenders." Criminology 47:699-740.
- MacKenzie, Doris L. 2006. What Works in Corrections: Reducing the Criminal Activities of Offenders and Delinquents. New York: Cambridge University Press.
- Maltz, Michael D. 1984. Recidivism. New York: Academic Press.
- Maruna, Shadd. 2012. "Elements of Successful Desistance Signaling." Criminology and Public Policy 11:73-86.
- . 2001. Making Good: How Ex-Convicts Reform and Rebuild their Lives. Washington, D.C.: American Psychological Association.
- Mears, Daniel P. 2010. American Criminal Justice Policy: An Evaluation Approach to Increasing Accountability and Effectiveness. New York: Cambridge University Press.
- Mears, Daniel P., Joshua C. Cochran, Sonja E. Siennick, and William D. Bales. 2012. "Prison Visitation and Recidivism." Justice Quarterly (forthcoming). Available on-line: www.tandfonline.com/doi/abs/10.1080/07418825.2011.583932 (accessed 09/11/12).
- Mears, Daniel P., and Julie Mestre. 2012. "Prisoner Reentry, Employment, Signaling, and the Better Identification of Desisters: Introduction to the Special Issue." Criminology and Public Policy 11:5-15.
- Mooney, Jessica L., and Michael Daffern. 2011. "Institutional Aggression as a Predictor of Violent Recidivism: Implications for Parole Decision Making." International Journal of Forensic Mental Health 10:52-63.
- Morgan, Stephen L., and David J. Harding. 2006. "Matching Estimators of Causal Effects: Prospects and Pitfalls in Theory and Practice." Sociological Methods and Research 35:3-60.
- Morris, Robert G., Michael L. Carriaga, Brie Diamond, Nicole L. Piquero, and Alex R. Piquero. 2012. "Does Prison Strain Lead to Prison Misbehavior? An Application of General Strain Theory to Inmate Misconduct." Journal of Criminal Justice 40:194-201.
- Mulvey, Edward P., and Carol A. Schubert. 2012. "Youth in Prison and Beyond." Pp. 843-867

- in The Oxford Handbook of Juvenile Crime and Juvenile Justice, edited by Barry C. Feld and Donna M. Bishop. New York: Oxford University Press.
- Nagin, Daniel S., Francis T. Cullen, and Cheryl L. Jonson. 2009. "Imprisonment and Reoffending." Crime and Justice 38:115-200.
- Ohlin, Lloyd E. 1951. Selection for Parole. New York: Russell Sage.
- O'Leary, Vincent, and Daniel Glaser. 1972. "The Assessment of Risk in Parole Decisionmaking." Pp. 135-198 in The Future of Parole, edited by Donald J. West. London: Duckworth.
- Petersilia, Joan. 2003. When Prisoners Come Home: Parole and Prisoner Reentry. New York: Oxford University Press.
- Piquero, Alex R. 2012. "Obeying Signals and Predicting Future Offending." Criminology and Public Policy 11:51-59.
- Poole, Eric D., and Robert M. Regoli. 1983. "Violence in Juvenile Institutions." Criminology 21:213-232.
- Reisig, Michael D. 1998. "Rates of Disorder in Higher-Custody State Prisons: A Comparative Analysis of Managerial Practices." Crime and Delinquency 44:229-244.
- Reisig, Michael D., and Gorazd Mesko. 2009. "Procedural Justice, Legitimacy, and Prisoner Misconduct." Psychology, Crime and Law 15:41-59.
- Rhodes, Lorna A. 2004. Total Confinement: Madness and Reason in the Maximum Security Prison. Los Angeles, CA: University of California Press.
- Rhodes, William. 2011. "Predicting Criminal Recidivism: A Research Note." Journal of Experimental Criminology 7:57-71.
- Rosenbaum, Paul R., and Donald B. Rubin. 1984. "Reducing Bias in Observational Studies Using Subclassification on the Propensity Score." Journal of the American Statistical Association 79:516-524.
- . 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." Biometrika 70:41-55.

- Sherman, Lawrence W. 1993. "Defiance, Deterrence, and Irrelevance: A Theory of the Criminal Sanction." Journal of Research in Crime and Delinquency 30:445-473.
- Smith, Herbert. 1997. "Matching with Multiple Controls to Estimate Treatment Effects in Observational Studies." Sociological Methodology 27:325-353.
- Snyder, Howard N., and Melissa Sickmund. 2006. Juvenile Offenders and Victims: 2006 National Report. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- Sorensen, Jon, and Mark D. Cunningham. 2010. "Conviction Offense and Prison Violence: A Comparative Study of Murderers and Other Offenders." Crime and Delinquency 56:103-125.
- Sorensen, Jon, Mark D. Cunningham, Mark P. Vigen, and S. O. Woods. 2011. "Serious Assaults on Prison Staff: A Descriptive Analysis." Journal of Criminal Justice 39:143-150.
- Spivak, Andrew L., and Kelly R. Damphousse. 2006. "Who Returns to Prison? A Survival Analysis of Recidivism Among Adult Offenders in Oklahoma, 1985-2004." Justice Research and Policy 8:57-88.
- Steiner, Benjamin, and John Wooldredge. 2008. "Inmate Versus Environmental Effects On Prison Rule Violations." Criminal Justice and Behavior 35:438-456.
- Steiner, Benjamin, and John Wooldredge. 2009. "The Relevance of Inmate Race/Ethnicity Versus Population Composition for Understanding Prison Rule Violations." Punishment and Society 11:459-489.
- . 2008. "Inmate Versus Environmental Effects on Prison Rule Violations." Criminal Justice and Behavior 35:438-456.
- Sykes, Gresham M. 1958. The Society of Captives. Princeton, NJ: Princeton University Press.
- Thomas, Charles. 1977. "Theoretical Perspectives on Prisonization: A Comparison of the Importation and Deprivation Models." Journal of Criminal Law & Criminology 68:135-145.
- Toch, Hans. 1977. Living in Prison: The Ecology of Survival. New York: Free Press.
- Trulson, Chad R. 2007. "Determinants of Disruption: Institutional Misconduct among State Committed Delinquents." Youth Violence and Juvenile Justice 5:1-28.

- Trulson, Chad R., James W. Marquart, Janet L. Mullings, and Tory J. Caeti. 2005. "In Between Adolescence and Adulthood: Recidivism Outcomes of a Cohort of State Delinquents." Youth Violence and Juvenile Justice 3:355-387.
- Trulson, Chad R., Matt DeLisi, Jonathan W. Caudill, Scott Belshaw, and James W. Marquart. 2010. "Delinquent Careers Behind Bars." Criminal Justice Review 35:200-219.
- Trulson, Chad R., Matt DeLisi, and James W. Marquart. 2011. "Institutional Misconduct, Delinquent Background, and Rearrest Frequency Among Serious and Violent Delinquent Offenders." Crime and Delinquency 57:709-731.
- Tyler, Tom R. 2003. "Procedural Justice, Legitimacy, and the Effective Rule of Law." Crime and Justice 30:283-357.
- Useem, Bert and Anne M. Piehl. 2008. Prison State: The Challenge of Mass Incarceration. New York: Cambridge University Press.
- Visher, Christy A., and Jeremy Travis. 2011. "Life on the Outside: Returning Home after Incarceration." The Prison Journal 9:102S-119S.
- . 2003. "Transitions from Prison to Community: Understanding Individual Pathways." Annual Review of Sociology 29:89-113.
- West, Heather C. 2010. Prisoners at Year end 2009. Washington, D.C.: Bureau of Justice Statistics.
- Wilson, James Q., and Joan Petersilia, eds. 2011. Crime and Public Policy. New York: Oxford University Press.
- Winship, Christopher, and Stephen L. Morgan. 1999. "The Estimation of Causal Effects from Observational Data." Annual Review of Sociology 25:659-706.
- Wolff, Nancy, Jing Shi, and Jane Siegel. 2009. "Understanding Physical Victimization Inside Prisons: Factors that Predict Risk." Justice Quarterly 26:445-475.
- Wolff, Nancy, and Jeffrey Draine. 2004. "Dynamics of Social Capital of Prisoners and Community Reentry: Ties That Bind?" Journal of Correctional Health Care 10:457-490.

Table 1. Any Misconduct: Average Treatment Effects on the Treated through Comparison of Unmatched and Matched Samples

| Outcomes | Unmatched | | | | | Matched | | | | % Bias | % Bias Reduct. |
|-----------------------------|-------------------|--------|-------------------|--------|-----|-------------------|--------|------------------|--------|--------|----------------|
| | Any Misc. (7,810) | | No Misc. (11,784) | | | Any Misc. (5,911) | | No Misc. (5,911) | | | |
| | Mean | S.D. | Mean | S.D. | | Mean | S.D. | Mean | S.D. | | |
| Reconviction - any | 0.49 | 0.50 | 0.40 | 0.49 | *** | 0.48 | 0.50 | 0.41 | 0.49 | *** | |
| Reconviction - violent | 0.11 | 0.31 | 0.07 | 0.25 | *** | 0.10 | 0.30 | 0.07 | 0.26 | *** | |
| Reconviction - property | 0.19 | 0.39 | 0.15 | 0.35 | *** | 0.19 | 0.39 | 0.15 | 0.35 | *** | |
| Reconviction - drug | 0.24 | 0.43 | 0.20 | 0.40 | *** | 0.23 | 0.42 | 0.20 | 0.40 | ** | |
| Reconviction - other | 0.15 | 0.36 | 0.12 | 0.33 | *** | 0.15 | 0.36 | 0.13 | 0.34 | ** | |
| <u>Matching Covariates</u> | | | | | | | | | | | |
| Age | 28.97 | 9.26 | 34.31 | 9.70 | *** | 30.92 | 9.49 | 30.98 | 8.60 | | -0.7 98.8 |
| Male (1/0) | 0.88 | 0.33 | 0.88 | 0.32 | | 0.88 | 0.33 | 0.87 | 0.33 | | 0.7 55.0 |
| White (1/0) | 0.38 | 0.49 | 0.45 | 0.50 | *** | 0.41 | 0.49 | 0.41 | 0.49 | | -1.5 88.9 |
| Black (1/0) | 0.54 | 0.50 | 0.47 | 0.50 | *** | 0.51 | 0.50 | 0.50 | 0.50 | | 1.2 90.5 |
| Hispanic (1/0) | 0.08 | 0.28 | 0.08 | 0.27 | | 0.09 | 0.28 | 0.08 | 0.28 | | 0.5 57.6 |
| Time served (days) | 411.00 | 166.65 | 305.60 | 155.92 | *** | 370.83 | 154.95 | 370.99 | 156.64 | | -0.1 99.8 |
| Sentence length (months) | 23.93 | 22.39 | 22.19 | 23.29 | *** | 22.82 | 24.02 | 23.06 | 15.24 | | -1.0 86.3 |
| Offense - murder (1/0) | 0.01 | 0.08 | 0.01 | 0.08 | | 0.01 | 0.08 | 0.01 | 0.08 | | -0.4 -122.4 |
| Offense - sex (1/0) | 0.02 | 0.15 | 0.03 | 0.17 | * | 0.02 | 0.15 | 0.02 | 0.15 | | -1.1 69.3 |
| Offense - robbery (1/0) | 0.06 | 0.24 | 0.04 | 0.20 | *** | 0.05 | 0.21 | 0.05 | 0.22 | | -1.2 86.2 |
| Offense - other viol. (1/0) | 0.14 | 0.35 | 0.13 | 0.34 | | 0.14 | 0.34 | 0.14 | 0.34 | | 0.0 97.4 |
| Offense - burglary (1/0) | 0.15 | 0.36 | 0.12 | 0.32 | *** | 0.13 | 0.34 | 0.14 | 0.35 | | -1.5 85.8 |
| Offense - property (1/0) | 0.19 | 0.39 | 0.19 | 0.39 | | 0.19 | 0.39 | 0.19 | 0.39 | | 1.9 -62.0 |
| Offense - drug (1/0) | 0.32 | 0.47 | 0.34 | 0.48 | *** | 0.34 | 0.47 | 0.34 | 0.47 | | 0.2 96.4 |
| Offense - weapons (1/0) | 0.03 | 0.16 | 0.03 | 0.16 | | 0.03 | 0.16 | 0.03 | 0.16 | | 0.3 -33.6 |
| Offense - other (1/0) | 0.08 | 0.28 | 0.11 | 0.31 | *** | 0.10 | 0.29 | 0.09 | 0.29 | | 0.5 93.8 |
| Prior prison commit. (#) | 0.77 | 1.35 | 0.94 | 1.48 | *** | 0.87 | 1.44 | 0.85 | 1.41 | | 1.8 84.8 |
| Prior violent conv. (#) | 0.79 | 1.59 | 0.78 | 1.55 | | 0.80 | 1.58 | 0.82 | 1.58 | | -0.9 -431.6 |
| Prior sex conv. (#) | 0.05 | 0.41 | 0.08 | 0.50 | *** | 0.06 | 0.44 | 0.06 | 0.44 | | -0.1 97.2 |
| Prior property conv. (#) | 2.53 | 5.10 | 2.77 | 5.13 | ** | 2.71 | 5.33 | 2.72 | 5.19 | | -0.4 92.4 |
| Prior drug conv. (#) | 1.55 | 3.05 | 1.98 | 3.61 | *** | 1.77 | 3.27 | 1.70 | 3.10 | | 1.9 85.2 |
| Prior other conv. (#) | 0.55 | 1.26 | 0.65 | 1.40 | *** | 0.61 | 1.32 | 0.61 | 1.32 | | 0.2 97.2 |
| Visits (#) | 2.63 | 7.47 | 2.13 | 6.91 | *** | 2.55 | 7.66 | 2.54 | 7.22 | | 0.1 98.0 |

* p<.05; ** p<.01; *** p<.001 (two-tailed); fixed effects for the state's 67 counties are included.

Table 2. Violent Misconduct: Average Treatment Effects on the Treated through Comparison of Unmatched and Matched Samples

| Outcomes | Unmatched | | | | | Matched | | | | % Bias | % Bias Reduct. |
|-----------------------------|-----------------|--------|-------------------|--------|-----|-----------------|--------|------------------|--------|--------|----------------|
| | Violent (1,782) | | No Misc. (11,784) | | | Violent (1,506) | | No Misc. (1,506) | | | |
| | Mean | S.D. | Mean | S.D. | | Mean | S.D. | Mean | S.D. | | |
| Reconviction - any | 0.54 | 0.50 | 0.40 | 0.49 | *** | 0.54 | 0.50 | 0.42 | 0.49 | *** | |
| Reconviction - violent | 0.15 | 0.35 | 0.07 | 0.25 | *** | 0.14 | 0.35 | 0.08 | 0.27 | *** | |
| Reconviction - property | 0.22 | 0.41 | 0.15 | 0.35 | *** | 0.22 | 0.41 | 0.14 | 0.35 | *** | |
| Reconviction - drug | 0.24 | 0.43 | 0.20 | 0.40 | *** | 0.25 | 0.43 | 0.22 | 0.41 | | |
| Reconviction - other | 0.16 | 0.37 | 0.12 | 0.33 | *** | 0.16 | 0.37 | 0.13 | 0.34 | ** | |
| <u>Matching Covariates</u> | | | | | | | | | | | |
| Age | 26.49 | 8.76 | 34.31 | 9.70 | *** | 27.68 | 8.93 | 28.08 | 7.83 | -0.7 | 98.8 |
| Male (1/0) | 0.87 | 0.33 | 0.88 | 0.32 | | 0.88 | 0.33 | 0.88 | 0.33 | 0.7 | 55.0 |
| White (1/0) | 0.31 | 0.46 | 0.45 | 0.50 | *** | 0.33 | 0.47 | 0.34 | 0.47 | -1.5 | 88.9 |
| Black (1/0) | 0.61 | 0.49 | 0.47 | 0.50 | *** | 0.58 | 0.49 | 0.58 | 0.49 | 1.2 | 90.5 |
| Hispanic (1/0) | 0.08 | 0.27 | 0.08 | 0.27 | | 0.08 | 0.28 | 0.08 | 0.27 | 0.5 | 57.6 |
| Time served (days) | 440.73 | 168.37 | 305.60 | 155.92 | *** | 413.50 | 160.70 | 422.67 | 164.05 | -0.1 | 99.8 |
| Sentence length (months) | 24.21 | 17.73 | 22.19 | 23.29 | *** | 23.74 | 18.87 | 24.30 | 13.03 | -1.0 | 86.3 |
| Offense - murder (1/0) | 0.01 | 0.09 | 0.01 | 0.08 | | 0.01 | 0.09 | 0.01 | 0.09 | -0.4 | -122.4 |
| Offense - sex (1/0) | 0.03 | 0.17 | 0.03 | 0.17 | | 0.03 | 0.16 | 0.03 | 0.17 | -1.1 | 69.3 |
| Offense - robbery (1/0) | 0.08 | 0.27 | 0.04 | 0.20 | *** | 0.07 | 0.25 | 0.07 | 0.25 | -1.2 | 86.2 |
| Offense - other viol. (1/0) | 0.18 | 0.38 | 0.13 | 0.34 | *** | 0.17 | 0.37 | 0.16 | 0.36 | 0.0 | 97.4 |
| Offense - burglary (1/0) | 0.17 | 0.38 | 0.12 | 0.32 | *** | 0.16 | 0.37 | 0.18 | 0.38 | -1.5 | 85.8 |
| Offense - property (1/0) | 0.17 | 0.38 | 0.19 | 0.39 | * | 0.17 | 0.38 | 0.17 | 0.37 | 1.9 | -62.0 |
| Offense - drug (1/0) | 0.26 | 0.44 | 0.34 | 0.48 | *** | 0.29 | 0.45 | 0.29 | 0.45 | 0.2 | 96.4 |
| Offense - weapons (1/0) | 0.03 | 0.16 | 0.03 | 0.16 | | 0.03 | 0.17 | 0.03 | 0.17 | 0.3 | -33.6 |
| Offense - other (1/0) | 0.07 | 0.25 | 0.11 | 0.31 | *** | 0.07 | 0.26 | 0.07 | 0.26 | 0.5 | 93.8 |
| Prior prison commit. (#) | 0.69 | 1.30 | 0.94 | 1.48 | *** | 0.77 | 1.36 | 0.77 | 1.35 | 1.8 | 84.8 |
| Prior violent conv. (#) | 0.86 | 1.73 | 0.78 | 1.55 | * | 0.87 | 1.73 | 0.87 | 1.56 | -0.9 | -431.6 |
| Prior sex conv. (#) | 0.04 | 0.33 | 0.08 | 0.50 | ** | 0.05 | 0.36 | 0.05 | 0.35 | -0.1 | 97.2 |
| Prior property conv. (#) | 2.11 | 4.60 | 2.77 | 5.13 | *** | 2.29 | 4.89 | 2.37 | 4.27 | -0.4 | 92.4 |
| Prior drug conv. (#) | 1.19 | 2.59 | 1.98 | 3.61 | *** | 1.37 | 2.77 | 1.41 | 2.92 | 1.9 | 85.2 |
| Prior other conv. (#) | 0.46 | 1.15 | 0.65 | 1.40 | *** | 0.51 | 1.21 | 0.52 | 1.19 | 0.2 | 97.2 |
| Visits (#) | 2.01 | 6.00 | 2.13 | 6.91 | | 2.09 | 6.29 | 1.91 | 5.27 | 0.1 | 98.0 |

* p<.05; ** p<.01; *** p<.001 (two-tailed); fixed effects for the state's 67 counties are included.

Table 3. Logistic Regression of Recidivism on Any Misconduct: Youth vs. Adults^a

| | Youth (21 and under) | | | Adults (22 and over) | | |
|-------------------------------|----------------------|------|----------|----------------------|------|----------|
| | <i>b</i> | SE | OR | <i>b</i> | SE | OR |
| Any misconduct (1/0) | 0.16 | 0.10 | 1.179 | 0.30 | 0.04 | 1.354*** |
| Age | -0.08 | 0.04 | 0.927 | -0.03 | 0.00 | 0.966*** |
| Male (1/0) | 0.88 | 0.22 | 2.423*** | 0.28 | 0.07 | 1.323*** |
| Black (1/0) | 0.91 | 0.12 | 2.483*** | 0.38 | 0.05 | 1.460*** |
| Hispanic (1/0) | 0.20 | 0.19 | 1.222 | -0.20 | 0.09 | 0.815* |
| Time served (days) | 0.00 | 0.00 | 1.000 | 0.00 | 0.00 | 1.000* |
| Sentence length (months) | -0.01 | 0.00 | 0.994 | -0.01 | 0.00 | 0.993*** |
| Offense - murder/mansl. (1/0) | -1.52 | 0.82 | 0.218 | -1.24 | 0.42 | 0.290** |
| Offense - sex (1/0) | -0.83 | 0.41 | 0.435* | -0.61 | 0.19 | 0.546** |
| Offense - robbery (1/0) | -0.43 | 0.21 | 0.650* | 0.07 | 0.12 | 1.072 |
| Offense - other violent (1/0) | -0.35 | 0.18 | 0.704* | -0.36 | 0.08 | 0.697*** |
| Offense - burglary (1/0) | -0.27 | 0.16 | 0.761 | 0.19 | 0.08 | 1.206* |
| Offense - property (1/0) | 0.37 | 0.18 | 1.453* | 0.27 | 0.07 | 1.306*** |
| Offense - weapons (1/0) | -0.42 | 0.32 | 0.654 | -0.05 | 0.14 | 0.955 |
| Offense - other (1/0) | 0.22 | 0.23 | 1.246 | 0.34 | 0.08 | 1.402*** |
| Prior prison commit. (count) | 0.36 | 0.17 | 1.436* | 0.22 | 0.02 | 1.240*** |
| Prior violent conv. (count) | 0.07 | 0.05 | 1.075 | 0.01 | 0.01 | 1.015 |
| Prior sex conv. (count) | 0.21 | 0.19 | 1.238 | 0.07 | 0.05 | 1.070 |
| Prior property conv. (count) | 0.01 | 0.02 | 1.009 | 0.02 | 0.00 | 1.016*** |
| Prior drug conv. (count) | 0.08 | 0.03 | 1.081* | 0.05 | 0.01 | 1.053*** |
| Prior other conv. (count) | 0.08 | 0.06 | 1.083 | 0.06 | 0.02 | 1.064*** |
| Visits (count) | -0.02 | 0.01 | 0.980** | 0.00 | 0.00 | 0.998 |
| County fixed effects | — | — | — | — | — | — |
| Constant | -1.05 | 1.45 | — | 0.38 | 0.37 | — |
| N | | | 1,985 | | | 9,813 |
| Pseudo R-squared | | | 0.104 | | | 0.083 |
| Log likelihood | | | -1231 | | | -6147 |

a. Sample = treated and matched groups.

* p<.05; ** p<.01; *** p<.001 (two-tailed).

Table 4. Logistic Regression of Recidivism on Violent Misconduct: Youth vs. Adults^a

| | Youth (21 and under) | | | Adults (22 and over) | | |
|-------------------------------|----------------------|------|----------|----------------------|------|----------|
| | <i>b</i> | SE | OR | <i>b</i> | SE | OR |
| Violent misconduct (1/0) | 0.28 | 0.16 | 1.318 | 0.55 | 0.10 | 1.732*** |
| Age | 0.02 | 0.06 | 1.021 | -0.05 | 0.01 | 0.955*** |
| Male (1/0) | 0.55 | 0.32 | 1.739 | 0.27 | 0.14 | 1.315* |
| Black (1/0) | 1.21 | 0.19 | 3.350*** | 0.50 | 0.12 | 1.644*** |
| Hispanic (1/0) | -0.06 | 0.30 | 0.941 | 0.04 | 0.20 | 1.038 |
| Time served (days) | 0.00 | 0.00 | 0.999 | 0.00 | 0.00 | 1.000 |
| Sentence length (months) | 0.00 | 0.01 | 1.000 | -0.02 | 0.01 | 0.985** |
| Offense - murder/mansl. (1/0) | -1.09 | 0.98 | 0.336 | -1.38 | 0.84 | 0.252 |
| Offense - sex (1/0) | 0.13 | 0.60 | 1.141 | -0.36 | 0.35 | 0.697 |
| Offense - robbery (1/0) | 0.23 | 0.32 | 1.263 | 0.13 | 0.23 | 1.141 |
| Offense - other violent (1/0) | 0.03 | 0.27 | 1.030 | -0.53 | 0.17 | 0.589** |
| Offense - burglary (1/0) | 0.10 | 0.26 | 1.108 | 0.34 | 0.17 | 1.406* |
| Offense - property (1/0) | 0.20 | 0.29 | 1.225 | 0.26 | 0.15 | 1.291 |
| Offense - weapons (1/0) | 0.18 | 0.53 | 1.198 | -0.57 | 0.30 | 0.566 |
| Offense - other (1/0) | 0.10 | 0.40 | 1.183 | 0.54 | 0.20 | 1.714** |
| Prior prison commit. (count) | -0.08 | 0.26 | 0.924 | 0.27 | 0.04 | 1.312*** |
| Prior violent conv. (count) | 0.03 | 0.07 | 1.031 | 0.00 | 0.03 | 1.001 |
| Prior sex conv. (count) | -0.29 | 0.39 | 0.750 | -0.06 | 0.14 | 0.943 |
| Prior property conv. (count) | 0.02 | 0.03 | 1.019 | 0.02 | 0.01 | 1.019 |
| Prior drug conv. (count) | 0.07 | 0.04 | 1.069 | 0.04 | 0.02 | 1.039* |
| Prior other conv. (count) | 0.16 | 0.10 | 1.172 | 0.05 | 0.04 | 1.053 |
| Visits (count) | -0.03 | 0.01 | 0.974 | -0.01 | 0.01 | 0.990 |
| County fixed effects | — | — | — | — | — | — |
| Constant | -0.29 | 1.45 | — | 0.39 | 0.85 | — |
| N | | | 863 | | | 2,110 |
| Pseudo R-squared | | | 0.120 | | | 0.116 |
| Log likelihood | | | -519 | | | -1280 |

a. Sample = treated and matched groups.

* p<.05; ** p<.01; *** p<.001 (two-tailed).

Appendix A. Logistic Regression of Misconduct on Matching Covariates

| | Any Misconduct | | Violent Misconduct | |
|-------------------------------|----------------|--------|--------------------|--------|
| | <i>b</i> | SE | <i>b</i> | SE |
| Age | -0.07*** | 0.00 | -0.11*** | 0.00 |
| Male (1/0) | -0.32*** | 0.05 | -0.50*** | 0.09 |
| Black (1/0) | 0.06*** | 0.07 | 0.13*** | 0.12 |
| Hispanic (1/0) | 0.12 | 0.04 | 0.42 | 0.07 |
| Time served (days) | 0.01*** | 0.00 | 0.01*** | 0.00 |
| Sentence length (months) | 0.00*** | 0.00 | -0.02*** | 0.00 |
| Offense - murder/mansl. (1/0) | -0.07 | 0.22 | 0.67* | 0.34 |
| Offense - sex (1/0) | -0.24* | 0.12 | 0.38 | 0.21 |
| Offense - robbery (1/0) | 0.24** | 0.08 | 0.62*** | 0.13 |
| Offense - other violent (1/0) | 0.12* | 0.06 | 0.62*** | 0.10 |
| Offense - burglary (1/0) | 0.21*** | 0.06 | 0.57*** | 0.10 |
| Offense - property (1/0) | 0.23*** | 0.05 | 0.51*** | 0.10 |
| Offense - weapons (1/0) | 0.11 | 0.10 | 0.50** | 0.19 |
| Offense - other (1/0) | 0.05 | 0.06 | 0.29* | 0.12 |
| Prior prison commit. (count) | 0.05*** | 0.01 | 0.16*** | 0.03 |
| Prior violent conv. (count) | 0.02 | 0.01 | 0.04* | 0.02 |
| Prior sex conv. (count) | -0.02 | 0.04 | -0.08 | 0.09 |
| Prior property conv. (count) | -0.01* | 0.00 | -0.02** | 0.01 |
| Prior drug conv. (count) | -0.03*** | 0.01 | -0.05*** | 0.01 |
| Prior other conv. (count) | -0.01 | 0.01 | -0.05 | 0.03 |
| Visits (count) | -0.01*** | 0.00 | -0.03*** | 0.01 |
| Time served (squared) | 0.00*** | 0.00 | 0.00*** | 0.00 |
| County fixed effects | — | — | — | — |
| Constant | 0.28 | 0.98 | 0.04 | 1.57 |
| N | | 19,561 | | 13,519 |
| Pseudo R-squared | | 0.147 | | 0.250 |
| Log likelihood | | -11228 | | -3951 |

* p<.05; ** p<.01; *** p<.001 (two-tailed).

Appendix B. Average Treatment Effects on the Treated: Recidivism of Four Misconduct Groups Compared to Matched Non-Misconduct Groups

| | Treated vs. Unmatched Groups | | | | | | | Treated vs. Matched Groups | | | | | | |
|----------------|------------------------------|------|-----------|--------------|------|-----------|-----|----------------------------|------|-----------|--------------|------|-----------|-----|
| | Treated Mean | S.D. | Treated N | Control Mean | S.D. | Control N | | Treated Mean | S.D. | Treated N | Control Mean | S.D. | Control N | |
| 1 misconduct | 0.46 | 0.50 | 3,430 | 0.40 | 0.49 | 11,784 | ** | 0.46 | 0.50 | 3,414 | 0.41 | 0.49 | 3,414 | ** |
| 2 misconducts | 0.48 | 0.50 | 1,557 | 0.40 | 0.49 | 11,784 | ** | 0.48 | 0.50 | 1,542 | 0.40 | 0.49 | 1,542 | ** |
| 3 misconducts | 0.49 | 0.50 | 781 | 0.40 | 0.49 | 11,784 | ** | 0.49 | 0.50 | 759 | 0.41 | 0.49 | 759 | ** |
| 4+ misconducts | 0.57 | 0.50 | 2,042 | 0.40 | 0.49 | 11,784 | *** | 0.57 | 0.49 | 1,522 | 0.44 | 0.50 | 1,522 | *** |

* p<.05; ** p<.01; *** p<.001 (two-tailed).