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The Path of Least Desistance: Inmate Compliance and Recidivism

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ABSTRACT

Scholars have speculated that inmate behavior may provide a signal about the probability of desistance. One such signal may be the successful avoidance of prison infractions or the cessation of them during the course of incarceration. Drawing on studies of prison socialization, recidivism, and desistance, we assess whether patterns of inmate misconduct throughout the course of incarceration provide insight into the likelihood of a successful transition back into society. Specifically, using data on a cohort of state prisoners, this study examines whether, after controlling for potential confounders, inmate misconduct trajectories predict recidivism. The analyses indicate both that unique misconduct trajectories can be identified and that these trajectories predict the probability of recidivism and desistance net of factors associated with recidivism. Results of the study lend support to scholarship on desistance and signaling, which emphasizes the salience of in-prison experiences for understanding reentry and, in particular, reoffending.

INTRODUCTION

Desistance and life-course research highlights that criminal offending patterns can be changed by life events, including those initiated by individuals or induced by social context (Laub and Sampson 2001; LeBel et al. 2008). However, identifying specific life events that result in changes in criminal behavior remains a critical task for scholars of desistance and behavior over the life-course (e.g., Laub et al. 1998; Blumstein and Nakamura 2009) as well as for research on the effects of criminal punishments (Garabedian 1963; Maruna and Toch 2005).

The experience of incarceration has constituted one significant life event investigated by scholars. Early "correctional" facilities were designed with the goal of "correcting" individuals through isolation, deprivation, and hard work (Rothman 1971; Bottoms 1999). Penal scholarship highlights, however, that imprisonment may do just the opposite. Many studies have found, for example, that former inmates have a higher likelihood of recidivism than offenders who experience other types of punishments, such as probation (Nagin et al. 2009; Cochran et al. 2014). Research has identified a range of inmate experiences that may contribute to inmate misconduct, or the continuation of a criminal career inside the prison, including victimization, deteriorating physical and mental health, and severed social ties (Adams 1992; Hassine 2009; George 2010; Cullen et al. 2014). These and other experiences may adversely affect inmates, exacerbate reentry challenges, and in turn create problems for former inmates and their families and communities (Petersilia 2003; Travis 2005).

Building on prison, desistance, and reentry research, scholars have argued for investigating dynamic measures of change to identify which inmates are most likely to recidivate (Lipsey and Cullen 2007; Kroner and Yessine 2013; Vose et al. 2013). Others have advocated identification of "signals" that inmates provide that may indicate a readiness and commitment to desist

(Bushway and Apel 2012; Maruna 2012; Schriro 2012). What is needed are studies that identify dynamic changes or signals that can occur during imprisonment and that provide insight into desistance prospects of released prisoners.

The goal of this paper is to address this research gap and, in particular, to respond to calls by desistance and reentry scholars to improve understanding of what in-prison experiences might mean for post-release outcomes. To this end, this study examines the utility of using developmental trajectories of prison misconduct as potential indicators of the probability of post-prison recidivism (Nagin 1999, 2005). We begin first with a discussion of theoretical and empirical accounts of prison life that emphasize the salience of dynamic incarceration experiences and their utility as a "signal" from inmates about their readiness or commitment to "go straight." After describing the data and methodology, we analyze information about a cohort of convicted felony offenders to identify distinct groups of inmates based on their trajectories of misconduct. We then assess whether, net of potential confounders, including prior criminal record, these trajectories are associated with recidivism. The analyses indicate that they are, and, in turn, that they provide potentially important information about an inmate's likelihood of desisting or recidivating. The findings are relevant across multiple areas of scholarship, including work on desistance, the effects of prison and prison experiences, and signaling.

BACKGROUND

Mass Incarceration and Recidivism

The expansion of the U.S. incarceration system over the past forty years has led to a large and growing proportion of citizens who have experienced life in a penal institution. The U.S. releases 600,000-700,000 individuals from its jails and prisons each year (Carson 2014). The

"success" or "failure" of these individuals—an estimated two-thirds or more of released prisoners are rearrested within three years of release—understandably has led to considerable scholarly and policymaker attention to prisons and the effect of incarceration on offending (e.g., Laub and Sampson 2001; Petersilia 2003; La Vigne et al. 2004; Maruna and Immarigeon 2004; Latessa et al. 2014). The theoretical logic of prisons rests in part on expected deterrent effects and benefits that accrue from rehabilitation, especially programming or practices that reduce criminogenic attitudes and beliefs and seek to improve social bonds and capital. Yet, as scholars have emphasized, prison experiences do not necessarily result in changes that occur in the desired direction and, indeed, may result in changes that go in the opposite direction, in turn creating more rather than less recidivism (Nagin et al. 2009; Cullen et al. 2011).

Desistance and Prison Experiences

Life-course research depicts desistance as a process—a range of different forces lead individuals to engage in offending and, for some, to desist from it (Warr 1998; Maruna 2001; Bushway et al. 2003; Wooditch et al. 2014; Skardhamar and Savolainen 2014). Several lines of theorizing have emerged that draw on life-course perspectives to explain desistance (e.g., Loeber and LeBlanc 1990; Laub and Sampson 2001). A prominent example is Sampson and Laub's (1993) age-graded theory of informal social control. The theory argues that the influence of informal sources of control changes over the life-course, as do the types of control to which individuals are exposed. Life-course perspectives draw particular attention to "turning points," that is, events—such as divorce, unemployment, or trauma—that result in a "knifing off" into different patterns, or trajectories of behavior (Laub and Sampson 2001).

Imprisonment constitutes a significant life event that also can be viewed as a potential

"turning point" (Krohn and Gibson 2013). Yet, as dismal recidivism statistics suggest, the precise direction to which inmates turn remains an open question. For some individuals, prison may contribute to desistance from offending while for others it may contribute to persistence in offending (Nagin et al. 2009). Many factors may contribute to this variation. Scholarship on prisons and prison social order has developed two general theoretical perspectives, importation and deprivation, that have helped to inform empirical analyses of inmate behavior. Importation refers to the idea that pre-prison characteristics and experiences may contribute to in-prison behavior (Clemmer 1940; Goncalves et al. 2014; Irwin and Cressey 1962; Jiang and Winfree 2006). Deprivation theory focuses on in-prison characteristics and experiences that may contribute to misconduct and violence. Prison may, for example, result in what Sykes (1958) referred to as the "pains of imprisonment" (see, generally, Crewe 2011; McCorkle et al. 1995; Wooldredge and Steiner 2013; Tewksbury et al. 2014) or in strains that lead to violence, riots, or other forms of deviance (Blevins et al. 2010; Listwan et al. 2010). The extent to which prison pains or strains exist may be influenced in part by the extent to which inmates receive programming or treatment or are victimized. More generally, and independent of importation- or deprivation-related considerations, there may be aspects of prisons that affect inmate behavior. For example, inmates may reside in prisons where gang and criminogenic conditions are more pervasive and where contact with prosocial influences, including visitors from the "outside," are minimal (Adams 1992; Bottoms 1999; Hassine 2009; George 2010).

In recognition of diverse possibilities, scholars increasingly have sought to identify specific prison experiences and their implications for prison order and desistance. Risk prediction efforts, for example, have taken heed of advances in scholarship and rely increasingly on a range of "static" and "dynamic" (change-focused) measures of individuals, their backgrounds, and

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their experiences during prison (Latessa et al. 2014; Wooditch et al. 2014). Yet, prediction efforts continue to face substantial challenges due in part to the diversity of experiences that may influence inmates and, in turn, their likelihood of offending (Serin et al. 2013; Labrecque et al. 2014). In this study, we present an analytical strategy that seeks to identify theoretically relevant variation in one dynamic experience—in-prison misconduct—and assess whether this variation is associated with offending once individuals are released from prison. Such an assessment may be useful for future risk prediction efforts, but more importantly, it helps advance understanding about the potential impacts of a salient, but likely heterogeneous, in-prison experience.

Prison Misconduct as a Signal

An alternative approach to identifying individuals who may be most likely to desist is to identify a "signal," that is, an indicator that an individual has changed in such a way as to be unlikely to reoffend (Bushway and Apel 2012; Maruna 2012; Schriro 2012; Skardhamar and Savolainen 2014; Wooditch et al. 2014). Typically, a signal requires effort on the part of the individual. The individual must expend time and energy to do something, such as work toward a goal or complete a particular task, and it is the fact of this effort that can reveal that the inmate has changed. From a signaling perspective, the change may not be directly apparent and it may result from diverse causes, such as a change in motivation, successful treatment of a mental illness, program participation, exposure to procedurally just administrative practices, or any of the many experiences and interventions that can occur in prison (Irwin and Cressey 1962; Adams 1992; Bottoms 1999; Reisig and Mesko 2009; Mears et al. 2012; Listwan et al. 2013; Latessa et al. 2014). What matters, however, is not the diverse causes but rather that achieving a given "signal" requires significant effort (Spence 1973) and that the signal reflects a change in the

individual that lowers the probability that he or she will go on to offend.

One potentially useful signal is whether an inmate engages in misconduct and, in particular, whether he or she either avoids engaging in misconduct or reduces the extent of their misconduct. The focus on misconduct trajectories is promising because, as a large body of research establishes, avoiding misconduct in a prison setting may be difficult (see, e.g., Adams 1992; Bottoms 1999; DeLisi 2003; Hassine 2009). As a general matter, individuals in prison typically have a record of violating the law and rules, and so may be prone to engage in misconduct. In addition, opportunities to engage in misconduct are ubiquitous. Not least, a long-standing literature in criminology describes ways in which prison entails deprivations (Sykes 1958) and adoption of inmates codes and culture (Clemmer 1940; see, generally, Hewitt et al., 1984; Adams 1992; McCorkle 1992; Sparks et al. 1996; Bottoms 1999; Rhodes 2004; Irwin 2005; Hassine 2009) that call for or contribute to inmate misconduct. The "inmate code," the necessity of defending oneself, the desire to "hit back" at staff or a prison system that one views as illegitimate—these forces and more propel many inmates toward misconduct. At the same time, certain experiences, such as participating in prison programming and receiving visits, typically require that inmates comply with prison rules.

The possibility that refraining from misconduct in prison may be effortful and, in turn, provide a useable signal, is suggested by Mears and Mestre (2012:8) in response to work by Bushway and Apel (2012): "Inmates who choose to refrain from misconduct or choose to participate in nonmandatory programs, especially those that require considerable effort (a central prerequisite for a good signal), may be sending a message that they have changed. In turn, that change may signal that they will continue to engage in prosocial behavior upon release from prison (Mooney and Daffern 2011)." In the context of signaling theory, the need to expend

effort is a hallmark of a useful, predictive, signal. Bushway and Apel (2012), for example, have

argued for the potential salience of employment training certifications as a signal of desistance.

The logic is that obtaining such certificates requires considerable effort and so may "signal"

unobserved internal change that is associated with a reduced probability of offending. The

authors recommended exploration of different potential signals of recidivism. The possibility

explored here is that during incarceration, a lack of misconduct—or a reduction in the amount of

it—may require effort, and expenditure of such effort may be viewed as a potential proxy for an

unmeasured internal change that is oriented toward prosocial behavior and thus desistance.

Assessing Prison Misconduct Over the Life Course of a Prison Term

Just as offenders may follow a range of different offending trajectories in society, there may

be different trajectories of misconduct in prison. In free society, some individuals never offend.

Similarly, in prison, some inmates may refrain from committing any infractions. However, non-

offending is but one of several possible trajectories that can unfold during prison. For example,

prisoners might engage in stable and high levels of misconduct, increasing or decreasing levels,

or they might engage in misconduct early on in prison and then slowly desist over time.

Prior scholarship underscores the potential salience of considering these types of longitudinal

patterns in behavior (e.g., Nagin 2005; Bersani et al. 2009; Piquero et al. 2010). This work

identifies that individual offending patterns can vary over time and that certain groups, such as

early- or late-onset desisters, may exist (Moffitt 1993; Nagin et al., 1995). Prison theory and

research underscores, too, the salience of examining behavior as it unfolds over time in prison

(Irwin and Cressey 1962; Liebling and Maruna 2005). Notably, however, research on the

relationship between in-prison misconduct and post-release offending by and large has missed

this possibility, relying instead on dichotomous or count measures of infractions rather than patterns of misconduct throughout a prison term (see, e.g., Trulson et al. 2011; Cochran et al. 2014). Of course, individuals' behaviors throughout incarceration may be stable, which would render trajectories irrelevant. Scholarship, however, suggests that individuals can and do change.

A point of departure, then, for conceptualizing inmate behavioral trajectories is to view them through the lens of desistance, life course, and signaling research, which together emphasize the potential utility of trajectory analysis and the potential meaning of longitudinal patterns of crime and deviance for anticipating future behavior (e.g., Nagin et al. 1995; Piquero et al. 2010; Mears et al., 2013). From these perspectives, we can anticipate that individuals will follow different pathways while incarcerated and that these pathways can be revealed through analyses of trajectories of misconduct. It is plausible, in turn, that in-prison offending trajectories may be linked to future outcomes, like desistance and recidivism. A signaling perspective argues that variation in trajectories of in-prison misconduct have important meaning and may indicate groups of inmates who have exerted varying levels of "work" or effort to change or desist from offending, or not. Evidence that such trajectories exist and that variation in these trajectories can be linked to variation in recidivism would lend support to arguments that in-prison behavior and experiences can inform scholarship on desistance and the salience of prison experiences for understanding reentry (DeLisi 2003; Liebling and Maruna 2005; Latessa et al. 2014).

DATA

This paper uses data from the Florida Department of Corrections (FLDC) on a release cohort of inmates that includes all individuals convicted of felonies and admitted to Florida state prisons between November 2000 and April 2002 and released prior to April 31, 2003. The data include

details for each inmate across every facility in the state of Florida, and the data include their demographic information (e.g., age, sex, and race and ethnicity), prior offending record, prior incarceration record, and information about the offense for which they were convicted. These covariates are important for accounting for potential confounding dimensions in studies of the relationship between in-prison deviance and recidivism (see, e.g., Nagin et al. 2009).

These data are particularly useful for the purposes of our study because of their comprehensiveness and level of detail, which includes information about the type and timing of inmate incidents of misconduct. To measure misconduct, we use formal inmate disciplinary report records, which are filed by prison officers in each instance of an officially reported misconduct event.[1] These records are compiled and tracked electronically in the FLDC Offender-Based Information System (OBIS). Misconduct types vary widely, but the most common include reports of defiance towards officers or staff, disorderly conduct, destruction of property, and assault. We include all types of misconduct events in our analysis. When disciplinary events occur, there may be multiple types of misconduct that occurred. In those instances, disciplinary hearing officers record the most serious offense or behavior. The original data file included information about the month and year of each misconduct event. Using this information, along with an inmate's admission date, we created monthly counts of misconduct events for each inmate for every month in which they were incarcerated. These monthly counts serve as the unit of analysis in the trajectory models.

For the dependent variable in the regression analyses, we use a dichotomous measure of recidivism that indicates whether an individual received a new felony conviction within three years after release from prison. Recidivism records observe whether recidivism occurs for all

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[1] Prior studies that have compared results when using formal records of misconduct versus self-reported inmate misconduct have identified similar findings (Simon 1993; Reisig and Mesko 2009; Steiner and Wooldredge 2014).

inmates for three years after their release. Descriptive statistics for additional variables are

discussed further below in the context of describing each of the inmate cohorts used to undertake

the trajectory modeling analyses.

ANALYTIC STRATEGY

The analyses focus on assessing whether patterns of in-prison behavior can be identified and

then assessing whether the patterns are linked to recidivism. To this end, the analyses proceed in

several stages. First, semiparametric group-based trajectory modeling is employed (Nagin 1999,

2005) to identify patterns of misconduct during incarceration. The trajectory analyses rely on

finite mixture models to identify clustering among cases that emerge over time. Here, the focus

is on examining patterns of group behavior during incarceration (for further description, see

Brame et al. 2001; Blokland et al. 2005).

One practical challenge for analyzing developmental trajectories of in-prison dimensions is

the unequal exposure time across the inmate population—inmates serve varying amounts of time

before being released. To address this issue, we limited the trajectory analyses to subgroups of

inmates who served similar amounts of time in prison. To test the robustness of the trajectories,

we then conducted a parallel set of analyses for five mutually exclusive inmate subgroups, each

serving differing amounts of time in prison. Specifically, we examined the following subgroups,

based on time served: 12-month (N = 2,324), 14-month (N = 1,934), 16-month (N = 1,387), 18-

month (N = 1,158), and 20-month (N = 781). If we were overly restrictive with the subgroups

(e.g., delimiting by day or week of release), the sample sizes became too small to support

analyses. For this reason, we used 2-month cohorts, which include all inmates who served at

least the number of months indicated by their subgroup title, but less than the number of months

of the next group. For example, the 12-month cohort includes all inmates who served at least 12 full months but less than 14 months. Sample sizes beyond 20 months were too small to support the trajectory modeling.

There are other analytic strategies that could be employed in this first stage to address unbalanced exposure periods. One potential option, which we explored, is to analyze the entire sample of inmates in the same model, and to account for variation in the amount of time served across inmates by including a measure of exposure in the model (see, e.g., Piquero et al., 2001). This approach is useful in scenarios where there may be intermittent or perhaps random gaps in a study participant's exposure over the course of the observation window. For example, modeling exposure helps when analyzing trajectories of juvenile delinquency to account for stints of detention or "time off the street," which will restrict opportunities for criminal behavior. By contrast, a study of in-prison misconduct over time is conceptually and statistically different. Inmates are systematically and permanently excluded (censored) from observation based on their sentence length and when they leave the prison, which makes modeling exposure in this way less appropriate and less intuitive. Regardless, we explored a series of trajectory analyses incorporating the full sample and analyzing patterns across 20 months (90 percent of the sample served 20 months or less before release). In general, the analyses identified stable four- and five-group models that were substantively similar to the trajectories that we identify below in the cohort-specific analyses. However, these full sample results, even though adjusted for exposure, defy straightforward interpretation. For example, far more than half of the inmates in the sample served 12 months or less. It is unclear, then, how to interpret 20-month trajectories when the bulk of the sample had observation windows that were substantially shorter than 20 months. Given the similar findings, we opted to proceed with the time-served groups. Our sample size

was large enough to facilitate splitting the sample across different lengths of time served to assess trajectories. This approach also helps to ensure that, within a given group, inmates are more likely to be similar than not, in a context where substantial differences in time served could impact the trajectory groups that emerge and their implications for recidivism.

In the second stage of our analysis, we created covariates indicating membership in a given misconduct trajectory group and employed multivariate logistic regression analyses. In these analyses, recidivism is regressed on the trajectory groups along with controls for potential confounding. To account for potential facility- and/or county-level variation in in-prison behavioral patterns and in recidivism, we estimated the models using robust standard errors in Stata. The goal of these analyses is to assess the extent to which different trajectories, or patterns, of misconduct in prison are associated with recidivism. As we describe below, we ran these regression analyses separately for each cohort. In addition, because of the relative consistency across the inmate subgroups in the substantive misconduct trajectories that emerged, we also ran a full sample regression analysis, after pooling together each subgroup for the multivariate analyses to increase sample size and, in turn, statistical power for the estimates.

FINDINGS

Determining Trajectory Model Specifications

We begin first with an examination of the patterns of misconduct that emerged for each inmate cohort. Scholars have emphasized the importance of examining longitudinal patterns of prison experiences (Liebling and Maruna 2005), but research to date has not systematically assessed patterns in inmate misconduct over the course of a prison term (Cochran 2012). For developmental trajectory analyses, the first step entails identifying the appropriate number of

groups for which trajectories should be estimated. This examination requires making

adjustments to the model estimation in the number of groups and observing changes to model fit

indicators (e.g., Nagin 2005; Stults 2010).

This process led to several findings. The developmental trajectory analyses indicate

evidence for either 4- or 5-group models across the inmate cohorts. Table 1 provides diagnostic

statistics for each of the cohorts analyzed. In accordance with the process outlined by Nagin

(2005) for determining best model fit, inspection of the Bayesian Information Criterion (BIC)

statistic indicates slightly more evidence for a 5-group model rather than for a 4-group model.

Specifically, for the 12-, 18-, and 20-month cohorts, BIC statistics indicate best model fit for a 5-

group model; for the 14- and 16-month cohorts, the statistics indicate best model fit from the 4-

group model. The Log Bayes Factor score also can be used to evaluate model specification.

This diagnostic score emphasizes improvement of model fit when moving from a simpler model

to a more complex model (i.e., from a model with fewer groups specified to a model with more

groups) (Jones et al. 2001; Stults 2010). Based on the Log Bayes Factor score, positive values

above 10 indicate strong evidence against the null model specification when moving to a more

complex specification (Jones et al. 2001:389). With this diagnostic, we find evidence for a 5-

group model for 2 of 5 cohorts and evidence for a 4-group model in 3 of 5 cohorts.

Insert table 1 about here

Here, to better capture potential variation in the extent to which different trajectory groups

predict recidivism, we proceed with the 5-group model specification for each cohort.

Comparisons between the 4- and 5-group trajectory figures indicate that, overall, the same

primary 4 groups emerge for each cohort. These 4 groups included a non-misconduct group, and

3 misconduct groups: low, medium, and high/escalating. The introduction of a fifth group,

across each cohort, resulted in the emergence of a trajectory of individuals who commit misconducts at a medium to high rate in the early months of incarceration but then deescalate to largely no misconduct in the second half of incarceration. In essence, it suggests a group of inmates who began their term of incarceration engaging in misconduct but then cease misconduct by the end of their term. Per Nagin (2005), the facts that this fifth group was supported by the trajectory diagnostic measures and that it provides substantive theoretical relevance for predicting recidivism suggests warrant for using the 5-group model specification (see also, Blokland et al. 2005).[2]

Assessing Trajectories of In-Prison Misconduct

Figure 1 provides five panels depicting the estimated trajectories from each inmate cohort. Panel A, for example, includes the five trajectories estimated for the 12-month cohort. Here, we can see, across the bottom of the figure, the non-misconduct trajectory, which depicts a pattern of complete non-misconduct for the duration of the prison term. The remaining four trajectory groups depict some level of misconduct. One group, which we have termed the "deescalating" misconduct group, takes on the pattern mentioned above. It consists of inmates who engage in relatively moderate to high rates of misconduct during the initial period of incarceration, with roughly .5 infractions per month, but then eventually desist from misconduct over the course of their imprisonment. The last three trajectories depict patterns of misconduct that largely persist over the course of incarceration, but at different levels: low (0.1 - 0.2 infractions per month), medium (0.4 - 0.5 infractions per month), and high/escalating (0.5 - 1.5 infractions per month).

Insert figure 1 about here

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[2] In ancillary analyses, we conducted the same multivariate analyses using a 4-group specification; the results mirrored those presented below, but necessarily provided no information about the fifth group.

Across the other four cohorts—panels B, C, D, and E, respectively—similar patterns emerge. There is a non-misconduct trajectory, a group of inmates involved initially in misconduct but then their misconduct tapers off, two groups (low and medium) that have a relatively stable or persistent pattern of misconduct, and a fifth, high/escalating, group for which misconduct rates are high and relatively stable before then increasing (escalating) to varying degrees across cohorts. Together, across the five cohorts, the relative size of each trajectory group is as follows: non-misconduct —67.6 percent, deescalating—2.2 percent, low—21.8 percent, medium—7 percent, high/escalating—1.5 percent. There are, however, slight differences in the precise shape and magnitude of any given trajectory when compared across cohorts. For example, the high/escalating trajectory for the 14-month cohort hits a higher peak (about 2.3 infractions per month) in the middle of the prison term than is the case for the other cohorts. Similarly, the deescalating trajectory for the 14-month cohort hits a lower peak in misconduct (about 0.3 infractions) than what emerges for the same trajectory across the other four cohorts.

These longitudinal misconduct patterns offer different, potentially more useful information for predicting recidivism compared to more traditional count or indicator measures of misconduct. For example, we show below, in table 2, that there is substantial variation in the overall monthly infraction rates for each trajectory group. Inmates in the non-misconduct trajectory group engage in almost no infractions per month (0.02); those in the high/escalating group engage in 1.24 infractions per month. In between, we see that low-misconduct trajectory inmates engage in 0.18 infractions per month and high-misconduct trajectory group inmates engage in 0.55 infractions. Interestingly, the rate for deescalating inmates falls in between low and medium inmates at 0.25 infractions per month. We discuss the implications of these results further and of trajectory modeling more generally in the conclusion.

Assessing the Effect of Misconduct Trajectory Group Membership on Recidivism

An advantage of the substantive similarities of the five trajectory groups that emerge across each cohort is that it allows all inmates across the cohorts to be pooled together and thereby increase sample size. The multivariate analyses below use inmates from all five cohorts (N = 7,584) combined together based on their trajectory group membership. We also estimated parallel regression equations for each time served cohort individually; these results were substantively similar to those shown here, which were estimated using the full, pooled sample.

Table 2 provides descriptive statistics for the full sample and then presents them for each trajectory group. The measures in table 2 are also those used as control measures in the multivariate analyses. These variables include measures of age, sex (1=male), and race/ethnicity (White non-Latino, Black non-Latino, Latino). (We also include a squared term for age in the analyses to account for the possibility of a nonlinear age-recidivism association.) In addition, descriptive measures of each individuals' offense and prior record are included: sentence length (in months), time served (in months), count totals of prior convictions by type (violent, property, drug, sex, other), a count of prior prison commitments, and dichotomous measures of offense type (violent, property, drug, sex, other). We also include in the analyses a count measure of in-prison visitation events. Doing so helps to account for the possible confounding influence of social ties to family and others, during incarceration, on the relationship between misconduct trajectories and recidivism (e.g., Cochran, 2012; Mears et al., 2011; Duwe and Clark, 2012).

We include in table 2 the average posterior probabilities (APP) for each cohort. Traditional convention suggests that APP values of 0.7 or higher indicate confidence that the trajectories measure a distinct group (Nagin 2005; Blokland et al. 2005). For four of the five groups, non-

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misconduct, low, medium, and high/escalating, we see values above the 0.7 threshold. The deescalating group approaches this threshold, with an APP of 0.66.

Insert table 2 about here

Inspection of table 2 reveals several additional findings. With the exception of the high/escalating misconduct trajectory, the groups have largely similar demographic characteristics—the average age ranges from 25 to 33, and the groups range from 89 to 90 percent male, 32 to 41 percent non-Latino white, and 6 to 9 percent Latino. Across all trajectory groups, the sentence length and prior record measures are also similar. For example, average sentence length varies minimally, ranging only from 24 to 26 months across the groups. Similarly, average number of prior commitments, prior felony convictions, and the proportions of offense types that led to incarceration are roughly similar across all five groups. The relative similarities across trajectory groups, despite substantial differences in in-prison misconduct patterns, supports the idea that experiences that occur in prison may occur at least partly autonomously, regardless of static characteristics individuals "import" into prison.

Juxtaposed against the similarities are two differences that warrant mention. First, medium and high/escalating groups are somewhat younger and include slightly higher percentages of violent offenders as compared to the non-misconduct group. This pattern accords with research findings on the correlates of prison misconduct (Goncalves et al. 2014). Second, medium and high/escalating group members on average had fewer prior stints in prison, which may suggest the possibility that first-time offenders face substantial difficulties navigating prison life.

Table 2 also includes rates of recidivism across each inmate trajectory group. Desistance scholarship suggests warrant for anticipating that members of the non-misconduct trajectory group would have the lowest probability of recidivism. Signaling perspectives support this same

idea and argue that these inmates' misconduct records indicate a group of inmates who have worked to resist committing infractions and violating prison rules. A non-misconduct trajectory may result from a commitment to change or from in-prison experiences that reduce a propensity to engage in misconduct and, in turn, offending. By contrast, inmates who persist in high levels of misconduct or escalate such activity should be more likely to recidivate.

The bivariate analysis in table 2 provides support for these possibilities. Specifically, we find that 39 percent of the non-misconduct group recidivate, which is the lowest rate among all trajectory groups. High/escalating inmates recidivate at the highest rate—70 percent—what translates, in absolute percentage terms, to a 31 percentage point difference in the probability of recidivism. The rate of recidivism increases as we move from a focus on the non-misconduct group (39 percent) to "low" (48 percent), "medium" (56 percent), and "high/escalating" (70 percent). Analysis of variance (ANOVA) results indicate that there is a statistically significant difference between the five trajectory groups in the rates of recidivism reported in table 2.

Notably, the rate of recidivism for the "deescalating" trajectory group (56 percent) falls in between that of the medium and high/escalating groups. This finding appears incongruous given that, near the time of release, the likelihood of misconduct among individuals in this group is almost zero. The deescalation suggests that a potentially beneficial change occurred, one that could signal a reduced likelihood of offending upon release compared to other groups. However, and contrary to our original hypotheses, the probability of recidivism for this group is second only to that of the high/escalating group.

To determine if the differences in recidivism might reflect compositional differences between the groups, we employed logistic regression analyses that estimated the effect of trajectory group membership on recidivism and that included controls, such as prior record, typically used in

recidivism analyses. The results are presented in table 3. Model 1 includes only the trajectory group membership measures; the coefficient estimates align with the bivariate statistics described above. Model 2 provides these estimates after including the control variables. Here, statistically significant coefficient estimates again emerge for each trajectory group.[3]

To facilitate interpretation of the results, figure 2 provides the predicted likelihoods of recidivism, setting the covariates at their means, based on the model 2 estimates. Inspection of the figure reveals a parallel set of findings to those in the descriptive and bivariate analyses. High/escalating inmates are the most likely to recidivate after release from prison, followed, in order of recidivism likelihood, by deescalating, medium, low, and non-misconduct inmates. Several covariates included in the model also are statistically significant, with effects that align with prior scholarship on recidivism. For example, we find that males, inmates who receive longer sentences, and inmates who have more serious prior records (e.g., more prior prison commitments, more prior property and drug convictions), are more likely to recidivate, even after accounting for in-prison misconduct trajectories.

<div align="center">Insert table 3 about here</div>

<div align="center">Insert figure 2 about here</div>

DISCUSSION AND CONCLUSIONS

Get-tough punishment policies have been criticized for creating an era of "mass incarceration" and for potentially worsening recidivism rather than improving it. Against that

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[3] One of the anonymous reviewers suggested that we assess the robustness of these results by analyzing misconduct trajectories by type of misconduct. We conducted a series of ancillary analyses to address this question, which involved differentiating between violent and non-violent misconduct. The analyses could not support identification of violent-only misconduct trajectories; there were too few misconduct events in any given time period, which led to unstable estimation. We were, however, able to analyze non-violent misconduct trajectories and results of the trajectory modeling and subsequent multivariate regression models predicting recidivism were substantively similar to those presented here. We thank the reviewer for the suggestion.

backdrop, scholars have called for greater understanding of desistance processes and policymakers have advocated "evidence-based" approaches to reducing recidivism. Even so, and despite advances in prison data collection and reentry planning, there remains a need to improve efforts to understand how in-prison experiences may lead to future outcomes, such as increasing the likelihood former prisoners desist from crime or reoffend when they reenter society (Travis 2005; Latessa et al. 2014). One promising avenue involves a focus on identifying signals that inmates may provide, intentionally or not, that indicate a depth of change during imprisonment that suggests a lower likelihood to offend.

Accordingly, this study focused on changes in inmate misconduct as a potential signal that provides information about the propensity to recidivate. The logic was that inmates must work hard to avoid violating prison rules throughout a prison term (Clemmer 1940; Adams 1992; Bottoms 1999; Irwin 2005; Hassine 2009). Theoretically, those who manage to rarely or never engage in misconduct thus may have committed to a prosocial lifestyle and worked assiduously toward achieving that goal. Similarly, inmates who continue or escalate misconduct may be providing a signal, one that suggests that they have not changed or have changed for the worse.

Findings from the study can be summarized briefly. First, unique inmate misconduct trajectory groups can be identified and are robust across varying durations of incarceration.

Second, the inmate misconduct trajectory groups found in this study were similar to those identified in studies of offending (e.g., Nagin et al. 1995; Nagin and Tremblay 1999; Fergusson et al. 2000; Blokland et al. 2005). The criminal trajectories literature has consistently identified a group of non-offenders, variations on medium to high to chronic offenders, and in some instances, criminal desisters, when examining latent class analyses of criminal trajectories (see, e.g., D'Unger et al. 1998; Laub et al. 1993; Nagin and Land 1993). For example, in one of the

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most prominent studies of criminal offending trajectories, D'Unger et al. (1998) identified four-and five-group life course offending trajectories across multiple cohorts (p. 1612) that are substantively similar to the patterns that we identified for inmates in this study. These results suggest that in society as well as in prison there may be different groups of individuals who, for a variety of reasons, exhibit different patterns of antisocial behavior over time.

Third, the inmate misconduct trajectories were associated with recidivism net of demographic characteristics and other potential sources of confounding, such as prior record. Here, then, the study echoes the findings of Bushway and Apel (2012) in suggesting a need for a signaling approach to improving our understanding of the implications of in-prison experiences. Inmates may be indicating, through their behavior over time in prison, how they may act upon release from prison. The findings echo, too, the importance, as Liebling and Maruna (2005) have emphasized, of examining inmate changes in prison and how they may affect reentry.

Fourth, another finding in this study was that inmates who appeared to be deescalating while in prison had, upon release, not a lower but instead a greater likelihood of recidivism. This unexpected pattern cannot be explained with the data used in this study. However, we speculate that it reflects a situation in which inmates do not become less criminal; rather, they learn to navigate prison life better. These individuals might be viewed as "deviant ritualists" (Merton 1968). They seek to follow prison rules, or avoid being caught, but do not seek to achieve a higher goal, such as becoming a prosocial member of society. In some prison settings, inmates might have an incentive to "learn" to behave normatively to gain early (i.e., conditional) release. This possibility, however, is less applicable to Florida because of its truth-in-sentencing laws that ensure that all inmates serve at least 85 percent of their assigned sentence (Bales and Miller, 2012). Another potential explanation is that inmates in the deescalating trajectory may have

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changed for the "good," but their hold on this goal may have been tenuous. As Maruna (2001)

has highlighted, successful reentry requires considerable effort and support. Those inmates who

seek to improve their behavior in prison but are not sufficiently committed to change may find

themselves especially frustrated by their reentry experiences and, in turn, recidivate.

   Before discussing implications of this study, the study's limitations bear emphasis. One

limitation is the possibility that inconsistencies in infraction reports exist across prison facilities.

Prior research on prison administrative control indicates, for example, that prison facilities are

unique and operate under individualized norms, routines, and control schemes (e.g., Reisig 1998;

Useem and Reisig 1999; Huebner 2003). Variation may exist across prison facilities in officer

and administrative decision-making regarding the types of infractions that warrant disciplinary

reports. This study unfortunately could not account for this possibility. It is unclear that

differential reporting would affect identification of misconduct trajectories, but it could. This

study, too, examined only one time period in one state, which limits its potential generalizability.

Studies are needed that examine misconduct patterns for inmates from other facilities,

jurisdictions, and time periods, to help identify the extent to which the patterns and results

identified here are generalizeable to other places and inmate populations. Not least, studies are

needed that incorporate other potential confounders—such as inmate educational background,

mental health status, and strength and quality of outside social ties—that were not available in

this study and that might influence estimation of trajectory group effects on recidivism.

   Another potential limitation is the possibility that misconduct and trajectories of misconduct

may be affected by prison housing. For example, inmates may, over the course of their

incarceration, be transferred to solitary confinement. These transfers could incapacitate inmates

and create a censoring problem in estimating trajectories, one similar to what occurs in

conventional offending trajectory modeling in which analysts must account for "time off the street" due to an arrest or incarceration (e.g., Piquero et al., 2001). However, little if any prison housing in fact incapacitates inmates from misconduct. These inmates, even those in solitary confinement, still can and do engage in misconduct (Mears 2013). Separate from any potential incapacitation effect is the possibility that prison transfers may affect misconduct trajectories or that characteristics of particular prisons—such as officer and inmate culture or the amount and quality of programming—may influence them. Although this study was not able to explore these possibilities, research is needed that investigates them.

We turn to discussion of several implications of this study. First, the examination of misconduct patterns underscores the potential usefulness of approaches that can account for the longitudinal nature of in-prison experiences. A range of analytic and measurement strategies can be used to describe and understand these experiences. This study provides one example. Here, trajectory analyses of in-prison infractions not only illuminate the heterogeneity that characterizes one type of prison experience. They also highlight how, in contrast to studies that rely on binary or count measures, misconduct trajectory measures may be useful for observing distinct behavioral patterns in prison. These patterns in turn raise the possibility that a person has changed during incarceration, that this change might be measurable using official records data, and that monitoring the change may be useful for predicting recidivism.

Second, when the goal of analysis is solely to predict recidivism, it is plausible that simpler measurements—such as a binary, count, or rate measure—of misconduct could be just as informative as trajectory groups. The analyses here, suggest, however, that the simpler approach should not be assumed to be better. For any given inmate sample, the aggregation of longitudinal patterns may obscure important information that is relevant for identifying inmates

at risk of offending. For example, some inmate groups may have highly different trajectories of misconduct and yet have similar overall rates of infractions. As importantly, this group "membership" may predict recidivism, as this study found.

Third, the analyses suggest that a trajectory modeling approach might productively be used to examine other potential signals, such as trajectories of participation in programming and treatment (Bushway and Apel 2012). The focus here also echoes that by advocates of other approaches, such as machine learning modeling (Berk 2012), to explore new ways of improving risk prediction and insights into desistance and recidivism detection.

Fourth, the heterogeneity that appears to be inherent to inmate misconduct patterns raises questions about the characteristics that inmates "import" with them into the prison environment and that contribute to variation in misconduct. One important line of future research to undertake is analysis of whether inmate misconduct simply represents the continuation of a pre-prison criminal career inside the prison walls or if misconduct is unrelated to prior offending patterns (Trulson et al. 2010). Studies could, for example, assess whether in-prison misconduct represents a continued upward or downward trajectory in criminal behavior.

Fifth, research is needed that can identify whether trajectories of misconduct, and their effects on recidivism, are conditional on inmate characteristics or experiences. A limitation of this study is that the analyses here focused on relatively short incarceration stays; little is known about the trajectories that emerge for inmates who serve extensive prison terms. Prior work suggests that in-prison misconduct and its causes may differ between males and females (Berg and DeLisi 2006; Cao et al. 1997; Celinska and Sung 2014; Craddock 1996; Harer and Langan 2001), which in turn suggests that pre-prison and in-prison behavioral trajectories, and their causes, may vary as well for these groups. Other factors, including race, ethnicity, and age, also

may be differentially associated with misconduct trajectories.

Sixth, future research will want to seek to exploit opportunities to rely on corrections data that permit identification of all misconduct (or other in-prison experiences) and when they occurred or for time-specific information on other life events that might provide a useful basis for identifying trajectories. With the advent of better, centralized database systems, such analyses soon increasingly should be possible and so provide a foundation on which to extend life-course scholarship and research on how prison contributes, or not, to desistance.

Finally, although this study provided no assessment of policy, the study results underscore the potential importance of examining opportunities for inmate change in prison as an approach for improving risk prediction and reentry planning (Kroner and Yessine 2013; Serin et al. 2013; Latessa et al. 2014; Mears et al. 2015). More research is needed before relying on trajectory models of misconduct. However, the results suggest that it may be useful to monitor inmate experiences to identify whether specific types of longitudinal patterns in these experiences predict future offending and, by extension, the need for supervision or services that might be needed to reduce the likelihood of recidivism (Lipsey and Cullen 2007; Latessa et al. 2014; Steiner and Meade 2014). Monitoring changes alone may provide an important avenue along which to identify the need to reduce future risk (Berk 2012). Such monitoring increasingly is possible given the advent of electronic database systems and the possibility of "real time" data analysis to monitor changes in inmate behavior. Ultimately, however, if research progresses to the point where monitoring can reliably identify meaningful inmate trajectories, the difficult work of identifying what contributes to them and how to reduce inmate risk will remain.

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Table 1. Bayesian Information Criterion and Log Bayes Factors for Competing Models

Inmate Cohort	Number of Groups	Bayesian Information Criterion	Null Model	Log Bayes Factor
12-Month	2	-8033.94	1	2462.62
	3	-7973.83	2	120.22
	4	-7941.09	3	65.48
	5	-7935.77	4	10.64
	6	-7944.56	5	-17.58
14-Month	2	-8112.14	1	2282.98
	3	-8031.17	2	161.94
	4	-8013.12	3	36.10
	5	-8016.83	4	-7.42
	6	-8029.42	5	-25.18
16-Month	2	-7194.66	1	2104.72
	3	-7094.98	2	199.36
	4	-7087.08	3	15.80
	5	-7094.80	4	-15.44
	6	-7097.99	5	-6.38
18-Month	2	-7128.35	1	2141.84
	3	-7021.01	2	214.68
	4	-6993.46	3	55.10
	5	-6984.55	4	47.80
	6	-6987.82	5	-36.52
20-Month	2	-5331.65	1	1448.76
	3	-5268.66	2	125.98
	4	-5051.33	3	434.66
	5	-5051.18	4	0.30
	6	-5272.63	5	-442.90

Note: Log Bayes Factor = $2(\Delta BIC)$ where ΔBIC is calculated by subtracting the BIC for the more complex model from the BIC of the null model (see Jones et al. 2001:399).

Figure 1. Developmental Trajectory Model Analyses of Inmate Infractions by Months of Incarceration, 5-Group Models.

A. 12-Month Cohort (n = 2,324)

✳ Non-Misconduct   ◆ Deescalating

B. 14-Month Cohort (n = 1,934)

✳ Non-Misconduct   ◆ Deescalating

C. 16-Month Cohort (n = 1,387)

✳ Non-Misconduct   ◆ Deescalating

D. 18-Month Cohort (n = 1,158)

✳ Non-Misconduct   ◆ Deescalating

E. 20-Month Cohort (n = 781)
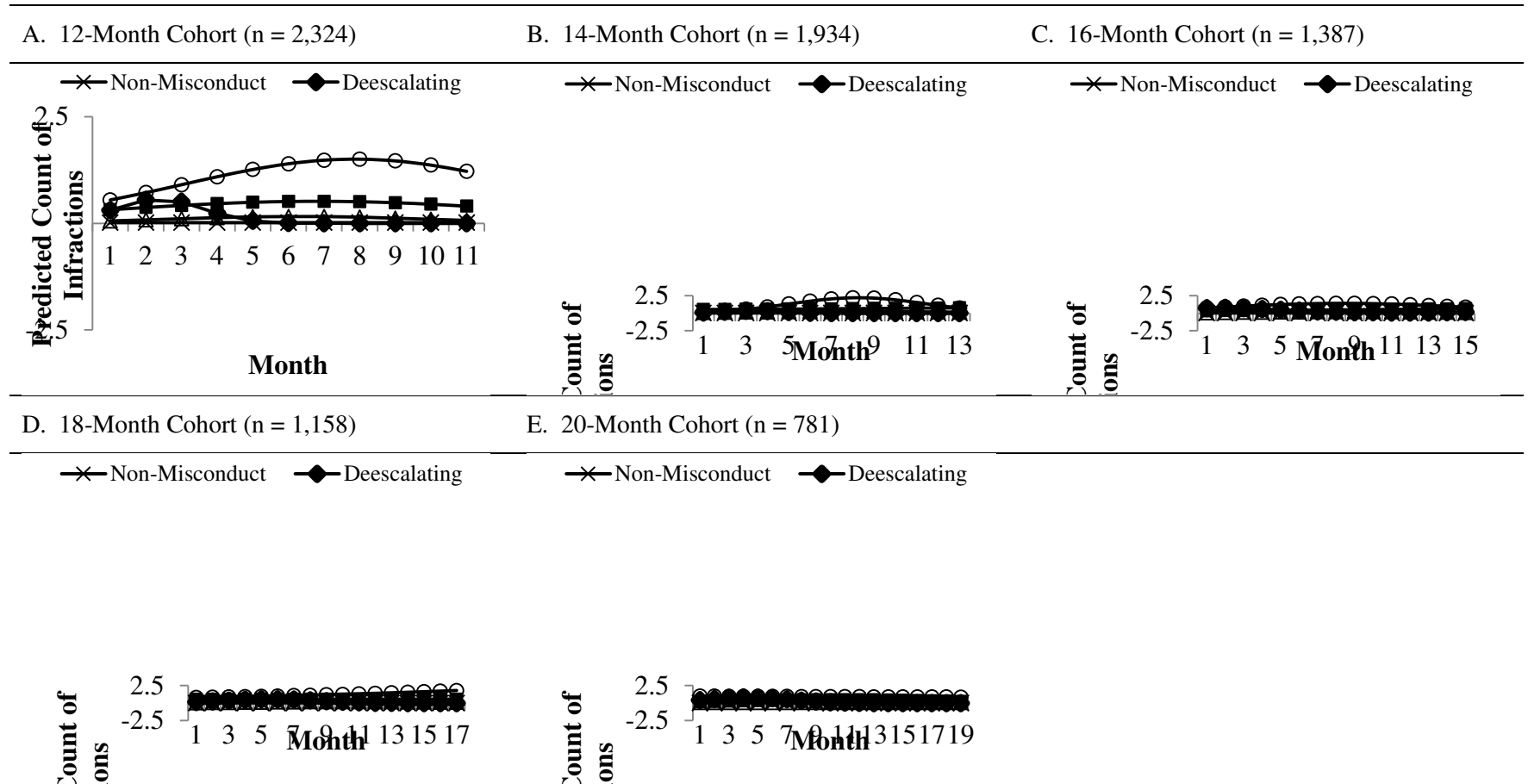
✳ Non-Misconduct   ◆ Deescalating

Table 2. Descriptive Statistics for Full Sample and By Pooled Trajectory Groups

	Full Sample		Non-Misconduct		Deescalating Misconduct		Low Misconduct		Medium Misconduct		High/Escalating Misconduct	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age (continuous)	31.84	9.89	33.93	9.59	27.94	9.22	28.71	9.07	24.71	8.31	21.71	6.16
Male (1/0)	0.90	0.30	0.90	0.30	0.90	0.31	0.90	0.30	0.89	0.32	0.87	0.34
White (1/0)	0.41	0.49	0.43	0.50	0.37	0.48	0.37	0.48	0.32	0.47	0.24	0.43
Black (1/0)	0.51	0.50	0.49	0.50	0.57	0.50	0.54	0.50	0.59	0.49	0.68	0.47
Latino (1/0)	0.08	0.27	0.08	0.27	0.06	0.24	0.09	0.28	0.09	0.28	0.08	0.27
Sentence length (mos.)	26.65	24.39	27.35	25.07	26.36	11.10	25.72	25.58	23.04	10.08	25.68	32.97
Offense-viol (1/0)	0.20	0.40	0.18	0.39	0.23	0.42	0.21	0.41	0.26	0.44	0.23	0.43
Offense-sex (1/0)	0.03	0.18	0.04	0.19	0.02	0.16	0.03	0.17	0.03	0.18	0.03	0.16
Offense-prop (1/0)	0.31	0.46	0.30	0.46	0.37	0.49	0.32	0.47	0.32	0.47	0.49	0.50
Offense-drug (1/0)	0.34	0.47	0.35	0.48	0.25	0.43	0.33	0.47	0.29	0.45	0.20	0.40
Offense-other (1/0)	0.12	0.33	0.13	0.34	0.12	0.33	0.11	0.31	0.10	0.30	0.05	0.22
Prior commits (count)	0.94	1.48	1.04	1.54	0.79	1.34	0.80	1.37	0.57	1.17	0.36	0.89
Conv-viol (count)	0.97	1.69	0.96	1.67	1.21	1.64	0.93	1.62	1.12	1.97	1.16	2.15
Conv-sex (count)	0.08	0.50	0.09	0.53	0.04	0.30	0.07	0.49	0.03	0.22	0.02	0.13
Conv-prop (count)	2.73	5.28	2.92	5.61	2.17	3.46	2.56	4.86	1.77	3.73	1.70	2.73
Conv-drug (count)	1.90	3.50	2.14	3.78	1.25	2.89	1.56	2.97	1.03	2.14	0.77	2.24
Conv-other (count)	0.63	1.37	0.67	1.40	0.66	1.63	0.57	1.31	0.51	1.28	0.37	1.05
Visits (count)	3.34	8.67	3.57	9.24	2.25	5.67	3.31	7.88	2.03	6.20	1.47	4.32
Time served (mos.)	15.90	2.84	15.86	2.76	16.68	2.77	15.82	2.95	16.17	3.18	16.50	3.19
Recidivism (1/0)	0.43	0.50	0.39	0.49	0.56	0.50	0.48	0.50	0.56	0.50	0.70	0.46
Infractions per month	0.15	0.22	0.02	0.04	0.26	0.17	0.18	0.09	0.55	0.19	1.24	0.43
APP		-		0.86		0.66		0.71		0.83		0.89
Percent		-		67.59		2.15		21.80		6.95		1.52
N		7,584		5,126		163		1,653		527		115

Notes: APP = Average posterior probability of assignment.

Table 3. Logistic Regression Analyses of 3-Year Felony Reconviction on Misconduct Trajectories and Covariates (n = 7,584)

	Model 1		Model 2	
	B	R.S.E.	B	R.S.E.
Trajectory Groups				
Deescalating (1/0)	0.692***	0.161	0.608***	0.119
Low (1/0)	0.385***	0.057	0.297***	0.064
Medium (1/0)	0.673***	0.092	0.533***	0.091
High/Escalating (1/0)	1.301***	0.206	1.102***	0.195
Covariates				
Age (continuous)	-	-	-0.029	0.015
Age-squared	-	-	0.000	0.000
Male (1/0)	-	-	0.405***	0.081
Black (1/0)	-	-	0.469***	0.062
Latino (1/0)	-	-	-0.325**	0.106
Sentence length (mos.)	-	-	-0.007***	0.002
Offense-viol (1/0)	-	-	-0.224***	0.061
Offense-sex (1/0)	-	-	-0.462*	0.190
Offense-prop (1/0)	-	-	0.246***	0.069
Offense-other (1/0)	-	-	0.304***	0.076
Prior commits (count)	-	-	0.219***	0.019
Conv-viol (count)	-	-	0.018	0.015
Conv-sex (count)	-	-	0.072	0.068
Conv-prop (count)	-	-	0.019***	0.005
Conv-drug (count)	-	-	0.047***	0.008
Conv-other (count)	-	-	0.076***	0.019
Visits (count)	-	-	-0.004	0.002
Time served (mos.)	-	-	-0.017*	0.007
Constant	-0.433***	0.029	0.059	0.311
Log Likelihood		-5124.134		-4732.811
Pseudo R-Squared		0.0128		0.0882

Notes: R.S.E. = robust standard errors.
Non-offending (1/0), Offense-drug (1/0), and White (1/0), serve as reference categories.

Figure 2. Predicted Likelihood of Recidivism, by Trajectory Group Membership