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Identification of Risk Factors for Self-Injurious Behavior in Male Prisoners*

ABSTRACT: Male prisoners with ($n = 132$) and without ($n = 132$) histories of engaging in self-injurious behavior (SIB) were matched on conviction prefix and custody level. Conditional logistic regression revealed that a combination of risk factors from domains defined by developmental, offense history, mental health, and institutional functioning factors correctly classified 93% of the prisoners in the sample (ROC AUC = 0.89, S.E. = 0.005, $p < 0.0001$). Model specificity was 92.6% and sensitivity was 95.3%. False positive and false negative rates were 2.3% and 3.4%, respectively. Implications for the assessment of prisoners at risk for SIB as well as suggested future directions for SIB prisoner research are discussed.

KEYWORDS: forensic science, self-injurious behavior, prisoners, risk assessment, risk model, self-mutilation

Prisoners who engage in self-injurious behavior (SIB) present a major challenge to correctional administrative, custodial, and healthcare staff whose mandate is to safely manage and treat them. Management and care for these prisoners has also proved quite costly. Prisoner SIB poses a variety of significant concerns not the least of which is the frequent necessary but problematic use of progressive physical restraints (1–3). It is generally agreed that SIB is a common event in the cases of incarcerated offenders (4–6). The behavior is considered to be an over-determined, significant, and persistent clinical problem which likely serves more than one function (7,8). Regardless of what function SIB is seen to serve, it is an effective—if maladaptive—coping strategy used by prisoners which may in part be explained by the nature and complexity of the prison setting itself (9).

Despite the fact that SIB has been studied and clinically examined for over 80 years and the extant literature provides a good deal of hypothesizing about its functions, psychophysiological bases, and correlates, there is currently no available formal means for identifying prisoners who are most likely at risk for SIB developed from data gathered from SIB prisoners. Risk estimation is a crucial task for correctional mental healthcare staff in which it is necessary to weigh, interpret, and communicate the implications of multiple risk factors at once for an individual case. Only a handful of prior studies have made particularly useful attempts to discriminate SIB prisoners from non-SIB prisoners. Another concern is that a collection of predictors selected and examined absent an explanatory framework is not helpful to research, assessment, or treatment. The present study is concerned with identifying risk factors for SIB in a prison population which might be later used in the development of a sensible risk assessment.

Defining SIB

Self-injurious behavior is referred to as deliberate self-harm (10–12), nonlethal self-harm (13), or an intentional act resulting in bodily injury to oneself in a direct and socially unacceptable manner (14,15). That SIB has been defined variously across studies poses potential conceptual, methodological, and clinical problems (16,17).

Definitions of SIB do not always clearly distinguish it from genuine suicide attempts although making this distinction within the prison setting is probably not helpful given that correctional authorities are ultimately charged with preventing death (18). It has been suggested that genuine suicide attempts not be included in the definition of SIB (19). Of course, this suggestion inevitably leads to the question of whether the behavior should be defined in terms of manipulative motive (20–22)—a theme frequently endorsed by correctional custodial and mental healthcare staff (23–25). On the other hand, genuine suicide attempt and a motive of manipulation may not be mutually exclusive concerns (20).

Three key considerations in defining SIB for prisoners should be that SIB (a) be defined as limited to deliberate destruction of body tissue (or interference with one's own medical status) without conscious suicidal intent due to suicidal intent being questionable as a measurable construct, (b) is defined as a repetitive behavior, and (c), that the behavior not be judged by observers as to whether it has life-threatening consequences or is "serious" versus "nonserious." It is important to note that while self-injurers are able to communicate that they distinguish between SIB and genuine suicidal intent, this does *not* qualify as a basis for judging the potential outcome of threatened or enacted self-harm. Due to the inbuilt peculiarities and complexities of the prison environment, it is necessary to define SIB behavior within the relevant "culture" of that setting. Such would include the most common prisoner behaviors and have as an objective criterion a threshold determined by an observed repetitive pattern (there are prisoners who may superficially cut themselves in an attempt to obtain a housing change or facility transfer to avoid paying a gambling or drug debt, for instance, who do so only once during their entire prison career). The repetitive criterion may be useful in estimating potential SIB severity and intractability (26).

Self-injurious behavior most commonly is seen in the form of cutting but also includes other behaviors such as foreign body

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ingestion, self-striking, self-biting, degloving, self-castration, and burning (27–33). Repetitive SIB increases the risk of fatal self-harm exponentially over time (34,35) and most individuals—including prisoners—engage in more than one type of SIB over time (19, 36,37). Prisoners are reported to present with the greatest incidence of SIB in comparison to noncorrectional populations (38,39)—particularly if they are diagnosed with a mental disorder (40).

Explaining SIB

Much of the literature concerning explanatory frameworks for SIB emphasizes a need to weigh the interaction of such factors as psychiatric diagnosis and treatment history, prior developmental experiences such as abandonment and abuse, and consequent problems with an inability to self-soothe or adapt (8). Explanatory models and research generally suggest that there are biological and social learning bases for aggressive/impulsive behavior that can be readily extended to the behavior of prisoners (41–43). What is basically a developmental trauma or “violence breeds violence” model based largely on the work of Lewis and her colleagues is considered particularly relevant (44–51). As an extension of Lewis et al.’s work, a risk model based on an explanatory framework and research concerning prisoner/offender behaviors that stem from many of the same underlying kinds of psychopathology as SIB (e.g., impulsivity, poor cognition, poor frustration tolerance) is extended to SIB prisoners. The essential hypothesis posed by the risk model is that as a result of a lack of positive developmental experiences—leading to greater psychological difficulties—and consequent ill-preparedness to adaptively meet various tasks of adolescence and adulthood, the SIB prisoner develops and therefore possesses fewer adaptive psychological resources than prisoners who have not had such experiences and who therefore tend not to engage in SIB.

Correlates of SIB

There is a relatively large body of literature concerning nonprisoner SIB which is potentially applicable to prisoner groups. This literature has primarily focused on predisposing risk factors such as developmental experiences, relationship status, and various forms of psychopathology, including psychiatric diagnoses as defined in the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) (52). In contrast, there is a much smaller body of literature concerning the SIB of prisoners—relatively little of which has concerned the SIB of male prisoners.

A number of extant reviews describe the relationship between SIB in community populations and developmental (relative youth, history of abuse/neglect, lack of formal education, history of significant central nervous system [CNS] insult) and mental health (diagnosis, treatment history, history of genuine suicide attempt, substance abuse) risk factors (7,8,10,19,53–55). While there are no good reviews concerning the relationship between prisoner SIB and developmental, legal/offense history (number of prior violent and nonviolent offenses), mental health, and institutional functioning (institutional behavior, housing status) risk factors, there are a number of reviews which describe risk factors associated with prisoner suicide (4–6,37–39,56–60)—which may share correlates with prisoner SIB (4–6,31,61–71). While individuals in the community and those in prison may share similar adverse developmental backgrounds which contribute to the future development of SIB, one of the primary differences between the literature concerning prisoner SIB and that concerning the SIB of community populations is that the latter largely centers on inpatient groups and the former usually

involves more general groups serving time in various prison settings. While there are commonalities in correlates of SIB risk for community and prisoner groups, differences in the significance and importance of correlates between these two groups are most certainly present—and particularly because of the complex and often highly precipitous environment in which prisoners find themselves.

Method

Participants

Archival data were gathered upon regional administrative approval from the electronic and paper healthcare, legal, and institutional records of prisoners currently serving sentences in the Michigan Department of Corrections (MDOC). All data were anonymized via assignment of random 5-digit identifiers prior to analyses. Two hundred and sixty-four cases were ultimately selected based on the availability of complete records for all cases. In the present study, 132 SIB and 132 non-SIB male prisoners were selected in a case-control design. Self-injurious prisoners were selected through an inquiry (a) of records listing those prisoners who had been referred to a self-injurious prisoner treatment program within the 10 years prior to its closing 3 years ago (31% of the SIB prisoner sample) and (b) based on the recommendation of various systemwide mental healthcare staff (for prisoners who had not been in the program, 69% of the SIB prisoner sample). All SIB prisoner cases were then reviewed for meeting the criteria for SIB defined for this study (see following section). Non-SIB prisoners were selected randomly from various statewide facility census listings and subsequent to case review on the basis of having no reported or documented history of engaging in SIB. Any non-SIB cases found to have a history of SIB were added to the SIB group and replaced in the non-SIB group randomly. Non-SIB cases were paired with SIB cases having the same conviction prefix to approximately match each prisoner by time of first entry into prison in order to provide some control for length of prison experience, a variable which has been associated with reductions in general prison misconduct (72). Prisoners in the two groups were also matched to each other by current custody level in order to reduce the potential effect of institutional security factors that may also affect prisoner behavior (73). Equal numbers of SIB and non-SIB cases also eased selection of an appropriate criterion cut-off for probability of risk (e.g., lowest probability value with the highest rate of overall correct classification).

Dependent Variables

The outcome for this study was whether the prisoner had ever engaged in SIB. Being a SIB prisoner was defined by engaging in one or more of the following behaviors in the documented absence of genuine suicidal intent at least two times within any 12-month period during the current prison term: (a) cutting, scratching, puncture, laceration, hair yanking, disembowelment, burning, eye enucleation, biting self, degloving—including reopening wounds, surgical staples/stitches, removal of urethral stents or other such serious tampering with medical interventions (“cutter”); (b) head-banging, bone breaking, or other striking of self (“banger/striker”); (c) ingestion or insertion of objects/substances foreign to body—through orifices or into wounds (“ingerter/inserter”); (d) ingestion of medication (neither suicidal nor an attempt to obtain a “high”) (“Rx overdosers [nonsuicide]”); and (e) purposeful interference with medical advice, recommended or completed treatment/intervention

not meeting criteria (a–d) which results in a medical crisis (“interferes with medical”).

Independent Variables

Developmental—Age at the time of study, years of formal education, history of abuse/neglect during childhood, parental status (has children or not), a history of significant head injury or other CNS insult, and current relationship status (married, divorced, single/never married, widowed).

Mental Health—A DSM-IV diagnosis of an Axis I psychotic or mood disorder, a diagnosis of Borderline Personality Disorder or Antisocial Personality Disorder, history of mental health contact in the community (includes being treated in a county jail), history of genuine suicide attempt(s), and history of significant substance abuse.

Legal/Offense—Number of prior nonviolent and violent offenses, instant offense was violent (either assaultive or sexual), and history of poor community supervision outcome while on probation or parole.

Institutional Functioning—Number of assaultive major misconducts (homicide, assault, assault and battery, fighting, threatening behavior), number of housing/lock moves within the past two years (including facility transfers), presently housed in long-term maximum security segregation, and history of protective custody placements/requests.

Statistical Analyses

Bivariate and penalized maximum likelihood conditional logistic regression (CLR, 74–76) analyses were performed utilizing version 2.7.0 of R (R Foundation for Statistical Computing, 2008) to examine the relationship between risk factors and prisoner SIB. Subsequent to CLR, the utility of the risk model was examined in several ways. Overall correctness of classification and rates of sensitivity, specificity, false positives, and false negatives were examined with classification tables.

Results

Ethnic Background Data

Of the full sample, 42.8% of the prisoners were Caucasian, 48.9% were African American, 5.3% were Latino/Hispanic, 1.5% were Native American, and 1.5% were “Other.” Of the SIB prisoners, 53.8% were Caucasian, 35.6% were African-American, 5.3% were Latino/Hispanic, 2.3% were Native American, and 3% were “Other.” Of the non-SIB prisoners, 31.8% were Caucasian, 62.1% were African-American, 5.3% were Latino/Hispanic, and 0.8% were Native American.

Offense Data

Of the SIB prisoners, 49.2% were presently serving a term for a nonsexual assaultive/violent offense, 9.1% were serving for a sexual offense, 2.3% were serving for a drug-related offense, 10.6% were serving for a property/financial offense, 11.4% were serving for an offense which was assaultive and sexual, 12.3% were serving for a combination of assaultive and property/financial offense, 1.5% were serving for a combination sexual property/financial

offense, 2.3% were serving for a combination drug-related and property/financial offense, and none were serving for at least three offenses, at least one of which included an assaultive and/or sexual offense.

Of the non-SIB prisoners, 52.3% were presently serving a term for a nonsexual assaultive/violent offense, 12.1% were serving for a sexual offense, 2.3% were serving for a drug-related offense, 15.2% were serving for a property/financial offense, 1.5% were serving for an offense which was assaultive and sexual, 13.6% were serving for a combination of assaultive and property/financial offense, 1.5% were serving for a combination sexual and property/financial offense, 0.8% were serving for a combination drug-related and property/financial offense, and 0.8% were serving for at least three offenses, at least one of which included an assaultive and/or sexual offense.

Classification Data

At the time of the study, 1.9% of the full sample was classified to security level I facilities, 6.8% to level II facilities, 26.1% to level IV facilities, and 65.2% to level V maximum security facilities. A total of 28.8% of the full sample were prisoners serving for convictions from >10 years ago, 51.9% were serving for convictions from >6 but ≤10 years ago, and 19.3% were serving for convictions incurred within the past 6 years.

Diagnostic Data

Of the SIB prisoners, 15.9% carried a primary diagnosis of psychotic disorder, 37.9% carried a primary diagnosis of mood disorder, 2.3% carried a primary diagnosis of anxiety disorder, 4.5% carried a primary diagnosis of an organic condition, 0.8% carried a primary diagnosis of eating disorder, 0.8% carried a primary diagnosis of Gender Identity Disorder, and 3.0% carried a primary diagnosis of Mental Retardation, Borderline Intellectual Functioning, or a Pervasive Developmental Disorder. 34.8% of the SIB prisoners carried a sole diagnosis of personality disorder. Of the non-SIB prisoners, 0.8% carried a primary diagnosis of psychotic disorder, 1.5% carried a primary diagnosis of mood disorder, none carried a primary diagnosis of anxiety disorder, an organic condition, eating disorder, Gender Identity Disorder, or a primary diagnosis of Mental Retardation, Borderline Intellectual Functioning, or a Pervasive Developmental Disorder. 97.7% of the non-SIB prisoners carried a sole diagnosis of personality disorder. Of the SIB prisoners, 46.2% carried a diagnosis of Antisocial Personality Disorder, 37.1% carried a diagnosis of Borderline Personality Disorder, and 16.7% carried a diagnosis of Personality Disorder NOS. Of the non-SIB prisoners, 75% carried a diagnosis of Antisocial Personality Disorder, 0.8% carried a diagnosis of Borderline Personality Disorder, and 24.2% carried a diagnosis of Personality Disorder NOS.

Self-injurious Prisoner Data

Of the SIB prisoners, 40.9% had engaged in SIB within the past 6 months, 17.4% had done so sometime between 6 and 12 months ago, 7.6% had done so between >12 but ≤24 months ago, 14.4% had done so between 24 and 60 months ago, and 19.7% had last engaged in SIB >60 months ago (>5 years ago). Of the SIB prisoners, 18.9% had begun engaging in SIB during childhood, 61.4% had begun during adolescence, and 19.7% had begun sometime in adulthood.

Ninety-eight percent of the SIB prisoners in the sample engaged in “cutter” behavior during their MDOC term, 36.8% had engaged

in “banger/striker” behavior, 38.7% had engaged in “insert/ingerter” behavior, 34.9% had engaged in “Rx ‘overdose’” behavior, and 28.3% had interfered with medical intervention. Nearly a quarter (24.2%) of the SIB prisoners in the sample had engaged in only one type of SIB during their current MDOC term. Of these SIB prisoners, 96.9% were solely “cutters,” none had engaged in “banger/striker” behavior, none had engaged in “ingerter/insert/er” behavior, 6.3% had engaged in “Rx ‘overdose’” behavior, and none had interfered with medical intervention. Nearly a third (31.8%) of the SIB prisoners had engaged in two types of SIB. Of these SIB prisoners, 97.6% had engaged in “cutter” behavior, 21.4% had engaged in “banger/striker” behavior, 35.7% had engaged in “ingerter/insert/er” behavior, 28.6% had engaged in “Rx ‘overdose’” behavior, and 14.3% had interfered with medical intervention. Of the SIB prisoners, 43.9% had engaged in three or more types of SIB. Of these SIB prisoners, 44.6% had engaged in “cutter” behavior, 60.3% had engaged in “banger/striker” behavior, 58.6% had engaged in “ingerter/insert/er” behavior, 70.7% had engaged in “Rx ‘overdoser’” behavior, and 43.1% had interfered with medical intervention.

Bivariate Analysis

A Bonferroni correction criterion of $p < 0.002$ was used in bivariate analyses. Nearly all of the developmental variables were significantly associated with the outcome of SIB (see Table 1). Neither prisoner parental status (e.g., has children or not) nor current relationship status (Model $\chi^2 = 0.86[4] p > 0.05$) were significantly associated with SIB outcome. All of the mental health variables were significantly associated with SIB. One of the legal/offense history variables and all of the institutional functioning variables were significantly associated with SIB.

TABLE 1—Associations between risk factors and self-injurious behavior in male prisoners.

Variable	χ^2 (df = 1)	ϕ^2	t (df = 1)	r_{pb}^2
Age at time of study			-0.27	0.00
History of abuse/neglect during childhood	49.11*	0.18		
History of significant head injury/neuro insult	35.43*	0.13		
History of head injury/CNS insult and abuse	36.07*	0.14		
Years of formal education			-4.81*	-0.09
Has children	3.25	-0.01		
Psychotic disorder	21.17*	0.08		
Mood disorder	68.50*	0.26		
Borderline PD	68.52*	0.26		
History of genuine suicide attempt	102.24*	0.39		
History of mental health contact in community	78.28*	0.28		
History of substance abuse	16.06*	0.06		
Current offense was violent	0.11	0.00		
History of poor community supervision outcome	9.35	0.03		
Number of prior violent offenses			3.19*	0.04
Number of prior nonviolent offenses			1.72	0.01
Number of assaultive misconducts			6.92*	0.16
Number of housing/lock moves w/in 2 years			9.27*	0.24
History of protection housing/requests	26.72*	0.10		
Currently housed in segregation	40.95*	0.16		

Bonferroni correction used. * $p < 0.002$. ϕ , phi coefficient. r_{pb} , point-biserial correlation. $n = 264$.

Regression Analysis

Significant classifiers in the CLR model were as follows: Combined history of abuse/neglect during childhood and history of significant CNS insult, number of years of formal education, having a current diagnosis of a mood disorder, having a diagnosis of Borderline Personality Disorder, history of genuine suicide attempt, number of assault misconducts, number of housing/lock moves in the past 2 years, and history of protective custody placement (see Table 2).

Classification Performance

The final risk model estimated via CLR correctly classified 93% of the prisoners in the sample with limited error at a 0.50 cut-off (ROC AUC = 0.89, S.E. = 0.005, $p = 0.0001$). At the cut-off, the model’s ability to accurately identify prisoners not to be classified as SIB prisoners (specificity = 92.6%) was nearly equivalent to its ability to accurately identify those prisoners who ought to be classified as at risk for SIB (sensitivity = 95.3%). At the cut-off, false positive and false negative rates for the model were 2.3% and 3.4%, respectively.

Discussion

The results of the present study suggest that there are risk-enhancing and risk-reducing factors from domains defined by developmental, mental health, offense history, and institutional functioning factors which may discriminate SIB prisoners from non-SIB prisoners. The results lend some support to a model which purports to explain SIB prisoner behavior in terms of developmental events (abuse/neglect during childhood, CNS insult, and a relative lack of formal education) resulting in a predisposition to psychological difficulties (mood disorder and borderline character pathology and their attendant problems) and to the development of dangerous behaviors (suicide attempts, assaultive behavior)—all of which may contribute to poor coping and environmental instability in the prison setting (frequent housing/lock moves, frequent facility transfers, and protective custody placements) which perpetuate problems as well as distress.

TABLE 2—Conditional logistic regression of the likelihood of self-injurious behavior in male prisoners.

Variable or interaction	<i>b</i>	SE	χ^2	OR
History of CNS insult and abuse/neglect as child	1.95	0.764	6.57*	7.02
Years of formal education	-0.49	0.093	68.41****	0.39
Psychotic disorder	-0.04	1.030	0.08	0.99
Mood disorder	3.50	1.113	12.91***	33.17
Borderline personality disorder	4.90	1.351	20.84****	134.73
History of genuine suicide attempt	2.05	0.688	8.77**	7.10
History of mental health contact in the community	0.98	0.633	2.28	2.59
History of substance abuse	-0.24	0.756	0.09	0.21
Number of prior violent offenses	0.20	0.114	3.46	1.22
Number of assaultive misconducts	0.08	0.021	22.80****	1.08
Number of housing/lock moves in past 2 years	0.08	0.024	11.37***	1.08
History of protective custody placements/requests	2.02	0.680	9.33***	7.51
Currently housed in segregation	-0.84	0.654	1.82	0.57

Model $\chi^2 = 255.16(13)****$. CNS, central nervous system; *b*, weight; SE, standard error; OR, odds ratio. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; **** $p < 0.0001$. OR < 1 = percent reduction in risk. $n = 264$.

The current results raise a number of issues. First, talking about suicide and SIB in prison inevitably leads to a debate about whether an individual is intending to die or not. What can be said is that prisoner SIB can lead to suicide and that perhaps we ought not to consider genuine suicidal ideation/intent/attempt to be mutually exclusive to SIB (at least as defined for this study). Second, although there are likely common risk factors for community and prison groups at risk for SIB, it almost goes without saying that prisoners are a unique group given other factors not present in the cases of community populations (particularly the complex and highly adversarial context in which they engage in the behavior). This is particularly true of prisoners who repeatedly engage in SIB (the SIB tends to be much more extreme in these cases). This paper is concerned with *prisoners* and partially about prisoners who are at the extreme. Thus, any generalization of the results to community populations should be made with caution. However, for example, it may be fair to suggest that individuals who are diagnosed with Borderline Personality may be at much higher risk for engaging in SIB when incarcerated than when they are in the community. Anyone working with Borderline clients may consider, then, a client's propensity for getting into trouble with the law. This could be another focus of future study. Third, the results of the current study lend support to general legal and clinical concerns for the vulnerability of certain prisoners (77–82).

The current results will need to be replicated upon a new and preferably larger sample before formalization of a prisoner SIB risk assessment instrument may realistically occur. It is recommended that future tests of the model specified here involve sampling subjects differently (e.g., unequal numbers of SIB and non-SIB prisoners and without consideration for classification or time-in-prison factors). It is conceivable to use the equations applied to the replicated data to generate risk estimates for individual cases to which a cut-off can then be applied to decision-making regarding a SIB prisoner's housing, management, and program disposition.

How do the current results relate to correctional mental health practice (and this includes practice within forensic/psychiatric prison inpatient or residential treatment units)? First, although self-harm risk is a primary concern for prisoners in general, the lack of the development of a formal risk assessment for prisoner SIB is considered a puzzling one—especially given the fact that SIB prisoners are frequently identified as a unique high risk population with particular needs. Such assessments are performed by correctional mental healthcare staff on a daily basis—particularly in reception centers and maximum security segregation housing at the state or federal prison level. In consult with correctional administrative, custodial, and healthcare staff, correctional mental healthcare staff must use and communicate information obtained from these assessments as part of a multidisciplinary decision-making process which affects a prisoner's housing, management, programming, and treatment disposition. Given the fact that there is currently no formal assessment of SIB risk available which is derived from SIB prisoner data, correctional mental healthcare staff are likely utilizing a combination of prior clinical experience (which may vary greatly), data derived from the literature (which is usually bivariate in nature and often purely anecdotal), and data derived from the administration of psychometric instruments at intake which are not specifically designed/normed for use with SIB prisoners (if the instruments have prisoner norms at all).

Second, the bivariate and multivariate results suggest that the prison environment has an impact on risk of SIB. This specifically raises concern for how well prisoners function when housed in segregation. It is particularly a concern when a prisoner has been housed in long-term administrative segregation at maximum

security where he may be in-cell for 23 h out of each day but for occasional healthcare, mental health, custody, or legal contacts and yard time (the latter if the prisoner is not on sanctions). This concern is brought further into focus when one considers that some prisoners may spend anywhere from 10 to 20 (± 5) years continuously in such housing settings due to their violent behavior.

Finally, there is no data that this author was able to find to indicate that time-dependent risk has ever been examined for SIB prisoners and future research in this area is strongly recommended. Potential length of SIB-free periods for prisoners is a particularly important concern due to the fact that custodial and mental healthcare staff are frequently engaged in the subjective estimation of the impact of institutional factors on prisoner behavior. For example, security classification decisions are often made on the basis of a determination of the degree of change in individual cases due to length of segregation placement periods (resulting from major rule infractions). Likewise, the degree to which a prisoner may be at risk of self-harm (or other harm) due to such placement is also a consideration. So, the essential information that a time-dependent analysis may provide is: Are there risk factors which have a more immediate impact on risk of SIB than other risk factors? In other words, we may be able to learn more about why it is that some prisoners seem to function for longer periods of time than others without engaging in SIB.

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