

# Criminal Justice and Behavior

<http://cjb.sagepub.com/>

---

## **Risk Factors for Violent Behavior in Prison Inmates : A Cross-Cultural Contribution**

Karin Arbach-Lucioni, Marian Martinez-García and Antonio Andrés-Pueyo

*Criminal Justice and Behavior* 2012 39: 1219 originally published online 11 June 2012

DOI: 10.1177/0093854812445875

The online version of this article can be found at:

<http://cjb.sagepub.com/content/39/9/1219>

---

Published by:



<http://www.sagepublications.com>

On behalf of:



[International Association for Correctional and Forensic Psychology](http://www.iacfp.org)

**Additional services and information for *Criminal Justice and Behavior* can be found at:**

**Email Alerts:** <http://cjb.sagepub.com/cgi/alerts>

**Subscriptions:** <http://cjb.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

>> [Version of Record](#) - Aug 2, 2012

[OnlineFirst Version of Record](#) - Jun 11, 2012

[What is This?](#)

# RISK FACTORS FOR VIOLENT BEHAVIOR IN PRISON INMATES

## A Cross-Cultural Contribution

KARIN ARBACH-LUCIONI

*University of Barcelona*

MARIAN MARTINEZ-GARCÍA

*Catalan Justice Department*

ANTONIO ANDRÉS-PUEYO

*University of Barcelona*

---

A large body of research has focused on indicators of the risk of prison violence, especially in the United States. Little is known about this question in Spain, despite the fact that in 2010, this country had the most crowded prison system in western Europe. This prospective study draws on official data to examine the relationship between individual and situational characteristics and misconduct in a sample of 1,330 inmates from 11 penitentiary facilities across a 10-month period. Violent misconduct was less frequent than potentially violent behavior, with prevalence rates of 9% and 13%, respectively. Younger age, being on remand, classification as first degree, prior violent behavior, drug and/or alcohol problems, poor response to treatment, and procriminal attitudes were significant risk factors of inmate misbehavior in an ordinal regression model (areas under the curve = 0.74 to 0.82). Having a violent conviction offense was not a significant predictor of outcome. The implications for current classification practices are discussed, and the importance of cross-cultural and empirically based research is stressed.

**Keywords:** prison violence; risk assessment; inmate behaviors; misconduct; risk factors

---

Inmate misconduct in correctional facilities can create problems both for other inmates and for staff. Identifying individuals at increased risk of violence in prison and quantifying the probability of such assaultive misconduct are obviously important issues for prison administrators and public policy makers (Sorensen & Cunningham, 2007). Inmate misconduct is one of the foci of a recently developed tool for assessing violence risk in Catalan prisons. Catalonia has a prison population of 137 inmates per 100,000 inhabitants, far higher than the median rate in Europe (109 per 100,000 inhabitants; Aebi & Delgrande, 2008). The identification of the prevalence rate and the risk factors associated with prison

---

**AUTHORS' NOTE:** *This research was funded by the Ministry of Science and Innovation of the Spanish government (PSI2009-13265). The authors wish to thank Alberto Maydeu Olivares for his assistance with the data statistical analyses. The authors also thank the Department of Justice of the Catalan government for providing access to the data for the study. Correspondence may be addressed to Karin Arbach-Lucioni, Personality Department, University of Barcelona, Passeig Vall d'Hebron 171, 08035, Barcelona, Spain; e-mail: karinarbach@ub.edu.*

CRIMINAL JUSTICE AND BEHAVIOR, Vol. 39 No. 9, September 2012 1219-1239

DOI: 10.1177/0093854812445875

© 2012 International Association for Correctional and Forensic Psychology

violence are key issues for the design of preventive policies aimed at minimizing the human and economic consequences of violent behavior. These factors have an immediate practical application on admission to prison in determining institutional classification and facility assignment (Cunningham & Sorensen, 2007b); inmates who show warning signs of violent misconduct are often assigned to more secure levels of custody, where theoretically they have fewer opportunities to commit violent acts.

The base rate of prison violence varies across studies as a function of the differences in outcome measures, penitentiary contexts, or periods considered. In the case of highly serious injury (e.g., homicide), the rate is usually so low as to make any predictive scheme difficult (Cunningham, Sorensen, & Reidy, 2005; Kuanliang, Sorensen, & Cunningham, 2008). However, it is widely agreed that the frequency of misconduct is inversely related to its severity (Cunningham & Sorensen, 2006a). In Sorensen and Cunningham's (2010) study in Florida, the rates of assaults resulting in injuries to inmates and staff that required more than first-aid treatment were 2.9 per 1,000 inmates and 0.8 per 1,000 inmates, respectively. Edens, Poythress, Lilienfeld, and Patrick (2008) found 25% of offenders incarcerated within the Florida Department of Corrections to be aggressive defiant and 11% to be physically aggressive. A prior study also led by Edens found a base rate of prison violence of 22% across three prison studies (Edens, Buffington-Vollum, Keilen, Roskamp, & Anthony, 2005). In the context of the present study, the rates in 2010 for serious injuries (those requiring hospitalization) against inmates and staff were 0.4 and 0.1 per 1,000 inmates, respectively. However, mild injuries (those requiring no more than first-aid treatment inside the prison) were more frequent, with rates of 87.3 per 1,000 (violence against inmates) and 5.9 per 1,000 inmates (violence against staff) (Catalan Justice Department, 2010).

Three of the main theory-based explanations of prison adjustment and misconduct are the deprivation, importation, and situational models (for a review, see Camp, Gaes, Langan, & Saylor, 2003; Drury & DeLisi, 2010; Huebner, 2003; Jiang & Fisher-Giorlando, 2002; Morris, Longmire, Buffington-Vollum, & Vollum, 2010). Importation theory suggests that in some instances, an inmate's personal characteristics are what drive his or her institutional behavior (Irwin & Cressey, 1962). The present study is guided mainly by this perspective. Conversely, deprivation theory posits that the structure of life in prison may lead to a system of inmate opposition against the prison administration (Sykes, 1958). Finally, the situational model attempts to explain misconduct on the basis of situational variables present in the prison environment and the attributes of the particular setting (see Cooke, Wozniak, & Johnstone, 2008).

## CORRELATES OF PRISON MISCONDUCT

Although each outcome measure and sample used must be considered in context, recent research has identified several individual-level indicators that are linked to inmate misconduct with varying degrees of consistency (Cunningham, Sorensen, Vigen, & Woods, 2011; Morris et al., 2010). Among demographic features, age is perhaps the individual characteristic most strongly and most consistently related with misconduct (Bench & Allen, 2003; Cooper & Werner, 1990; Flanagan, 1980); in most studies, age shows a strong inverse

relationship with prison misconduct or disciplinary infractions (Cunningham et al., 2005, 2011; Cunningham & Sorensen, 2006a, 2007b; Kuanliang et al., 2008; Morris et al., 2010; Sorensen & Cunningham, 2010). On the basis of results with a sample of juvenile inmates serving in an adult prison, Kuanliang et al. (2008) found a decrease in the age-misconduct curve similar to the general age-crime curve in the “free world.”

Age also seems to be a mediating variable between length of sentence and misconduct. For example, Flanagan (1980) found that the rate of involvement in institutional misconduct is lower among older inmates serving long terms than among those serving short terms. However, the seriousness of the misconduct in the long-term group may be greater: In a sample of 24,500 close-custody inmates in the Florida Department of Corrections, Cunningham and Sorensen (2007b) reported that those serving long sentences had lower rates of disciplinary infractions and violent prison misconduct. Previous studies in samples of inmates sentenced to life without parole (Cunningham & Sorensen, 2006b) and with capital life sentences in Texas (Morris et al., 2010) produced similar results. Some authors attribute the improvement in conduct across the course of the prison terms to varying combinations of the effects of maturation and adaptation to the prison environment (Toch & Kupers, 2007). Others, however, have found sentence length to be independent of age or time served, and thus “maturation and adaptation” are not satisfactory explanations. Probably, the perceptions of compliance of long-term inmates differ from those of the short-term group; they seem to be more convinced of the need to coexist with the prison authorities within the institution (Flanagan, 1980).

Another demographic feature that is frequently studied is gender, but the data produced are less consistent than those for age. Some research indicates that the institutional misconduct rate is lower for females than males, especially for the most severe forms of misconduct (see Cunningham et al., 2011; Drury & DeLisi, 2010; Harer & Langan, 2001; Sorensen & Cunningham, 2007, 2010); but other studies found no differences between the genders regarding the likelihood of institutional misconduct (Camp et al., 2003). Nonetheless, covariates of institutional misconduct for both males and females have remained relatively consistent (Drury & DeLisi, 2010; Harer & Langan, 2001).

Similarly mixed results have been reported for several penitentiary and criminal history variables that are frequently studied in relation to inmates’ institutional misconduct. Researchers have shown great interest in determining whether being convicted of a violent crime makes people more prone to show violence in prison, but the evidence found is not conclusive (Cunningham et al., 2011). Some studies have reported a positive relationship between a violent conviction offense and prison assault (Steiner, 2009). In many others, however, the conviction offense was not significantly related to the likelihood of violent misconduct in prison (see Cunningham et al., 2011; Cunningham & Sorensen, 2006a; Sorensen & Cunningham, 2010). Even more striking is the association found between violent conviction offenses and lower rates of violent prison infractions (Cunningham et al., 2005; Cunningham & Sorensen, 2007b; see also Edens et al., 2005).

Moreover, previous studies reported that property offenders show the highest rates of prison disciplinary infractions that involve violent misconduct (e.g., Cunningham et al., 2005). Another issue that is related to conviction offense is the type of victim; however, the same study (Cunningham et al., 2005) found no relationship between the type of victim and violent prison misconduct.

Actually, it is widely accepted that the term *dangerousness*, usually based exclusively on “what the individual did,” is not useful for the purposes of classification, since someone who has committed a violent offense is considered dangerous in a general way and in non-specified scenarios (Redondo Illescas & Andrés Pueyo, 2007). Understanding the empirical relationship between violent crimes and misconduct within prison will help to assess the validity of the current practice of using the conviction offense as the main criterion in the classification process.

A criminal risk factor that has shown better (albeit modest) predictive power for inmate misconduct is a history of previous imprisonment (Drury & DeLisi, 2010; Sorensen & Pilgrim, 2000). The evidence is mixed but tends to suggest a positive relationship between prior incarcerations and a variety of misconduct types (Cunningham et al., 2005; Cunningham & Sorensen, 2006a, 2007a, 2007b; Sorensen & Cunningham, 2010). Many reports in the literature have documented the positive relationship between criminal records and institutional misconduct (e.g., Berg & DeLisi, 2006; Campbell, French, & Gendreau, 2009; DeLisi & Munoz, 2003; Drury & DeLisi, 2010; Flanagan, 1983; Gendreau, Goggin, & Law, 1997; Sorensen & Pilgrim, 2000). Studies with samples of chronic offenders assert that inmates with past violence and prison history tend to violate prison order disproportionately (Berg & DeLisi, 2006; DeLisi & Munoz, 2003; Flanagan, 1983; Gendreau et al., 1997). The meta-analysis of 39 studies conducted by Gendreau et al. (1997) found that criminal history, antisocial attitudes and behavior, and institutional factors were the strongest predictors of prison misconduct. In a recent meta-analysis of 88 prospective studies with adult offenders, an aggregate category of criminal history indexes produced the most accurate mean effect size (Campbell et al., 2009). In a sample of high-security inmates, Cunningham et al. (2005) found that a sentence of 6 to 10 years was associated with an increased risk of violent misconduct in prison, whereas a prior probated sentence was a risk-reducing factor. In contrast, other studies have found no association between a history of violence in the community and prison misconduct or institutional violence (see Cunningham et al., 2005); some recent investigations have failed to find a significant association between a prior prison sentence and actual assaults among life-sentenced capital offenders (Morris et al., 2010) or inmate-on-staff assaults (Lahm, 2009). These mixed findings could be attributable to variations in samples, definitions of the outcome, or the predictors used. For example, some studies include violent and nonviolent offenses as criminal history, whereas others include only violent offenses.

More consistent is the link between a pattern of prior prison violence and subsequent violence in an institutional setting (Cunningham & Reidy, 2002; Cunningham & Sorensen, 2007b; Drury & DeLisi, 2010; Sorensen & Pilgrim, 2000). Empirical findings show that prior institutional behavior must be considered in classifying and predicting future prison misconduct. Furthermore, an inmate's misconduct record is usually considered an indicator not only of prison adjustment but of postrelease recidivism risk as well (Flanagan, 1983; Perez Fernández & Redondo Illescas, 1991).

In the past decade, there has been increasing interest in personality and psychological factors as predictors of inmate adjustment and misbehavior. There is evidence that inmates who are emotionally disturbed or who receive mental health care are disproportionately involved in prison infractions and also in violent incidents (see Toch & Kupers, 2007). The psychopathy construct has been studied in detail and has been measured by a range of

instruments; the overall results indicate that the antisocial behavioral dimension, more than the affective dimension, explains the relation with institutional aggression (Guy, Edens, Anthony, & Douglas, 2005; McDermott, Edens, Quanbeck, Busse, & Scott, 2008). Andrews and Bonta (1995b) state that attitudes supportive of crime are a strong risk factor for violence; individuals with these attitudes emphasize the usefulness of criminal activity, rationalize or justify law violations, and minimize or deny responsibility for their actions and the consequences of these actions. In our study, this risk factor was based mainly on Andrews and Bonta's description of the criminogenic need named "attitudes/orientation supportive of crime," which concerns what and how a person thinks and feels about himself or herself and others in regard to violation of the law and conventions (Andrews & Bonta, 1995b). Furthermore, as well as the cognitive component (attitudes), in this risk factor, we included a behavioral dimension indicated by a pattern of hostile conduct against others. Both components are considered in traditional violence risk assessment schemes (e.g., Historical, Clinical, Risk Management–20, Level of Service Inventory–Revised) and have shown their association with reoffending and violence. Furthermore, recent research has suggested that the provision of social support may reduce inmate hostility by lessening the potentially harmful effects of exposure to criminogenic strains in prison (Hochstetler, DeLisi, & Pratt, 2010).

Meta-analyses have found substance abuse to be a moderate risk factor for recidivism and a variable interrelated with other criminogenic needs, such as procriminal attitudes and antisocial associates, or financial, marital, family, and employment problems (Andrews & Bonta, 1995b). Although substance abuse in prisoners has been more frequently studied as an outcome than as a predictor of misconduct, some studies have identified a complex relationship between a history of drug and alcohol use and rates of misconduct (Bench & Allen, 2003; Kuanliang et al., 2008). The present study explores the role of drug or alcohol problems in the past year, not a long history of abuse or dependence.

Several socioeconomic indicators have also been studied in relation with prison misconduct, although the results are not always consistent. For example, some previous studies report an inverse relationship between level of education or literacy and prison misconduct (e.g., Cunningham et al., 2005; Cunningham & Sorensen, 2006a; Drury & DeLisi, 2010; Harer & Langan, 2001), but others do not (e.g., Cooper & Werner, 1990; Morris et al., 2010). Marital status and economic resources have been related to a broader community stability factor that would be expected to influence prison violence risk (Cunningham et al., 2005). Race may also play some role in explaining inmate misconduct, although the direction of the relationship varies according to the study and, especially, according to the racial composition of communities (Berg & DeLisi, 2006; Flanagan, 1983; Morris et al., 2010; Steiner, 2009). The findings of a study with convicted murderers in Texas (Sorensen & Cunningham, 2007) were consistent with Gendreau et al.'s (1997) meta-analysis, which reported race to be a modest predictor of prison violence. In Catalonia, foreigners represented nearly 44% of the prison population in 2010, and preliminary results suggested that foreigners scored lower than natives on an aggregate measure of general violence risk (Arbach Lucioni & Andrés Pueyo, 2010).

Although identifying individual-level risk factors has an important role in the targeting of security resources and programming, it is widely accepted that violence is rarely just a function of the individual; rather, it emerges from the intersection of the person in a particular

interpersonal interaction in a given context (Cunningham & Reidy, 1999; Cunningham, Sorensen, Vigen, & Woods, 2010; Monahan, 1981). Thus, a model based on “person” features alone ignores the multiple structural, institutional, and environmental factors that contribute to prison violence (Cooke et al., 2008; Cunningham & Sorensen, 2007b; Toch & Kupers, 2007). The present study aims to overcome this limitation by including *classification* as a contextual risk factor. Penitentiary classification is the process by which prisoners are assigned to a security level (close, ordinary, or community regime), which determines where they will be housed. According to Byrne and Hummer’s (2007) tricky question, “if where we place inmates affects their behavior—and more specifically, if such placement has a mediating effect on their behavior—we would expect higher rates of inmate misbehavior in lower risk settings” (p. 533). Nonetheless, many findings indicate that the frequency of violent misconduct increases with the security level of inmate assignment (Sorensen & Cunningham, 2010; Steiner, 2009). In consequence, Byrne and Hummer claim that the current efforts to reduce prison violence by identifying “high-risk” inmates, and/or by placing them in higher levels of institutional control, do not seem to work particularly well. Nonetheless, the result they mention may be attributed to different, although nonexclusive, causes. For example, (a) the higher the security level, the lower the staff tolerance and the more exhaustive the reporting practices; (b) higher security levels are characterized by a more punitive milieu and/or with fewer incentives for compliance; and finally, (c) violent misconduct increases with security levels because the prison system responds dynamically to misconduct or gang affiliation by elevating the security level of inmates who exhibit violence, thus concentrating them at higher security levels. To clarify the role of classification level in misconduct, some studies have randomly assigned inmates with the same classification to different custody levels (Camp & Gaes, 2005) and found lower levels of misconduct at higher levels of custody. Thus, even though higher-risk inmates may misbehave more in higher-custody environments, their degree of misconduct would have been even higher had they been placed in a lower-custody environment. Other findings support this idea (Berk & de Leeuw, 1999).

In summary, prior research in northern countries, especially in the United States, has identified individual characteristics as risk factors for explaining misconduct during incarceration. With a relatively high level of agreement, the findings show that inmates who are younger, with shorter prison terms, with disadvantaged socioeconomic and/or psychological conditions, with longer criminal histories, and with prior prison sentences engage in significantly higher levels of misconduct in prison than other inmates. Several empirically based predictive models are available for the assessment of inmate violence risk. One of the most reliable actuarial models for predicting misconduct is the Risk Assessment Scale for Prison (RASP; Cunningham & Sorensen, 2006a). The performance (areas under the receiver operating curve [AUCs]) of the various RASP models (i.e., RASP-CC, RASP-Cap, RASP-FDR) or similar measures (e.g., S&P; Sorensen & Pilgrim, 2000) in modeling prison violence in their construction samples and predicting prison violence in subsequent U.S. samples was modestly successful in modeling violence at different severity levels (i.e., potential violence, assaults, and serious assaults), with AUCs ranging between .59 and .77 (see Cunningham et al., 2011). Another actuarial measure tested for predicting institutional misconduct during incarceration was the Violence Risk Appraisal Guide (Harris, Rice, & Quinsey, 1993), which achieved moderate predictive accuracy (AUCs = .67) for physical incidents in a male inmate sample (Hastings, Krishnan, Tangney, & Stuewig, 2010).

## THE CURRENT STUDY

In Spain, research on base rates and correlates of prison misconduct is lacking, despite the fact that the country has the most crowded prison system in western Europe. By assessing and quantifying the risk factors for prison misconduct identified by researchers in other geographical areas, we seek to contribute to the cross-cultural study of risk factors for inmate violence and to offer recommendations to local authorities responsible for establishing guidelines for the case management plan.

Thus, the primary objective of the current study was to investigate the utility of individual factors traditionally associated with in-prison behavior in predicting institutional misconduct among male and female inmates. We also aimed to explore whether inmates with conviction offenses against persons were more likely to behave violently inside prison compared with those imprisoned for other offenses. In the light of previous reports, we did not necessarily expect index offenses against persons to be a significant predictor of violent misconduct. Finally, we aimed to provide more detailed base rate information and risk analysis using a truly prospective design with an ordered operational definition of prison misconduct. Sorensen and Cunningham (2007) stress that the choice of the measure used when operationalizing prison violence is crucial in determining base rates but that its effect on identifying correlates and predicting outcomes may be more limited. We therefore expected our results to shed light on the prevalence of in-prison infractions in this sample of offenders and to show predictors similar to those detected in studies using comparable outcome measures.

## METHOD

### SETTING

The Catalan Penitentiary System has 14 prisons for adult offenders. During the period of this study (from July 1, 2009, to April 30, 2010), it held 16,468 different inmates, with the occupation rate reaching an average of 116% (range 94% to 193%; Catalan Justice Department, 2010). Offenders are classified as first, second, or third penitentiary degree and on this basis are assigned to different security levels termed *close*, *ordinal*, or *community* regimes, respectively. The close-custody regime is applied only when an inmate has shown serious maladjustment in other security-level facilities. The data reported here are part of a larger study of a recently developed risk assessment tool for prisons conducted by the coauthor (AAP), currently in the pilot phase. This study presents some preliminary results.

### PARTICIPANTS

The study sample consisted of all inmates evaluated from the time when the risk assessment system was implemented, at the beginning of July 2009. The system was implemented in a phased manner at different penitentiary facilities and in different offender groups. It began with men with violent crimes and in prisons closest to central correctional services and continued in other correctional facilities and other offender groups.

A total of 1,668 inmates were assessed in the study as a whole, representing 10.2% of the total prison population during the same period. As violent offenders were the first group



assessed, those with an index offense against people or a sexual offense are overrepresented in the total sample. To control time at risk, we limited the sample to the inmates assessed and who were incarcerated for the entire period of study ( $n = 1,330$ ; 338 participants were released). No significant differences were found in terms of gender, age, or nationality between those who completed follow-up and those who were released. As to be expected, given the length of their sentences, a higher proportion of people convicted for sexual crimes and crimes against public health completed follow-up.

The final sample comprised 1,266 males (95.2%) and 64 females (4.8%). This male-female ratio is slightly higher than that of the total prison population, in which 92.4% are male. Mean age was 37.1 years ( $SD = 12$ ; range 18 to 82), with no significant differences according to gender; this figure is lower than the mean age of the total prison population in the same period, which was 41 years. Sixty-one percent of the sample ( $n = 816$ ) were Spanish, and the rest were foreigners ( $n = 514$ , 38.6%). Table 1 displays a full description of the frequency distribution of sample characteristics.

## MEASURES

*Risk factors.* We focused on the effect of diverse risk factors grouped in four dimensions: (a) sociodemographic variables, including gender, age, nationality, marital status, low economic resources, and low social support, of which the last two variables were estimated for the previous year; (b) penitentiary variables, including current proceeding situation (i.e., whether the inmate has been sentenced or is on remand, that is, inmates who are in prison pending trial), classification (a situation variable related to the security level: close, ordinary, and community), and an aggregate measure of prison maladjustment comprising data on behavioral problems in current or previous incarcerations (including overt interpersonal conflicts and serious disciplinary infractions, ranging from serious threats to homicide); (c) criminal history variables, including conviction offense, relationship with the victim, early beginning of criminal or violent behavior (prior to or after 17 years old), history of community violence, and drug or alcohol problems in the last year; and finally, (d) psychological variables, including poor response to psychological or psychiatric treatments in the past year, history of actual or attempted self-injury, and procriminal attitudes. As Table 1 shows, most characteristics of the final sample differed significantly according to outcome category.

*Outcome.* The outcome selection is conditioned by the nature of the penitentiary system, which determines the classification of particular types of misconduct. Following Sorensen and Cunningham (2010), who suggest that the most comprehensive operational definition of prison violence would include a broad range of rule violations, our analysis used an ordered dependent variable that distinguishes between infractions of different degrees of severity. The response categories ranged from noninfractions to violent infractions ( $M = 0.12$ ,  $SD = 0.49$ , skewness = 5.72), with potentially violent infractions in the middle ( $M = 0.24$ ,  $SD = 0.83$ , skewness = 5.69). This latter category includes serious infringements and behaviors that could result in interpersonal aggression (e.g., disturbances, active resistance, violence against property, theft, escape, possession of a weapon), and violent infractions include attacks or attack threats on persons (e.g., serious and strongly feasible threats, assaults, battering).

**TABLE 1: Sample Characteristics and Associations With Different Behaviors in Prison**

| <i>Risk Factor</i>                | n     | <i>Outcome</i>       |                            |                | $\chi^2$   |
|-----------------------------------|-------|----------------------|----------------------------|----------------|------------|
|                                   |       | <i>No Infraction</i> | <i>Potentially Violent</i> | <i>Violent</i> |            |
| Age                               |       |                      |                            |                |            |
| <i>M (SD)</i>                     | 1,313 | 38.4 (12.0)          | 32.1 (10.4)                | 29.9 (9.1)     | -0.27****a |
| Gender                            |       |                      |                            |                |            |
| Male                              | 1,253 | 82.3                 | 9.5                        | 8.2            | 6.1*       |
| Female                            | 47    | 78.3                 | 5.0                        | 16.7           |            |
| Nationality                       |       |                      |                            |                |            |
| Native                            | 803   | 83.1                 | 9.0                        | 8.0            | 1.4        |
| Foreigner                         | 510   | 80.6                 | 9.8                        | 9.6            |            |
| Marital status                    |       |                      |                            |                |            |
| Married                           | 293   | 89.1                 | 6.5                        | 4.4            | 29.2***    |
| Single                            | 734   | 77.1                 | 11.4                       | 11.4           |            |
| Other                             | 286   | 87.8                 | 6.6                        | 5.6            |            |
| Low economic resources            |       |                      |                            |                |            |
| Yes                               | 310   | 76.1                 | 12.6                       | 11.3           | 9.9**      |
| No                                | 1,003 | 83.9                 | 8.3                        | 7.8            |            |
| Low social support                |       |                      |                            |                |            |
| Yes                               | 289   | 75.4                 | 13.1                       | 11.4           | 11.3**     |
| No                                | 1,024 | 84.0                 | 8.2                        | 7.8            |            |
| Proceeding situation              |       |                      |                            |                |            |
| Sentenced                         | 1,131 | 84.5                 | 7.7                        | 7.8            | 34.8***    |
| On remand                         | 173   | 66.5                 | 19.1                       | 14.5           |            |
| Past prison maladjustment         |       |                      |                            |                |            |
| Yes                               | 503   | 73.2                 | 12.9                       | 13.9           | 46.2***    |
| No                                | 810   | 87.7                 | 7.0                        | 5.3            |            |
| Conviction offense                |       |                      |                            |                |            |
| Persons                           | 550   | 83.3                 | 9.5                        | 7.3            | 40.6***    |
| Public health                     | 194   | 90.2                 | 5.7                        | 4.1            |            |
| Property                          | 294   | 70.7                 | 13.9                       | 15.3           |            |
| Sexual                            | 210   | 86.7                 | 6.7                        | 6.7            |            |
| Other                             | 65    | 84.6                 | 6.2                        | 9.2            |            |
| Victim                            |       |                      |                            |                |            |
| Relative                          | 85    | 95.3                 | 1.2                        | 3.5            | 42.7***    |
| Couple                            | 303   | 87.8                 | 6.3                        | 5.9            |            |
| Nonrelative                       | 706   | 76.1                 | 12.0                       | 11.9           |            |
| No victim                         | 219   | 88.6                 | 7.8                        | 3.7            |            |
| Early beginning of violence/crime |       |                      |                            |                |            |
| Yes                               | 159   | 68.6                 | 13.2                       | 18.2           | 26.5***    |
| No                                | 1154  | 84.0                 | 8.8                        | 7.3            |            |
| History of violence               |       |                      |                            |                |            |
| Yes                               | 400   | 79.5                 | 10.4                       | 10.1           | 14.0**     |
| No                                | 913   | 88                   | 6.8                        | 5.3            |            |
| Drug/alcohol problems             |       |                      |                            |                |            |
| Yes                               | 337   | 69.1                 | 15.4                       | 15.4           | 52.2***    |
| No                                | 976   | 86.6                 | 7.2                        | 6.3            |            |

(continued)

**TABLE 1: (continued)**

|                             |       |      |      |      |         |
|-----------------------------|-------|------|------|------|---------|
| Poor response to treatments |       |      |      |      |         |
| Yes                         | 955   | 73.8 | 13.7 | 12.5 | 22.0*** |
| No                          | 344   | 85.1 | 7.7  | 7.1  |         |
| Self-injury                 |       |      |      |      |         |
| Yes                         | 206   | 69.9 | 15.0 | 15.0 | 25.1*** |
| No                          | 1,103 | 84.4 | 8.3  | 7.3  |         |
| Procriminal attitudes       |       |      |      |      |         |
| Yes                         | 393   | 74.3 | 8.0  | 13.5 | 24.8*** |
| No                          | 920   | 85.4 | 12.2 | 6.5  |         |

a. Pearson correlation index ( $r$ ).

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

The prevalence of nonviolent incidents was below 3% ( $M = 0.03$ ,  $SD = 0.18$ , skewness = 6.18). This figure seems unusually low; we assume that because of their very high frequency and the apparent absence of consequences, these incidents are not generally reported in the official records. Therefore, we removed people with only nonviolent infractions (i.e., without any other type of infraction;  $N = 17$ ) from the sample to avoid any bias that might have led to these cases being recorded, as opposed to the many others that were not. Furthermore, it could be argued that the potentially violent misconduct variable includes many offenses that do not result in actual violence and, as such, suffers from a conceptual overinclusiveness that could bias empirical outcome; therefore, this effect could counteract the incidents that are not reported. The frequencies for disciplinary violations were calculated across a period of 10 consecutive months, and in all cases, these recordings were made after the baseline assessment.

#### ANALYTICAL PROCEDURE

This study was prospective in design. All the variables in Table 1 were exogenous; this means that they all occurred prior to the current imprisonment, with the possible exception of drug and/or alcohol problems and poor response to treatment. Official records were used to specify the relationships between personal, criminal, psychological, and penitentiary risk factors and subsequent institutional misconduct. Data were gathered from electronic inmate histories, which include a wide range of information, such as court records, penitentiary classification reports, psychological conditions, and participation in programs (e.g., drug treatment, mental health treatment, and educational or vocational skill development programs). The outcome information was extracted from official disciplinary records for the period between the baseline assessment and the end of the study. These records include not only violent or aggressive incidents inside prisons but also a wide range of misbehaviors or acts of noncompliance specified in the penitentiary regulations. It is well known that the decision to formally “write up” an inmate for a disciplinary infraction can be influenced by a variety of contextual factors (Flanagan, 1980). We found this to be especially true in the case of nonviolent incidents, which had minor consequences and were, in general, better tolerated. However, given the large number of cases examined and the range of institutions assessed, the data collected in the study can be considered as a broad indicator of institutional misconduct.

To facilitate the presentation and interpretation of the results, a regression analysis was performed with potential predictive factors taken from the literature. Ordinal regression is appropriate when the dependent variable is composed by ordered categories. Misconducts were grouped in a rational way to obtain an ordered measure of in-prison conduct severity. When the same person presented potential and actual violent behaviors, only the latter were considered for regression analyses. To derive an equation that maximized the predictive potential with a minimum number of risk factors, we performed single regression analyses for each predictor. In the second stage of the analysis, predictors that showed a significant relationship with the outcome were examined in a multivariate analysis. Using the probabilities obtained with the model, the AUCs for each level of the criteria and their standard errors were calculated. The AUC is a measure of association that ranges from 0 (perfect negative prediction) to 0.50 (chance prediction) to 1.00 (perfect positive prediction). For purposes of illustration, we could say that an area of 0.75 means that there is a 75% chance that an actually violent person would score above the cutoff for violence on the predictor and that an actually nonviolent person would score below the cutoff (Douglas, Ogloff, Nicholls, & Grant, 1999). We also calculated the proportional odds ratio (OR; the coefficient exponentiated) and the 95% confidence interval to obtain a measure useful for comparisons.

Finally, to address our second question, the effect of the conviction offense, we had to overcome the sample bias for the overrepresentation of violent offenders. To do so, we selected a sample of offense types that gave an accurate reflection of the general prison population and replicated the two sets of regression analyses with the selected sample of 621 inmates. In the rest of the article, we will specify when the results refer to this selected sample.

## RESULTS

Most of the sample had no infractions ( $n = 1,078$ ). The remaining participants accumulated 315 potentially violent and 163 violent infractions. As Table 2 shows, the prevalences were 13.3% for potentially violent infractions and 8.6% for violent infractions, with 174 and 113 inmates being responsible for at least one incident, respectively. Table 2 displays the number of infractions and the percentage of potentially and actual violent inmates broken down according to security level.

We carried out bivariate regression analyses to examine the structure of the relationship between each single predictor and the outcome. Probably because of the large sample size, all predictors, with the exception of gender, showed a significant bivariate relationship with the outcome at  $p < .05$  level. We then used a multivariate ordinal regression analysis to test the relationship between the predictors and the measure of prison behavior. The likelihood ratio test ( $-2LL = 1253.23$ ,  $\chi^2 = 258.29$ ,  $df = 24$ ;  $p < .001$ ) allowed us to reject the null hypothesis and to conclude that at least one of the independent variables in the model was a significant predictor of the dependent variable.

Examination of the parameter estimates in the regression solution revealed eight variables to be statistically significant. Table 3 displays the statistics for significant predictors in the model. The  $\text{Exp}(B)$  column contains the proportional ORs that should be interpreted in much the same way as the ORs from a binary logistic regression.

**TABLE 2: Rates of Varying Severities of Infractions at Different Security Levels**

| Security Level            | n     | Potentially Violent Infractions (f) | Potentially Violent Offenders (%) | Violent Infractions (f) | Violent Offenders (%) |
|---------------------------|-------|-------------------------------------|-----------------------------------|-------------------------|-----------------------|
| First degree              | 13    | 34                                  | 30.8                              | 11                      | 61.5                  |
| Second degree             | 989   | 236                                 | 9.7                               | 136                     | 9.5                   |
| Third degree              | 199   | 7                                   | 2.0                               | 6                       | 1.0                   |
| Other degree <sup>a</sup> | 110   | 38                                  | 16.4                              | 10                      | 8.2                   |
| Total                     | 1,311 | 315                                 | 13.3                              | 163                     | 8.6                   |

a. The category *other degree* refers to persons pending classification at the moment of the assessment.

**TABLE 3: Risk Factors of Violent Inmate Behavior Modeled by Multivariate Ordinal Regression Analysis in the Total Sample**

| Risk Factor                              | Parameter Estimates | Standard Error | p    | Exp(B) | 95% CI        |
|--|---------------------|----------------|------|--------|---------------|
| Age                                      | -0.05               | .010           | .000 | 0.96   | [0.94, 0.98]  |
| Proceeding situation (on remand)         | 0.94                | .265           | .000 | 2.57   | [1.53, 4.33]  |
| First-degree classification <sup>a</sup> | 2.67                | .706           | .000 | 14.40  | [3.61, 57.43] |
| Third-degree classification <sup>a</sup> | -1.12               | .532           | .024 | 0.30   | [0.11, 0.86]  |
| Past community violence                  | 0.71                | .233           | .002 | 2.04   | [1.30, 3.22]  |
| Past prison maladjustment                | 0.84                | .183           | .000 | 2.32   | [1.62, 3.31]  |
| Drug/alcohol problems                    | 0.49                | .191           | .010 | 1.64   | [1.13, 2.38]  |
| Poor response to treatments              | 0.39                | .198           | .048 | 1.48   | [1.01, 2.18]  |
| Procriminal attitudes                    | 0.51                | .181           | .005 | 1.66   | [1.17, 2.37]  |

Note. CI = confidence interval.

a. *Other* was the referent category for the classification variable.

Among inmates' personal characteristics, the one most strongly related to violence was age. The overall relationship was negative, with younger inmates being more likely to commit violent misconduct. The parameter estimates suggest that for each one-unit increase in age, the ordered log odds of higher prison misconduct severity would fall by  $-.04$ . This is not a negligible figure if one considers the broad age range (18 to 82 years old).

Compared with people sentenced, those on remand had a higher risk of prison violence. The  $Exp(B)$  column shows that among inmates on remand, the odds of violent infractions were 2.57 greater than among sentenced inmates, provided that all the other variables in the model are held constant. The odds of the combined potentially violent and violent infractions categories were also 2.57 times greater among prisoners on remand than among sentenced prisoners.

A history of community violence and the measure of prison maladjustment, including general adaptation problems, were both strong predictors of future violent behavior inside prison, increasing the risk of violent misconduct 2.04 times and 2.32 times, respectively. As prior violent infractions are the reason for inmates' being classified as first degree, this could explain in part the strong effect of this custody level, which increased the risk of future prison violence more than 14 times. In contrast, a third-degree classification decreased the in-prison violence risk; specifically, the community regime decreased the

probability of in-prison violence by 70%. This result is not surprising, since one of the requirements for this classification, in addition to the accomplishment of certain legal conditions (e.g., serving three quarters of the sentence), is a favorable professional judgment related to the inmate's future behavior not only inside prison but also in the community.

Finally, people with a poor response to psychological or psychiatric treatments aimed at reducing criminal behavior had a risk of misconduct near 1.5 times higher than those without this factor, and the presence of drug and/or alcohol problems and procriminal attitudes increased the likelihood of committing infractions by 1.6 times compared with those without the risk factor.

In summary, the regression model indicated that offenders who were younger, on remand, in close custody; with a history of community violence and prison maladjustment; and with poor response to treatment, recent substance problems, and procriminal attitudes showed a higher risk of violent and potentially violent infractions while in prison.

To minimize the sample bias in responding to the question concerning the role of the conviction offense in subsequent prison violence, we replicated regression analyses in a representative sample that was selected on the basis of the conviction offense. The results were very similar to those in the total sample, with five out of eight predictors remaining in the model ( $-2LL = 612.61$ ,  $\chi^2 = 143.30$ ,  $df = 24$ ;  $p < .000$ ). The variables excluded were preceding situation, substance problems, and poor response to treatment. Interestingly, as in the total sample, in this representative sample, the variable conviction offense did not enter in the predictive model.

In both sets of regression analyses, the estimated cell probabilities for each response category were saved to calculate the AUCs, which can be taken as an index for interpreting the overall accuracy of the predictor (see Douglas et al., 1999). Areas are generally preferred to other statistics when evaluating the validity of scales because they are not influenced by the prevalence of an outcome. As Cunningham et al. (2011) has pointed out, this is especially important because in-prison violence is a low prevalence behavior and because the standardized measure provides a common metric for comparing the findings between related studies.

As Table 4 shows, the AUCs of the total sample model ranged from .74 to .82 (with confidence intervals between .70 to .86), representing a moderate to large effect size (Mossman, 1994). The model's accuracy to predict violent infractions among inmates in the selected sample was very similar, with AUCs ranging from .77 to .82 (with confidence intervals from .71 to .87).

## DISCUSSION

Identifying and classifying inmates who are prone to institutional misconduct are important tasks within the institutional setting (Drury & DeLisi, 2010). In contexts in which institutional misconduct arises, the knowledge obtained from individual-level research has been valuable in shaping classification tools, risk assessments, and strategies for dealing with problematic inmates (Steiner, 2009).

To compensate for the current lack of research into these issues in Spain, this study used standard data recorded in prison files to provide base-rate information on at-risk participants.

**TABLE 4: Areas Under the Receiver Operating Curve (AUC) Predicting Violent Behavior in Prison in Total and Selected Sample**

| <i>Outcome Level</i>            | Total Sample |           |          |               | Selected Sample |           |          |               |
|---------------------------------|--------------|-----------|----------|---------------|-----------------|-----------|----------|---------------|
|                                 | <i>AUC</i>   | <i>SE</i> | <i>p</i> | <i>95% CI</i> | <i>AUC</i>      | <i>SE</i> | <i>p</i> | <i>95% CI</i> |
| No infractions                  | .81          | .015      | .000     | [.78, .84]    | .82             | .021      | .000     | [.78, .86]    |
| Potentially violent infractions | .74          | .021      | .000     | [.70, .79]    | .77             | .029      | .000     | [.71, .83]    |
| Violent infractions             | .82          | .020      | .000     | [.78, .86]    | .82             | .029      | .000     | [.76, .87]    |

*Note.* CI = confidence interval.

We examined correlates of prison misconduct on the basis of officially recorded disciplinary infractions during a standardized “at-risk” period. We also included a situational risk factor in the study, given its special relevance in previous empirical research. Predictors of violent misconduct committed by inmates against other inmates and correctional officers during the 10 months of the study period represented the main focus of analysis. This is an important research topic, given that cross-cultural research into inmate violence is scarce; few studies of predictive factors have been performed outside the United States, Canada, or northern Europe.

#### PRISON MISCONDUCT BASE RATE

This study provided important base rate information for inmate misconduct. Our results corroborated those of previous research (Cunningham & Sorensen, 2007a; Sorensen & Cunningham, 2010) in that the prevalence of institutional violence was inversely related to severity, with 13% of the sample showing potentially violent infractions versus 8.6% who committed actual acts of violence. Nonetheless, one unexpected finding was the low prevalence of nonviolent infractions (3%). We considered this to be a recording bias; as nonviolent infractions usually have harmless consequences, they may be underrecorded. It is also true that high-frequency behaviors tend to be underrecorded because of the time taken in their registration. Cunningham et al. (2011) hypothesized that the discrepancy between actual and reported violence is greater for less severe inmate-on-inmate assault and that more severe infractions (homicides, assaults on staff, very severe assaults) will be recorded in official statistics. These authors assert that there is no compelling rationale for why individual-level correlates, demonstrated across a spectrum of samples, should be fundamentally distorted by unreported violence.

In the current study, half of the 163 violent infractions were perpetrated by 2% of the sample (28 inmates). Similarly, 5% of the sample (66 inmates) was responsible for 65% of potentially violent infractions. These data largely debunk popular misconceptions that serious assaults in prison are routine. Rather, they support the idea that the higher the security level, the higher the rate of misconduct, since 12 out of 13 inmates (92%) in the most restrictive regime (close custody) showed potential or actual violent behavior during follow-up. In contrast, only 19% of the 989 inmates in the ordinary regime showed potential or actual violent behavior despite the fact that the ordinary regime is much less restrictive than close custody; inmates have time for personal matters, education or occupational training, work, and cultural and therapeutic activities.

The far higher frequency and prevalence (62%) of actual violent infractions at the close-custody level suggest that the transfer of inmates from the ordinary regime to close custody, which is mostly attributed to violent behavior in prison, achieves some success in anticipating new inmate violence. In fact, this group was 14 times more likely to be violent than others. Alternatively, these findings may also suggest that the close-custody environment encourages rule violations or lower staff tolerance thresholds and hence higher levels of violation reporting (Sorensen & Cunningham, 2007, 2010). Byrne and Hummer (2007) assert that if where one places inmates affects their behavior, then one would expect higher rates of inmate misbehavior in lower-risk settings. As we have been discussing, this is not the case in the present study. We found a higher proportion of violent inmates in higher-security levels, but there is no single explanation for this finding: Lower staff tolerance, a more punitive milieu, or the concentration of inmates with a higher propensity to violence in higher-security levels may all be involved. Nonetheless, because of the limitations of our design, we cannot know what would have happened if people with a first-degree classification had been housed in a lower-security level. In the present study, the classification level is simply an additional proxy for increased risk. The anticipation of the behavior of people in probation seemed to be successful, since inmates who progressed to the community level were 70% less likely to show violent or potentially violent behavior than were people at other classification levels.

#### CORRELATES OF PRISON MISCONDUCT

Our results support the consistently reported finding that age is inversely related to the frequency of prison misconduct and violence among prison inmates (Cunningham et al., 2005, 2011; Cunningham & Sorensen, 2006a, 2007b; Kuanliang et al., 2008; Morris et al., 2010; Sorensen & Cunningham, 2010). Those who committed violent infractions were significantly younger than those with no infractions (with a mean of 30 vs. 38 years old, respectively).

Also in accordance with existing research (i.e., Cunningham & Reidy, 2002; Cunningham & Sorensen, 2007b; Drury & DeLisi, 2010; Flanagan, 1983; Sorensen & Pilgrim, 2000), we found a strong association between prior maladjustment and subsequent violence in the institutional setting. Drury & DeLisi (2010) assert that earlier research, which did not include a prior adjustment measure, may have attributed inflated effects to variables that may not maintain significance in predicting institutional misconduct. The present study attempted to overcome this limitation by including an aggregate measure of previous prison maladjustment. All people in close custody (in contrast to 42% in the ordinary regime and 31% in the community level) presented this risk factor, which may explain why they are housed in this much more restricted regime. This result corroborates the widely accepted idea that one of the best predictors of future behavior is past behavior (Andrews & Bonta, 1995a), provided that past and predicted contexts are similar (Cunningham & Reidy, 1999).

We found that not only history of prison misconduct predicted outcome, but past community violence did as well. People with this risk factor were twice as likely to be violent while in prison. Previous research has found similar results (e.g., Berg & DeLisi, 2006; Campbell et al., 2009; DeLisi & Munoz, 2003; Drury & DeLisi, 2010; Flanagan, 1983; Gendreau et al., 1997; Sorensen & Pilgrim, 2000). In our study, the history of violence was independent from the conviction offense, which, as will be discussed later, was not a



significant predictor for misconduct. Moreover, we used a wide definition that includes a history of violence during the lifetime that did not necessarily result in a criminal record.

As Flanagan (1983) stated more than two decades ago, the likelihood of violent misconduct is not uniformly distributed across the course of a prison sentence. Violent misconduct in prison is more likely during the early years of an inmate's prison tenure (Cunningham et al., 2005). Although a limitation of the present study was the lack of data regarding time served, our results indicated that people on remand, who by definition spend less time in prison than sentenced inmates, were more than twice as likely to show violent infractions. The result is not surprising, since people on remand are those considered by jurors as sufficiently "dangerous" to be kept in prison before their trial. However, we considered it important to explore empirically the relation between proceeding situation and violent infractions, given the fact that jurors' assessments of future dangerousness have been demonstrated to be highly subjective (Edens et al., 2005; Sorensen & Pilgrim, 2000).

Two psychological variables entered in the model as significant predictors of misconduct: Poor response to treatment and procriminal attitudes increased the probability of being violent or potentially violent by 48% and 66%, respectively. Toch and Kupers (2007) state that a disproportionate amount of prison violence is related to prisoners' mental health problems. When treatments of psychological and behavioral problems related to criminal activity do not produce optimal results, these prisoners tend to have great difficulty in controlling impulses that could lead them into fights (Kupers, 1999). The finding suggests that for inmates who respond poorly to therapy, refuse to start or continue treatment, or fail to benefit from it, achieving treatment adherence would be a valid objective. Precisely, one of the main advantages of assessing factors susceptible to change is the option of making them targets in the case management plan (Douglas & Skeem, 2005). Additionally, as this item includes all treatments aimed at reducing community reoffending, the results suggest that its effect has to do with both in-prison and community misbehavior.

The results for substance problems and procriminal attitudes are consistent with Andrews and Bonta's (1995b) model, which identifies these factors among the major criminogenic needs and predictors of criminal behavior. As mentioned earlier, Gendreau et al.'s (1997) meta-analysis also supports this idea. A common correlate of procriminal attitudes is antisocial behavior, which has been associated with prison violence in previous studies (Guy et al., 2005; McDermott et al., 2008). It would not be surprising that a pattern of hostility toward others and an antisocial orientation leads a person to systematically violate the law and common rules in the community or inside institutions.

The relationship between conviction offense and misconduct takes on a special interest in the present study. To explore it, we selected a representative sample from the participant group on the basis of conviction offense. In accordance with previous research (Cunningham & Sorensen, 2007b; Sorensen & Cunningham, 2010), our results showed that in comparison to other inmates, those convicted for crimes against people and sexual offenses were not overly involved in potentially or real violent rule infractions. Furthermore, when other variables are considered, the conviction offense did not contribute to the predictive model. The fundamental finding that incarcerated violent offenders did not constitute a disproportionate menace to institutional order, staff, or other inmates has important implications for classification. The frequent use of a violent conviction offense as a primary override for classification into higher-security levels cannot be justified with an internal-security rationale

(Sorensen & Cunningham, 2010); rather, the current findings, in combination with prior research (Cunningham & Sorensen, 2006a; Lahm, 2009; Sorensen & Cunningham, 2010), suggest that the conviction offense should not be stressed in projections of risk of institutional violence proneness among inmates and that more comprehensive models for violence risk assessment, not those based on the dangerousness “diagnosis,” should be used (Redondo Illescas & Andrés Pueyo, 2007).

Probably because of the small number of females in the sample, gender was not associated with misconduct measure in the multivariate analyses. Similar results have been found in the literature (e.g., Camp et al., 2003). Nonetheless, future research is needed to specify the relationship between gender and institutional violence, since the frequency of women in our study is proportionately low and does not represent the real prevalence of females in prisons.

Although other sociodemographic variables were single predictors of in-prison infractions, their association with outcome disappeared in the multivariate analyses. In Cooper and Werner’s (1990) study, only 2 (age and coming from nonurban areas) out of 17 demographic variables were associated with violence during the first 6 months of incarceration. It is possible that certain sociodemographic characteristics and other maladaptive features usually associated with risk of violence in the community are so pervasive among prison inmates that they are of little value in identifying which inmates will exhibit institutional violence (Cunningham & Reidy, 1999, 2002).

The predictive accuracy of the model extracted from the ordinal regression analysis was moderately to highly successful; AUCs from .74 to .82 were generated, suggesting good predictive performance. This figure is comparable with those reported for actuarial models generated in a very different context, such as the United States, with AUCs in the .60-to-.80 range (Cunningham et al., 2011; Hastings et al., 2010).

When the analyses were replicated in a sample selected to represent the real distribution of conviction offenses in the total prison population, the results were very similar to the findings in the total sample, with AUCs from .77 to .82. The association between drug or alcohol problems and misbehavior was not significant in this sample, probably because almost half of the inmates in the violent offenders group presented this risk factor, compared with 28% of offenders with property crimes, 9% of sexual offenders, and 6.5% of other offender groups. It is more difficult to explain (at least considering the limits of this article) why the other two risk factors, proceeding situation and poor response to treatment, were excluded from the model.

#### LIMITATIONS OF THE CURRENT STUDY

In spite of the extensive concordance between our findings and the existing literature, our results must be evaluated in light of the study’s limitations. Our data pertain to inmates from a specific correctional system during a limited time period. The extent to which the correlates of institutional misconduct vary according to geographic regions and over time has not been assessed. However, inmates’ age and other risk factors reported here have emerged in multiple studies in the past 25 years as strong predictors of institutional behavior.

Another limitation is the fact that the impact of institutional setting on variation in individual-level infraction rates was not examined. We refer to individual-level causes of inmate misconduct, but the occurrence of violence is not simply a matter of demographic characteristics or even of proclivity to personal violence. Rather, violent acts represent the

pathological intersection of the person-interaction context (Cunningham et al., 2005; Monahan, 1981). The prison system responds dynamically to inmates' behavior with programming, contingency management, and security modifications. Thus, the functional expression of some individual-level factors may be inhibited or blocked by correctional interventions (Cunningham et al., 2011). Further research on causes or correlates at the contextual level is necessary in our country, especially in view of its impact on the expression of prison violence (Cooke et al., 2008; Flanagan, 1983; Steiner, 2009).

This study also lacks direct control over the time served. We assumed that proceeding situation could be an indirect indicator of the time in prison, since all people on remand spend less time in prison than inmates who have already been sentenced, but future research would benefit from considering a direct measure of this variable. Additionally, the inclusion of the infraction date would help to determine the "time to failure" as a relevant issue for the purposes of intervention. A related limitation is the lack of information about the date of admission to prison. This study includes participants who were at different stages of imprisonment. Consequently, we cannot determine whether the drug or alcohol problems in the past year occurred when the individual was in the community or in prison. However, since this variable does not directly affect the classification, it is unlikely to influence the interpretation of the final results.

Some relevant factors in the model (i.e., classification, proceeding situation) are not held constant in the design and may influence the outcome. A better understanding of dynamic variables, which change at varying speeds over time, could be achieved by extending the follow-up period and examining them through repeated assessments. Although the results should be regarded with caution, they have implications for assessment and treatment targets in this population. Previous research suggests that dynamic risk factors are the most useful in identifying patients at a higher risk of exhibiting institutional misconduct (McDermott et al., 2008). The main advantage of working with factors of this type is that precisely because of their dynamic nature, they are amenable to therapeutic approaches (Douglas & Skeem, 2005).

## CONCLUSIONS

In spite of the limitations mentioned above, the data we present here have several policy implications. The underrecording of nonviolent offenses reflects a high tolerance level for this type of behavior. However, there is some evidence that prior adjustment, including minor and major disciplinary infractions, has a strongly significant effect in explaining future institutional misconduct (Drury & DeLisi, 2010). In addition, our results challenge the common practice of classification and regime assignment as a function of the conviction offense; our multivariate analysis did not identify this variable as a significant predictor of institutional infractions.

In conclusion, in spite of its limitations, the current study is strong in design and makes a useful contribution to the cross-cultural research on institutional violence. It goes some way to redressing the current lack of base rate information in Spain and explores the effects of individual-level variables and their relationship to subsequent institutional misconduct in a truly predictive fashion. Our findings show that younger age, being on remand, close-custody

classification level, prior violent or antisocial behavior in community and in prison, poor response to treatment, recent drug or alcohol problems, and procriminal attitudes produce a robust positive effect in predicting disciplinary infractions among males and females held in different prisons.

We hope that the present study will stimulate further large-scale correctional research in other countries, especially outside the United States and the United Kingdom, to test the correlates of prison violence and to cross-validate the associated predictive models on inmate populations from different jurisdictions.

## REFERENCES

- Aebi, M. F., & Delgrande, N. (2008). *Council of Europe annual penal statistics: SPACE I, Survey 2008*. Lausanne, Switzerland: Institut de Criminologie et de Droit Pénal, Université de Lausanne.
- Andrews, D., & Bonta, J. (1995a). *LSI-R: The Level of Service Inventory-Revised*. Toronto, Canada: Multi-Health Systems.
- Andrews, D., & Bonta, J. (1995b). *The psychology of criminal conduct*. Cincinnati, OH: Anderson.
- Arbach Lucioni, K., & Andrés Pueyo, A. (2010, October). *A comparative study of immigration and violent offenses in Catalan prisons: Preliminary results*. Paper presented at the International Conference on Cultural Psychiatry in the Spanish-speaking World (WPA), Barcelona, Spain.
- Bench, L. L., & Allen, T. D. (2003). Investigating the stigma of prison classification: An experimental design. *Prison Journal, 83*, 367-382.
- Berg, M. T., & DeLisi, M. (2006). The correctional melting pot: Race, ethnicity, citizenship, and prison violence. *Journal of Criminal Justice, 34*, 631-642.
- Berk, R. A., & de Leeuw, J. (1999). An evaluation of California's inmate classification system using a generalized regression discontinuity design. *Journal of the American Statistical Association, 94*, 1045-1052.
- Byrne, J., & Hummer, D. (2007). In search of the "tossed salad man" (and others involved in prison violence): New strategies for predicting and controlling violence in prison. *Aggression and Violent Behavior, 12*, 531-541.
- Camp, S., & Gaes, G. (2005). Criminogenic effects of the prison environment on inmate behavior: Some experimental evidence. *Crime & Delinquency, 51*, 425-442.
- Camp, S., Gaes, G., Langan, N., & Saylor, W. (2003). The influence of prisons on inmate misconduct: a multilevel investigation. *Justice Quarterly, 20*, 501-534.
- Campbell, M. A., French, S., & Gendreau, P. (2009). The prediction of violence in adult offenders: a meta-analytic comparison of instruments and methods of assessment. *Criminal Justice and Behavior, 36*, 567-590.
- Catalan Justice Department (2010). *Statistical Descriptors of Correctional and Rehabilitation Services*. Secretary of Correctional Services, Rehabilitation and Juvenile Criminal Justice. Barcelona, Spain: Department of Justice. Catalan Government.
- Cooke, D., Wozniak, E., & Johnstone, L. (2008). Casting light on prison violence in Scotland: Evaluating the impact of situational risk factors. *Criminal Justice and Behavior, 35*, 1065-1078.
- Cooper, R., & Werner, P. (1990). Predicting violence in newly admitted inmates: A lens model analysis of staff decision making. *Criminal Justice and Behavior, 17*, 431-447.
- Cunningham, M. D., & Reidy, T. J. (1999). Don't confuse me with the facts: Common errors in violence risk assessment at capital sentencing. *Criminal Justice and Behavior, 26*, 20-43.
- Cunningham, M. D., & Reidy, T. J. (2002). Violence risk assessment at federal capital sentencing: Individualization, generalization, relevance, and scientific standards. *Criminal Justice and Behavior, 29*, 512-537.
- Cunningham, M. D., & Sorensen, J. R. (2006a). Actuarial models for assessing prison violence risk: revisions and extensions of the Risk Assessment Scale for Prison (RASP). *Assessment, 13*, 253-265.
- Cunningham, M. D., & Sorensen, J. R. (2006b). Nothing to lose? A comparative examination of prison misconduct rates among life-without-parole and other long-term high-security inmates. *Criminal Justice and Behavior, 33*, 683-705.
- Cunningham, M. D., & Sorensen, J. R. (2007a). Capital offenders in Texas prisons: Rates, correlates, and an actuarial analysis of violent misconduct. *Law and Human Behavior, 31*, 553-571.
- Cunningham, M. D., & Sorensen, J. R. (2007b). Predictive factors for violent misconduct in close custody. *Prison Journal, 87*, 241-253.
- Cunningham, M. D., & Sorensen, J. R. (2010). Improbable predictions at capital sentencing: contrasting prison violence outcomes. *Journal of the American Academy of Psychiatry and the Law, 38*, 61-72.
- Cunningham, M. D., Sorensen, J. R., & Reidy, T. J. (2005). An actuarial model for assessment of prison violence risk among maximum security inmates. *Assessment, 12*, 40-49.

- Cunningham, M. D., Sorensen, J. R., Vigen, M. P., & Woods, S. O. (2010). Inmate homicides: killers, victims, motives, and circumstances. *Journal of Criminal Justice, 38*, 348-358.
- Cunningham, M. D., Sorensen, J. R., Vigen, M. P., & Woods, S. O. (2011). Correlates and actuarial models of assaultive prison misconduct among violence-predicted capital offenders. *Criminal Justice and Behavior, 38*, 5-25.
- DeLisi, M., & Munoz, E. (2003). Future dangerousness revisited. *Criminal Justice Policy Review, 14*, 287-305.
- Douglas, K., Ogloff, J. R. P., Nicholls, T. L., & Grant, I. (1999). Assessing risk for violence among psychiatric patients: The HCR-20 Violence Risk Assessment Scheme and the Psychopathy Checklist: Screening Version. *Journal of Consulting and Clinical Psychology, 67*, 917-930.
- Douglas, K., & Skeem, J. L. (2005). Violence risk assessment: Getting specific about being dynamic. *Psychology, Public Policy, and Law, 11*, 347-383.
- Drury, A., & DeLisi, M. (2010). The past is prologue: prior adjustment to prison and institutional misconduct. *Prison Journal, 90*, 331-352.
- Edens, J., Buffington-Vollum, J., Keilen, A., Roskamp, P., & Anthony, C. (2005). Predictions of future dangerousness in capital murder trials: Is it time to "disinvent the wheel?" *Law and Human Behavior, 29*, 55-86.
- Edens, J., Poythress, N., Lilienfeld, S., & Patrick, C. (2008). Further evidence of the divergent correlates of the Psychopathic Personality Inventory factors: Prediction of institutional misconduct among male prisoners. *Psychological Assessment, 20*, 86-91.
- Flanagan, T. (1980). Time served and institutional misconduct: patterns of involvement in disciplinary infractions among long-term and short-term inmates. *Journal of Criminal Justice, 8*, 357-367.
- Flanagan, T. (1983). Correlates of institutional misconduct among state prisoners: A research note. *Criminology, 21*, 29-39.
- Gendreau, P., Goggin, C. E., & Law, M. A. (1997). Predicting prison misconduct. *Criminal Justice and Behavior, 24*, 414-431.
- Guy, L., Edens, J., Anthony, C., & Douglas, K. (2005). Does Psychopathy predict institutional misconduct among adults? A meta-analytic investigation. *Journal of Consulting and Clinical Psychology, 73*, 1056-1064.
- Harer, M. D., & Langan, N. (2001). Gender differences in predictors of prison violence: Assessing the predictive validity of a risk classification system. *Crime & Delinquency, 47*, 513-536.
- Harris, G. T., Rice, M. E., & Quinsey, V. L. (1993). Violent recidivism of mentally disordered offenders: The development of a statistical prediction instrument. *Criminal Justice and Behavior, 20*, 315-335.
- Hastings, M. E., Krishnan, S., Tangney, J., & Stuewig, J. (2010). Predictive and incremental validity of the Violence Risk Appraisal Guide scores with male and female jail inmates. *Psychological Assessment, 23*, 174-183.
- Hochstetler, A., DeLisi, M., & Pratt, T. C. (2010). Social support and feelings of hostility among released inmates. *Crime & Delinquency, 56*, 588-607.
- Huebner, B. (2003). Administrative determinants of inmate violence. *Journal of Criminal Justice, 31*, 107-117.
- Irwin, J. K., & Cressey, D. R. (1962). Thieves, convicts, and the inmate culture. *Social Problems, 10*, 142-155.
- Jiang, S., & Fisher-Giorlando, M. (2002). Inmate misconduct: A test of the deprivation, importation, and situational models. *Prison Journal, 82*, 335-358.
- Kuanliang, A., Sorensen, J. R., & Cunningham, M. D. (2008). Juvenile inmates in an adult prison system: Rates of disciplinary misconduct and violence. *Criminal Justice and Behavior, 35*, 1186-1201.
- Kupers, T. (1999). *Prison madness: The mental health crisis behind bars and what we must do about it*. San Francisco, CA: Jossey-Bass.
- Lahm, K. F. (2009). Inmate assaults on prisons staff: A multilevel examination of an overlooked form of prison violence. *Prison Journal, 89*, 131-150.
- McDermott, B. E., Edens, J. F., Quanbeck, C. D., Busse, D., & Scott, C. L. (2008). Examining the role of static and dynamic risk factors in the prediction of inpatient violence: Variable- and person-focused analyses. *Law and Human Behavior, 32*, 325-338.
- Monahan, J. (1981). *Predicting violent behavior: An assessment of clinical techniques*. Beverly Hills, CA: Sage.
- Morris, R. G., Longmire, D. R., Buffington-Vollum, J., & Vollum, S. (2010). Institutional misconduct and differential parole eligibility among capital inmates. *Criminal Justice and Behavior, 37*, 417-438.
- Mossman, D. (1994). Assessing predictions of violence: Being accurate about accuracy. *Journal of Consulting and Clinical Psychology, 62*, 783-792.
- Perez Fernández, E., & Redondo Illescas, S. (1991). Efectos psicológicos de la estancia en prisión [Psychological effects of prison stays]. *Papeles del Psicólogo, 48*, 54-57.
- Redondo Illescas, S., & Andrés Pueyo, A. (2007). La Psicología de la Delincuencia [The psychology of delinquency]. *Papeles del Psicólogo, 28*, 147-156.
- Sorensen, J. R., & Cunningham, M. D. (2007). Operationalizing risk: The influence of measurement choice on the prevalence and correlates of prison violence among incarcerated murderers. *Journal of Criminal Justice, 35*, 546-555.
- Sorensen, J. R., & Cunningham, M. D. (2010). Conviction offense and prison violence: A comparative study of murderers and others offenders. *Crime & Delinquency, 56*, 103-125.
- Sorensen, J. R., & Pilgrim, R. L. (2000). An actuarial risk assessment of violence posed by capital murder defendants. *Journal of Criminal Law and Criminology, 90*, 1251-1270.

- Steiner, B. (2009). Assessing static and dynamic influences on inmate violence levels. *Crime & Delinquency*, 55, 134-161.
- Sykes, G. M. (1958). *The society of captives: A study of a maximum security prison*. Princeton, NJ: Princeton University Press.
- Toch, H., & Kupers, T. (2007). Violence in prisons, revisited. *Journal of Offender Rehabilitation*, 45(3/4), 1-28.

**Karin Arbach-Lucioni**, PhD, is an associate researcher in the Group of Advanced Studies in Violence at the University of Barcelona, Spain. She works as a psychologist for the Correctional Prison Services of the Catalan government. She is also a researcher at the Violence Studies Group at the University of Barcelona.

**Marian Martínez-García**, MA, is an associate professor in criminology in the Department of Personality at the University of Barcelona, Spain. She works as a psychologist for the Correctional Prison Services of the Catalan government. She is also a researcher at the Violence Studies Group of the University of Barcelona.

**Antonio Andrés-Pueyo**, PhD, is a professor in the Department of Personality at the University of Barcelona, Spain. He is a director of the Advanced Violence Studies Group and director of the Master's Program in Legal and Forensic Psychology. He led the project to adapt violence risk assessment tools in forensic and penitentiary settings in Catalonia.