Exploring correlates of Prison Violence in Chilean Prisons:
Examining nationwide, administrative data

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DEDICATION

To my wife, Maria Gloria,

For her encouragement, support, love and sacrifice

To my Parents Erika & Luis

For their good example and faith in me

To my grandma Silvia

For her example of faith and courage

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Abstract

In modern times, imprisonment has been established *as* punishment and not *for* punishment,

which means that the only right that is suspended has to do with freedom of movement.

Nevertheless, serving a sentence in Chilean prisons has become a form of continuous punishment

that extends far beyond the mere deprivation of liberty. Indeed, Chilean prisons have been

criticized for their levels of overcrowding, lack of access to rehabilitative programs, and for their

levels of mistreatment towards inmates. In addition, violence has become a common, daily

reality in many facilities throughout the country. Its occurrence is problematic not only because

it threats security and order inside prisons, but also because it undermines any attempt to

successfully develop rehabilitative initiatives inside prison walls. Despite that prison violence

has been studied in developed nations, much remains unanswered for developing countries.

Thus, this dissertation will try to fill part of this gap by analyzing the correlates of violent events

in Chilean prisons as well as by examining which theory of prison violence (among deprivation,

administrative-control and importation) seemed to better explain the study's results. In order to

do that, this study employed a combination of both administrative data from the Chilean Bureau

of Prisons (*Gendarmería de Chile*) and some results of the First National Survey on Inmates'

Perception of Quality of Life, conducted in 2013 (Sanhueza, in press). Anchored in the literature

review and on empirical findings on prison violence, this study included six representative

indicators coming for the three theories tested, while controlling for total inmate population size.

Then, descriptive analyses and a series of multivariate, negative binomial regression models

were run. Main results indicated that the two importation variables (average inmates' age and the

proportion of inmates highly-engaged in criminal activities) and the control variable remained

significant in the full model. Finally, this study highlights some of their possibilities and

limitations, as well as suggests some further research questions and policy implications.

CHAPTER I

Introduction

According to many international legal systems, including the Chilean one, when an individual is sent to prison and deprived of liberty, the only right that is suspended while s/he is incarcerated is freedom of movement (Coyle, 2003; Richardson, 1993). Furthermore, in modern, Western societies, imprisonment is imposed on individuals *as* punishment, not *for* punishment (Ignatieff, 1978). In other words, incarcerated individuals should have access to the same rights (i.e., health, education, human and civil rights) as those who are on the outside, except for freedom of movement (Alzúa, Rodríguez & Villa, 2008). Consequently, international human rights agreements have defined a variety of prison standards in order to respect inmates' human dignity. In the same vein, scholars have translated these normative standards into indicators, including "prison decency" (Richardson, 1993), "healthy prisons" (Her Majesty's Inspectorate of Prisons [HMIP], 2012), or "the moral performance" of a prison system (Liebling, 2004).

Nevertheless, a variety of pressures from politicians, governments, mass media, and even citizens have made the as-punishment premise less certain and have put consideration for the human rights of the incarcerated at risk (Cavadino et al., 1999; Garland, 2001). A number of human rights reports have expressed concerns about prisons in Chile not only because of overcrowding (which reaches 30% on average) and infrastructure problems, but also because of the many ways in which the prisons' daily functioning compromises inmates' dignity: many fear for their safety; most lack medical assistance; few have access to productive activities and even fewer to drug treatment; there is an exaggerated use of solitary-confinement and, moreover, a

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significant percentage of inmates will have been tortured while in solitary confinement (Instituto

Nacional de Derechos Humanos [INDH], 2013; Dammert, 2012; Sanhueza, in press). These

practices violate international standards and threaten inmates' chances for a successful

reintegration.

Given this precarious scenario, the reality of prison violence emerges as a common,

dangerous situation faced by almost every facility in the country. Indeed, survey data from a

nationwide study conducted in 2013 (Sanhueza, in press) shows that a high proportion of

respondents declared having suffered physical maltreatment by other inmates (21.1%) and by

uniformed personnel (38.7%). In addition, psychological mistreatment was present, with 33.7%

of respondents declaring they had suffered psychological mistreatment from other inmates and

44.3% from guards. Moreover, violence in Chilean prisons also entails interpersonal fights,

resulting in hurt and/or dead inmates; the use (and fabrication) of artisan knives, lancets and

other weapons; the existence of inmate-on-staff assaults; and even the occurrence of prison fires

or riots, which constitute a daily threat for prison personnel and for the inmates themselves.

Thus, the purpose of this dissertation is to analyze the main correlates of violent events in

Chilean prison facilities during 2012 based on three theories of prison violence: deprivation,

importation and administrative-control. The main research questions have to do with what

variables can account for the occurrence of violent events in Chilean prisons and with which

theory of prison violence is most empirically supported. In order to address these questions, I

employed a combination of both administrative and survey data at the facility level from 75

prisons throughout Chile. The main results indicated that, when considered separately, the three

theories of prison violence explored here (deprivation, importation, and administrative control)

were able to account for variations in violent events; when considered in the same model, the

importation variables (inmates' average age and a measure of criminal engagement), along with total population size, acquired prominence.

Overview of the Prison System in Chile

The Chilean Bureau of Prisons (*Gendarmería de Chile*) is the public entity in charge of providing security, services, and rehabilitation programs for the sentenced or held-for-trial individuals under its control. Generally speaking, the *Gendarmería*—which has more than 17,000 employees nationwide—works with three categories of employees: i) prison officers, ii) prison guards, and iii) administrative or professional staff.[1]

After Pinochet's regime ended in 1990, there was increasing concern for human rights in Chile, including the situation of prisons in the country. For example, Diego Portales University prepared a series of reports on the situation of human rights in Chile and included a chapter on the human rights of the incarcerated. Other organizations, such as the Inter-American Commission of Human Rights, noticed that prison overcrowding severely damaged inmates' living conditions and limited their chances for a successful rehabilitation. These organizations denounced these poor conditions, noting that even in democracy, inmates suffered torture, mistreatment, and other abuses that went against the standards for humane treatment.

In response, the Chilean government implemented prison privatization as a way to deal with overcrowding. Initially, the private companies were going to build the prisons, since construction is one of the most expensive components of prison operation. The private companies would also operate the services inside the prisons (food, rehabilitative programs, sport activities, and so on), while the *Gendarmería* would continue to provide custody. However, the

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[1] This includes psychologists, social workers, physicians, sociologists, administrative staff, and other non-custody-related personnel.

additional spots that privatization was supposed to create were neutralized by other changes to the prison system.

In the early 2000s, the Chilean government designed and implemented major changes in the penal process, in what was called "Penal Process Reform" (PPR). This change looked to accelerate the entire penal process in order to avoid holding individuals for trial for indefinite periods of time without a sentence. In addition, PPR directed major additional funds to the different actors who participate in penal prosecution, such as prosecutors, the Chilean police, judges, and investigators. As a result, more individuals were prosecuted and found guilty and sent to prison. However, these changes to the penal process gave no additional funding to the *Gendarmería de Chile*, which was in charge of providing custody and treatment to offenders. Thus, prison overcrowding increased again and neutralized the additional spots that had been brought in by prison privatization.

In the beginning of the 2010s, the Chilean Ministry of Justice decided to create a commission called the Council for Prison Reform (CPR) in order to analyze the prison system and propose changes. The diagnosis prepared by CPR stated that in the last decade prisons have been overused to sanction deviant behavior and crimes. In addition, the CPR report stated that both prison policy and practice have focused on prison infrastructure (through privatization), with an excessive emphasis on security above rehabilitation and with poor results in terms of recidivism (Consejo para la Reforma Penitenciaria, 2010). Moreover, CPR noted additional problems affecting the Chilean prison system, such as overcrowding, the lack of infrastructure for programs, the low access to them, the precarious quality of psychosocial interventions, lack of support for prisoner reentry, and poor coordination of relevant actors beyond the *Gendarmería*.

In addition, the CPR proposed a variety of changes to be made in order to improve the Chilean prison system. Some of the areas identified by CPR had to do with the need to rationalize the use of prisons as a social sanction, to improve the system of sanctions outside the prisons and probation system, to design and implement better in-prison intervention programs, and to reinforce the prisoner reentry component of penal sanctions, among some others.

Additional tactics intended to target overcrowding included a variety of measures such as administrative absolutions (and deportation) for foreign prisoners and petty criminals, the augmentation of early and/or gradual release programs, and the increased use of alternative sanctions outside prison. As a result, in recent years, the rate of incarceration has dropped from 318 in 2008 to 267 in 2014, breaking the tendency toward growth of last two decades. Thus, currently, the Chilean penitentiary system holds about 43,000 prisoners with an incarceration rate of around 265 individuals behind bars per 100,000 inhabitants (International Centre for Prison Studies [ICPS], 2012) and an estimated recidivism rate of 50% (Morales et al., 2012).

Table 1: Individuals under penal control in Chile (May 31, 2014)			
Type of System	Men	Women	Total
Total	107,25	13,393	121,118
Prisons (Closed System)	39,654	3,197	42,851
Semi-Open System	630	99	729
Probation (Open System)	43,149	7,071	50,220
Post-Prison System	24,292	3,026	27,318
Source: Gendarmería de Chile, http://www.Gendarmería.gob.cl/			

In 2012, a new law (20,603) introduced a catalogue of new sanctions as substitutes for incarceration, including the electronic monitoring of certain offenders. However, due to various difficulties in enacting the law, the implementation of law 20,603 was delayed, and the new system has not entered into operation yet. At the same time, during 2012 to 2013, the Chilean Ministry of Justice intended to give a new boost to in-prison intervention programs with inmates in order to reduce recidivism and better prepare them for their release to communities. Thus, based on a risk-need-responsivity (RNR) model for offenders' treatment (Andrews, Bonta & Wormith, 2011), the government intended to tackle the lack of consistency that generally characterizes rehabilitative efforts in Chile, where there have been different—but disconnected— initiatives in this vein.

Finally, the *Gendarmería* tried to formulate a new, human rights-based prison policy and created the "Unit for Protection and Promotion of Human Rights," whose mission was the creation of an internal culture of respect for and promotion of the dignity of inmates. Between 2012 and 2013, the Unit developed a variety of educational initiatives for prison personnel nationwide, proposed changes to the use of solitary confinement in the country, and conducted the first Inmates' Survey on the Perception of Quality of Prison Life to determine a baseline for the entire system.

Although this dissertation has thus far only discussed the situation of inmates in Chilean prisons, the situation of prison personnel—particularly the guards and staff members who work directly with inmates—is by no means better than that of the incarcerated. Prison guards are simultaneously supposed to perform functions related to the custody of inmates, to maintain order and security in the facilities, to aid the rehabilitation of prisoners, and to attend to the provision of activities and services for them. Furthermore, prison officers and guards usually

perform these varied duties with little training;[2] many are continuously be threatened by violent inmates, and they risk their lives when trying to stop revolts or fights. They work in poorly equipped, unpleasant facilities to serve a very complex population for very low pay (INDH, 2012; Espinoza & Martinez, 2007).

In sum, the dehumanizing conditions for both inmates and prison workers combined with a variety of pressures from the government to be "tough on crime" have created in Chile a vicious cycle of higher incarceration, increased overcrowding, poor conditions, problematic "rehabilitation" programs, and higher levels of recidivism (Dammert & Zúñiga, 2008; Morales et al., 2012).

Theories of prison violence

But why does prison violence occur? Many explanations have been proposed to answer this question, and different scholars have offered explanations that focus on individual characteristics of the offenders, the conditions of confinement, the role of prison authorities, and the specific characteristics of violent situations. In the present study, I have included four of the major theoretical perspectives that have been used to account for prison violence: the deprivation model, the importation model, the situational model, and the administrative-control model.

The *deprivation model*, whose proto-foundations can be found in Clemmer's work (1940), states that prison violence merges as an adaptive response to the strains of the institutional life experienced by inmates. Sykes (1958), in *The Society of Captives*, described in great detail "the pains of imprisonment" as inmates are deprived of a variety of material and

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[2] In general, all custody personnel (prison officers and guards) apply to enter the Prison Academy, which depends on *Gendarmería*. When selected, their training may take between 6-9 months for prison guards and between 12-18 months for prison officers, depending on demand.

symbol benefits from the free environment (goods, services, heterosexual relationships, autonomy, and security) and argued that inmates' behavior, including misconduct, would reflect adaptive responses to such losses. Deprivation theorists argue that inmates react to the variety of losses by developing an inmate subculture with negative attitudes, values, and self-concepts that turns into permanent opposition to the administration and staff (Paterline & Petersen, 1999; Sykes & Messinger, 1960; Thomas, 1977). Thus, the deprivation model assigns the explanation for violence to the condition of prison itself, beyond the inmates' characteristics. Consequently, the model has employed indicators of overcrowding, security level of the facility, visiting patterns, prison programs, and sentence length (Cooley, 1993; Gaes, 1994; Goodstein & Wright, 1989; McCorkle, Miethe, & Drass, 1995; Cao et al., 1997; Wright, 1991)

On the other hand, the *importation model* (Irwin & Cressey, 1962) states that inmates do not arrive in prison in a vacuum, in order to be molded by the correctional institution. According to this theory, inmate organization and conduct reflect the values and behavioral repertoires that offenders brought with them into the prison from the outside, as a result of pre-prison experiences and the inmates' own socio-cultural backgrounds (Irwin, 1981; Irwin & Cressey, 1962; Irwin, 1970). In addition, the circumstances of pain and deprivation caused by imprisonment would not be experienced by every inmate in the same way; they would exhibit different abilities to meet their needs in prison (Bonta & Gendreau, 1990; Bukstel & Kilmann, 1980; Seymour, 1977; Toch, 1977), which would certainly include different capacities for the use of force and violence. Finally, the original idea of "a society of captives" that has been deprived of goods and services becomes problematic, since inmates do not constitute a homogeneous, solitary group; there are different subgroups with different belief systems and norms, including many gangs (Carroll, 1974; Irwin & Cressey, 1962; Jacobs, 1977; Wooldredge,

1991). Importation scholars have considered different variables in their research, including individual-level inmate variables that were present prior to incarceration, to explain prison violence; this includes such variables as race, sex, age, marital status, education level, previous convictions, employment, type of crime, gang membership, drug use, and some personality variables (Goodstein & Wright, 1989; Wooldredge, 1991; Wright, 1991; DeLisi, 2003).

Despite the fact that both the deprivation and the importation theories of prison violence have dominated debate, both models have been conceptually and methodologically criticized. Some scholars, for example, have criticized both models as too general (Porporino & Zamble, 1984; Paterline & Petersen, 1999), while others have pointed out that the two models use varying and ambiguous measures (Porporino & Zamble, 1984) and have included only a limited number of variables (Paterline & Petersen, 1999). In addition, both models have been criticized for overlooking important situational factors that could explain adjustment to prison life (Steinke, 1991) or the influential role of officers, since they run the prisons (Di Iulio, 1987).

The *administrative-control model* assumes that prison officials and administrators are critical determinants of inmate behavior, including individual and collective violence, since they are, to a great extent, those who run the prisons (Di Iulio, 1987; Reisig, 2002). Proponents of this model maintain that failures in prison management have been associated with severe forms of inmate violence, including inmate homicides (Reisig, 2002) and collective riots (Useem & Kimball, 1989). Research has also shown that the managerial style of prison administrators and officers is a good predictor of job satisfaction and role strain among correctional staff (Reisig & Lovrich 1998; Stohr et al. 1994), which can, in turn, influence inmates' in-prison and post-prison outcomes, including violence (Craig, 2004).

Despite its explanatory strength, this approach has been received with criticism, as there are other factors—such as the security level of the facility or prison crowding—that have been linked to prison violence (Martin, Lichtenstein, Jenkot & Forde, 2012; Huey & Mcnulty, 2005). In addition, the individual characteristics of inmates and staff (Goodstein & Wright, 1989; Tewksbury & Mustaine, 2008; Moster & Jeglic, 2009) are additional factors that may mediate the relationship between prison management and violence.

My research project: Exploring correlates of Prison Violence in Chilean Prisons

Although these theories have received considerable scholarly attention, the vast majority of the empirical research comes from developed countries, and the phenomenon of prison violence remains relatively unexamined in Latin American contexts. Thus, even though prison violence is a common, widespread problem in Chile, no systematic research has been conducted to study this phenomenon or its correlates nationwide, beyond anecdotal evidence and a few qualitative pieces. As a result, prison administrators have little systematic knowledge for reducing violence and, thus, little expertise for creating a healthier prison environment that is more supportive of inmates' treatment (Pollock et al., 2012; Liebling, 2004). The overall objective of this dissertation is to enhance our understanding of violence in Chilean prisons and to explore its main correlates, as well as to use local data to examine further the importation/deprivation/administrative-control debate. My overarching *research question* for this project asks which variables account for violent events at the aggregate level in Chilean prisons and which theory receives the most empirical support.

Given the broad and multifaceted nature of prison violence (McGuirre, 2008) and the fact that there is no agreed-upon benchmark for the conceptualization of in-prison violence (Jackson & Brownstein, 2004), it is important to provide a definition of "prison violence." This definition

is important because, even in developed countries, research on prison violence has shown that violence occurs in different forms and has multiple dimensions (Wolff et al., 2008). Thus, in this study "prison violence" will be understood according to these criteria:

- The occurrence involves physical violence.

- The occurrence is interpersonal and involves intentional violence (Jackson & Brownstein, 2004).

- The occurrence refers to a violent event that registered in official records as a serious violent offence, including those events that only result in serious injury (requiring medical treatment—cut, bleeding, unconscious, etc.) (Thornberry et al., 1995).

- The occurrence may be deadly or non-deadly, but it involves the use of a weapon (usually a handmade one) made for the purpose of damaging the other person.

- The occurrence is primarily inmate-on-inmate violence (not inmate-staff violence).

In contrast, "those acts in which someone was hurt or injured, but perhaps only in a minor way (…) hitting, getting into fights and so on" (Thornberry et al., 1995, p.224) will not be included in the present study. Also excluded are attempted-but-not-committed acts of physical violence, any sort of sexual assault, and any form of exercising psychological violence.

Research Objectives and Data

Following decades of theoretical debates and empirical studies, researchers seem to agree that different variables are associated with prison violence. Furthermore, the study of prison violence and guidelines for its reduction have taken a critical impetus for more humane treatment of prisoners, as well as an important step toward building a safer society given the expected reduction of recidivism. Questions regarding the correlates of prison violence in Chile remain unanswered, however. The overall objective of this dissertation, therefore, is to investigate the

correlates of prison violence by testing indicators from three theoretical approaches, namely the deprivation model, the importation and the administrative-control model[3] and thus, the main research questions of the study are:

1. What are the main correlates of violent events in Chilean prisons?

2. Which model of prison violence here considered (deprivation, importation or administrative-control) is more supported by empirical findings when competing models of prison violence are analyzed together?

To answer these research questions, this study uses a combination of aggregated, facility-level data from two sources: administrative records from the *Gendarmería* and survey data from the First National Survey on Inmates' Perception of Quality of Prison Life conducted in 2013. Details of the datasets and the samples for this study are described in the Methods section.

Research Significance

Different scholars have argued that a violent prison environment in general, along with the occurrence of more serious, specific violent episodes, constitute a serious threat to the creation and maintenance of a human rights-based prison environment, a pre-requisite for a successful rehabilitation (Ward, Gannon & Birgden, 2007; Liebling, 2004). At the same time, if a safer society is to be achieved, greater attention must be paid to the dynamics that occur inside prisons, as they will probably impact future recidivism and possibilities for creating a safer society (Dias, 2011; Teixeira, 2012; Katz, Levitt & Schusstorovic, 2003; Chen & Shapiro, 2004; Drago, Galviati & Bertova, 2011; Petersilia, 2003). Thus, the study of prison violence becomes relevant as it negatively affects inmates' quality of life and is detrimental to inmates' reentry.

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[3] The focus on these three approaches mainly has to do with data availability

The study presented here is significant in that it differs from many prior studies in three aspects. First, to the author's knowledge, this is the first in-depth and comprehensive study of prison violence in Chilean facilities. The study, therefore, has valuable policy implications prison administrators and for the design of prison programs with the goal of reducing prison violence. Second, whereas most studies tend to rely only on administrative records, this study employs a combination of administrative data and survey data with information at the aggregate prison level, thereby offering an innovative approach to the study of prison violence. Finally, this study contrasts three approaches that rarely have been considered all together, namely the deprivation, the importation and the administrative-control models of prison violence.

Dissertation Organization

The rest of the dissertation has been divided into four chapters. Chapter Two, the Literature Review section, provides a summary and a critical analysis of theories and empirical evidence on prison violence. Chapter Three, the Methods section, specifies the research questions and main hypotheses, describes the data sources, and outlines the design and methodology of the study. Chapter Four presents the main results, which include descriptive statistics of prison violence and its correlates and the results of the negative binomial regression analyses. Finally, the dissertation concludes with Chapter Five, which includes a description of the study's possibilities and limitations, some suggestions for further research, and implications for policy and practice.

Chapter II

Literature Review

2.1 Theories of prison violence

What causes prison violence? What are its specific characteristics inside prison walls?

Scholars have tried to answer these questions by proposing different explanations. In this section

I provide an introduction for six different explanations of prison violence, whereas my research

study will focus on three of the major theoretical perspectives that have been used to explain

prison violence, namely the deprivation, importation, and administrative-control models.

Although much of the literature has presented these models as competing theories, my approach

to the study of prison violence assumes that these different models illuminate different aspects of

the phenomenon and that they all can contribute to enhancing our understanding of prison

violence.

A) The deprivation model

With its original formulation found in the seminal work of Clemmer (1940), the

deprivation model states that prison violence occurs as the result of an adaptive response to the

strains of the restricted institutional life experienced by inmates. Indeed, Clemmer described the

process of prisonization that an inmate experiences as an adaptive process that occurs when

entering prison. According to Clemmer, "the inmate must adopt in greater or lesser degree the

folkways, mores, customs, and general culture of the penitentiary" (p. 299). He also presented a

rich description of the social relations and hierarchies that take place in prisons, which vary

according to the type of crime and other symbols of status.

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Later, in *The Society of Captives*, Sykes (1958) described in great detail "the pains of imprisonment"; inmates suffer a variety of deprivations when entering prison, including the loss of freedom of movement, goods and services, heterosexual relationships, autonomy, and security. Inmates' misconduct reflects the adaptive responses to those losses. In particular, inmates form a subculture in response to such deprivations, with its own argot, inmate code, roles, and values. Deprivation theorists argue, too, that the subculture formed in response, with its negative attitudes, values, and self-concepts, develops in permanent opposition to the administration and staff (Paterline & Petersen, 1999; Sykes & Messinger, 1960; Thomas, 1977). These theorists thus assert that the stressful and oppressive conditions within prison walls carry the ultimate responsibility for prison violence (Cao et al., 1997; Wright, 1991). In sum, deprivation theory assigns the explanation for prison violence to the oppressive conditions of confinement and confinement facilities and thus places the roots of prison violence beyond inmates' characteristics.

Consequently, the following indicators have been considered as falling under the deprivation hypothesis: the security level of the facility, the level of prison crowding, the total inmate population, the visitation patterns, the inmates' perceived "pains of imprisonment," and sentence length. All of these factors have been recognized in the literature as indicators of deprivation (Rocheleau, 2013; Gaes, 1994; Cooley, 1993; Goodstein & Wright, 1989; McCorkle, Miethe, & Drass, 1995; Farrington & Nuttall, 1980).

B) The administrative-control model

The administrative-control model (also called "the prison management model") assumes that prison officials and administrators—since they are to a great extent those who run the prisons—are determinant actors that influence prison outcomes and inmate behavior including,

of course, misconduct and violence (Di Iulio, 1987; Reisig, 2002). Proponents of this model maintain that failures in prison management have been associated with severe forms of inmate violence, including inmate-inmate aggression, inmate homicides, or collective riots (DiIulio, 1987; Reisig, 2002; Snacken, 2005; Sparks et al., 1996; Useem & Kimball, 1989). Research has also shown that the managerial style of prison administrators and officers is a good predictor of job satisfaction and role strain among correctional staff (Reisig & Lovrich 1998; Stohr et al. 1994), which would mediate, in turn, in-prison inmates' outcomes such as violence and misconduct in general (Craig, 2004).

Indicators that have been employed under the administrative-control model include staff turnover, the use of coercive controls, the use of remunerative controls, the participation of inmates in work-based programs, the use of administrative segregation or solitary confinement, and the overall management/administrative style of the prison, and any aspect overall that might be related to decision-making processes, whether administrative or leadership-related (Di Iulio, 1987; Reisig, 1998; Reisig, 2002; Huebner, 2003; Craig, 2004; Steiner, 2009).

Nevertheless, this model has been received with criticism. Despite the fact that prison management and practices have been linked to a variety of prison outcomes, including prison violence, prison management does not mechanically influence violence because other factors—such as the type of facility, its level of security and overcrowding—must be considered (Martin, Lichtenstein, Jenkot & Forde, 2012; Huey & Mcnulty, 2005). It is also important to consider the fact that individual characteristics of inmates (Goodstein & Wright, 1989; Tewksbury & Mustaine, 2008; Moster & Jeglic, 2009) may mediate the relationship between prison management and prison violence.

C) The importation model

The importation model, on the other hand, argues that inmates do not arrive in prison in order to be molded by the correctional institution in a vacuum. According to this theory, the inmates' organization and behavior reflect the values and social patterns that offenders bring with them into the prison. In other words, prison violence would be the result of pre-prison experiences and socialization processes, as inmates' socio-cultural backgrounds and individual attributes will largely determine their behavior while incarcerated (Irwin & Cressey, 1962; Irwin, 1981). Jacobs' *Statesville* (1977) challenged Sykes' traditional explanation for inmates' adaptations by maintaining that instead of responding to the deprivations of prison life, inmates *import* values, modes of thinking, and behavior based on outside patterns. As a result, there is no single "society of captives," but rather a variety of value systems within different sub-groups, usually ethnically-defined gangs. In this case, the modes by which inmates adapt to prison life would result not from the losses they experience while incarcerated but instead from what is brought into the prison from outside. Therefore, the subcultural aspects of prison correspond to those in the community (Irwin & Cressey, 1962). In addition, the experiences of pain and deprivation caused by imprisonment would not be equally experienced by every inmate, as each would exhibit differential abilities to meet his needs in prison (Bonta & Gendreau, 1990; Bukstel & Kilmann, 1980; Seymour, 1977; Toch, 1977). Those differential abilities would certainly include a differential capacity for the use of force and violence. Finally, the idea of a unified "society of captives" (Sykes, 1958) becomes problematic, since inmates would not constitute a homogeneous group, but rather many subgroups with different belief systems and norms (Carroll, 1974; Irwin & Cressey, 1962; Jacobs, 1977; Wooldredge, 1991; Crewe, 2005; Irwin, 2005).

Scholarly literature on the importation model has tended to include individual-level inmate variables, such as race, sex, age, social class, marital status, education, previous convictions, employment, type of crime committed, gang membership, substance abuse, and personality variables (i.e. Goodstein & Wright, 1989; Wooldredge, 1991; Wright, 1991; De Lisi, 2003; Drury & De Lisi, 2010; Berg & De Lisi, 2006; Harer & Steffensmeier, 1996; Kuanliang & Sorensen, 2008).

In sum, three perspectives on prison violence have been introduced in the previous pages, namely the deprivation, the importation, and the administrative-control models of prison violence. The deprivation model argues that the main cause of violence has to do with the oppressive and stressful prison environment in which inmates are forced to live, where they face a variety of pains and deprivations. The importation model, on the other hand, assigns the explanation for prison violence to the inmates' pre-prison experiences and to the individual repertoire of characteristics that inmates bring into the prison. Finally, the administrative-control model maintains that violence occurs as a result of inadequate "prison government" by officers and administrators and that leadership and control are key elements for maintaining orderly prisons. More recent developments that have studied prisons as organizational units have identified certain variables as influential in promoting or decreasing violence, such as prison culture, staff burnout, or staff beliefs/ideology.

In the next section, the Literature Review, I present and critically analyze empirical findings on prison violence based on studies that have relied on the three approaches just described (deprivation, importation, administrative-control). The objective here is to present what we empirically know about each theory, as well as some of the research gaps in the literature, in order to frame my own dissertation enterprise and my main research questions.

2.2 Literature Review: Empirical Findings on Prison Violence

Part of the literature review in this section is based on a study by Gadon, Johnstone and Cook (2006) that conducted a systematic review of the literature on situational variables and institutional violence. Gadon, Johnstone and Cook identified 21 studies on prison violence,[4] and their work represents a valuable contribution not only for their analysis of the literature, but also for the range of situational variables (including compositional, management-related, spatial-temporal, and program-related variables) they analyzed. Their study has broadened the spectrum of contextual influences that can be relevant for prison violence. Indeed, they criticized the fact that much of the research on prison violence was focused on "person-centered explanations" (p. 515), and their work highlights the ways in which prison violence occurs within a social context.

Evidence for the Deprivation Theory

- Prison characteristics and violence

Findings regarding prison size revealed inconsistent results. On the one hand, Farrington and Nuttall (1980) concluded that there were no statistically significant differences in assault rates for small and large prisons. On the other hand, McCorkle et al. (1995) found that larger institutions (those holding a larger daily population) showed higher staff assault rates, yet larger prisons also reported lower levels of prisoner–prisoner assaults. Atlas (1982) found a trend for physical and sexual assaults occurring in areas of little or no supervision.

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[4] Out of the studies, 16 considered sole physical assaults as the main outcome; 2 included physical, verbal and sexual assaults, and 1 considered physical and sexual assaults as the outcome of interest. In two studies, the type of assault was not specified. In terms of the type of the perpetrators, 8 out of the 21 studies analyzed both prisoner–prisoner violence and prisoner–staff assaults. Six of them studied prisoner–staff violence, and in 4 articles, prisoner–prisoner violence was examined. Three of the studies did not explicitly mention who was involved in the incident. The vast majority of them (20/21) employed a quantitative approach. Authors grouped the situational variables into eight categories: (1) structure-related, (2) staff characteristics, (3) temporal factors (e.g., when the incident took place), (4) location, (5) level of crowding, (6) management, (7) program availability and (8) ward/unit features.

In terms of the location where violence takes place in prisons, Steinke (1991) found a relationship between prisoner–prisoner assaults and local job or school appointment sites, dorms, corridors, shower areas, dining, recreational areas, residential areas, and observation units. When homicides were considered, Porporino and colleagues (1987) found that most homicides (45%) happened in an inmate's cell, whereas Jayewardene and Doherty (1985) found that prisoners were killed in all parts of an institution except workshops.

With regard to overcrowding, only one study (Lester, 1990) found a significant relationship between crowding and institutional violence, whereas other authors (Ekland-Olson, 1986; Jan, 1980; Nacci et al., 1977) found non-significant relationships. Nevertheless, it is important to recall that research on crowding and violence might be affected by conceptual and operational inconsistencies across studies (Bonta & Gendreau, 1990; Gaes, 1994).

Regarding temporal aspects, one study found no significant differences between monthly rates of violent incidents when physical or verbal prisoner–staff assaults were examined (Bidna, 1975). On the other hand, differences were found when homicide rates were examined by season, with more murders taking place in the autumn and summer months (Porporino et al., 1987). At the same time, two studies (Jayewardene & Doherty, 1985; Porporino et al., 1987) found that higher rates of homicides and violent incidents occurred on a Friday, Saturday, and Sunday, suggesting that higher risk could be related to times of reduced activities.

- Overcrowding

In a study that tried to separate the effects of prison size on prison violence and reconviction, Farrington and Nuttall (1980) found that factors other than size per se could account for variations in violence and recidivism. Indeed, after controls, they found that overcrowding was a more important predictor of prison violence than prison size. However, this

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study did not include individual-related variables as controls, and thus there was no chance to potentially consider an alternative explanation, such as the importation hypothesis, for example.

Some years later, Gaes and McGuire (1985) analyzed the influence of crowding on prison violence and found that out of four dependent variables analyzed (different types of assault), three of them were positively related to a crowding composite score and that overcrowding was the most important variable in determining assault rates at the aggregate level. After Gaes and McGuire, other studies have addressed this issue with mixed evidence. On the one hand, Austin and Irwin (2001), Bonta and Gendreau (1990), Lester (1990), and Spector (2010) have reported increased prison violence when crowding increases. Other researchers, such as DiIulio (1990), Ekland-Olsen (1986), Gaes (1994) or Reisig (1998), have argued that violence can be better predicted by looking at poor management and lack of officer training. Wooldredge and Steiner (2009) explained such inconsistencies in terms of different definitions of overcrowding that were being used in the literature (as a ratio between total population and design capacity; as a total raw population; and as a ratio plus a count of the total population) and pointed out the importance of clarifying definitions of overcrowding and acquiring more consistency in future research.

- Security level of the facility

In terms of *structure-related* variables, findings revealed that violent assaults (including inmate homicides) were more likely to happen in maximum or high-security settings (Jayewardene & Doherty, 1985; McCorkle et al., 1995; Porporino et al., 1987; Kratcoski, 1988). More recently, a longitudinal study by Steiner (2009) found that a higher proportion of inmates in high-security custody was significantly associated with higher levels of violence, both cross-sectionally and longitudinally.

In addition, Briggs, Sundt and Castellano (2003) evaluated the extent to which supermax prisons[5] had diminished prison violence, finding no empirical support for the association between supermax prisons and the aggregate levels of inmate-inmate violence. At the same time, the idea that supermax prisons improved staff safety showed mixed results: no effect was found on levels of inmate-staff assaults in Minnesota; there were increased staff injuries in Arizona and decreased assaults in Illinois. The authors concluded that supermax prisons do not seem to be the best alternative for controlling inmate violence, highlighting instead that alternative courses of action should be considered, such as administrative segregation, solitary confinement or even cognitive-behavioral therapies. In an updated version of that study, Sundt, Castellano, and Briggs (2014) analyzed the influence of opening a supermax facility in the state of Illinois on the reduction of violence; they found no empirical association between its opening and the rate of inmate-on-inmate assaults, although there was an observed reduction in inmate-staff assaults and in the number of days that inmates were in solitary confinement.

- Inmates' perception of prison environment

Hochstetler and De Lisi (2005) found that inmates' perception of the prison environment (mainly through boredom, noise, and lack of privacy) had an effect on prison violence through both witnessing victimization and through inmate's participation in the informal economy. More recently, Rocheleau (2013), using a set of operational indicators based on Sykes' (1958) original work, conducted a survey among inmates on prison conditions and other "pains of imprisonment." This study found that "boredom" was associated with prison violence, highlighting "the irony of confinement": experiencing more of the pains of imprisonment actually degrades and disadvantages individuals' capacities for rehabilitation.

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[5] The so-called supermax prisons or "supermax" have been defined as maximum-security facilities usually oriented toward housing the most dangerous individuals in a highly restricted regime. (Pizarro & Narag, 2008)

- Sentence Length

Sentence length and time served and their relationship to violence offer mixed results. On the one hand, a positive association between sentence length and prison violence has been observed (Drury and De Lisi, 2010); Dhami, Ayton and Loewenstein (2007) found that there were direct effects of time spent in prison (current sentence) on inmates' misconduct in prison. On the other hand, Cunningham and Sorensen (2007) found that sentence length was negatively associated with institutional violence. Some years later, the same authors (Sorensen & Cunningham, 2010), in a study in Florida, found similar evidence and noted that sentence length was negatively associated with probability of committing violent acts.

- Conflict with guards

In a recent study, Rocheleau (2013) assessed the relationship between a contemporary version of Sykes' "pains of imprisonment" and prison violence and found a positive association between conflicts with staff and prison violence, as well between inmates having concerns about their safety and violent misconduct

Evidence for the Administrative-Control Theory

In an article by Cook, Wosniak, and Johnstone (2008), the authors argued in favor of considering the situational context where violence takes place and criticized what they consider an excessive focus on individual-risk assessment, which has overlooked the situational components of violence behind bars. They reason that "violent prisoners are only violent in certain circumstances" and that we need "to understand not only the origins of violence in prison but also the situational contexts in which violence occurs" (p.1065).

- Program access

In terms of program availability for inmates, findings showed that a higher proportion of prisoners working in programs relating to education, vocational training, or industry was associated with lower rates of prisoner–staff assaults (McCorkle et al., 1995; Walrath, 2001). Similarly, prisoners who train to serve as workshop leaders for other prisoners reported fewer prisoner–prisoner fights than their prisoners who did not take part in the program (Walrath, 2001).

In the same vein, lower levels of violence were associated with the use of remunerative controls rather than coercive ones (Huebner, 2003). Similarly, in a two-wave, longitudinal study, Steiner (2009) found that a higher proportion of working inmates was associated with decreasing violence, in both the cross-sectional and longitudinal analyses.

- Coercive-based control measures

By employing nationally representative survey data, Huebner (2003) tested the administrative-control model for explaining prison violence by contrasting, specifically, the role of remunerative versus coercive forms of controls. His findings revealed that remunerative controls were important for reducing inmate-staff violence and that coercive controls were not significant to explaining any form of violence, in opposition to what Di Iulio had stated almost twenty years ago (1987).

- Conjugal visitation programs

Hensley, Koscheski, and Tewksbury (2002) examined the relationship between participation in conjugal visitation programs and violent behavior in two prisons in Mississippi. They surveyed 256 incarcerated men and women regarding institutional violence and participation in the conjugal visitation program. Only inmates housed in a minimum or medium security unit are permitted to participate in these visits, and conjugal visits must be earned

through good behavior. Findings showed that inmates who engaged in conjugal visits had no significant differences in terms of engaging in violent behavior or threats of violence than those who did not participate in the conjugal visitation program.

- Effective leadership

Fleisher (1989), in a unique research study, conducted a participant observation at the Federal Penitentiary at Lompoc, California, after receiving training as a prison officer for one year. The author found that violence was reduced at Lompoc as a result of the creation and maintenance of an environment that rewarded non-violent behavior among inmates. A critical role in this successful story was played by a for-profit prison factory that helped inmates obtain sources of income and, thus, improve their material conditions. The author posits that despite the fact that Lompoc housed violent offenders, an effective leadership was able to run a prison where violence was prevented. Other studies after Flesher's that focused on leadership and organizational aspects have found that poor prison management or highly formalized managerial practices were positively associated with prison violence (McCorkle et al., 1995; Reisig, 1998, 2002).

Kimmet and Martin (2002) interviewed 209 inmates and maintained that violence is a response for surviving the risk of exploitation, an ever-present threat derived from the prison culture. They found that most violent situations in prisons had to do with non-material interests, such as respect, fairness, loyalty, and honor. In addition, the authors described in rich detail the most common manifestations of violence (accusation or threats, verbal challenges, invasion of space, and insults) and how they related to inmates' social structure, interests, power balance, and fight catalysts. Finally, they identified a variety of management-related factors that

prevented or minimized violence: prior good relations between parties, privileges that inmates wanted to retain, and officers prioritizing conflict prevention.

- Prison culture

Prison culture has been found to be influential in generating organizational failures such as ethical violations or increased levels of violence within prison settings (Jung et al., 2009; Carrol, 2007; Liebling, 2004). For example, a prison environment that rewards violent behavior from guards has been associated with more violence among inmates.

- Staff ideologies

Some studies conducted on staff attitudes, beliefs, and orientations toward their work have shown their importance for prisons' daily operations and general management (Cullen et al., 1989; Tewksbury & Mustaine, 2008). Indeed, the prison staff's prevailing ideologies and how they give meaning to their own work can influence outcomes such as staff interactions with inmates, encouragement of various forms of behavior by inmates, and the way inmates may think about the future, which can, in turn, create predispositions to violence.

- Burnout of prison staff

The burnout of prison staff has been linked to the development of violence in correctional settings. The concept of "job burnout" refers to being psychologically worn out and exhausted from the job, which usually takes place when employees experience a gradual loss of caring about the people with whom they work (Freudenberger, 1974; Maslach, 1978). Job burnout has severe consequences for staff members (Dollard & Winefield, 2001; Neveu, 2007), for their relationship with inmates (Garner, Knight, & Simpson, 2007; Maslach, Schaufeli, & Leiter, 2001) and for the overall functioning of the facility (Carlson & Thomas, 2006; Garland, 2002; Neveu, 2007; Schaufeli & Peeters, 2000; Maslach et al., 2001).

- Staff characteristics

When staff characteristics and their relationship to violence were examined, no relationship was found between staff age and likelihood of assault (Davies & Burgess, 1988; Kratcoski, 1988). On the other hand, studies have found that staff experience and assault rates are related. Indeed, Davies and Burgess (1988) found that staff experience was inversely associated with assaults, which coincides with Kratcoski (1988) and Walter's (1998) observations in terms of less experienced officers being more prone to experiencing assaults.

In a longitudinal analysis that employed facility-level data from the 1995 and 2000 Census of State and Federal Adult Correctional Facilities, Steiner (2009) studied both inmate-on-inmate violence as well as collective violence and found that facilities with more racial heterogeneity (between inmates and staff) and a higher ratio of inmates to guards were positively associated with violence.

In terms of staff training, Kimmet and Martin (2002) found that when staff members were trained to recognize and manage conflict through resolution programs prison violence could be prevented or reduced.

Evidence for the Importation Theory

- Age

In the literature, there is vast agreement that an inmate's age is negatively related to prison violence: younger inmates show higher levels of violent misconduct (Ekland-Olson et al., 1983; Malbi et al., 1979; Cao, Zhao & Van Dine, 1997; Kuanliang & Sorensen, 2008; Lahm, 2009; De Lissi et al., 2010; Sorensen & Cunningham, 2010; Arbach-Lucioni, Martinez-García & Andrés-Pueyo, 2012). Nevertheless, after assessing a variety of individual-level variables as predictors of violent misconduct among inmates in close custody, Cunningham and Sorensen

(2007) found that individual-level variables only modestly predicted different forms of misconduct (area under the curve between .72 and .74) and suggested that a broader set of indicators should be employed.

- Marital status

In the literature that was reviewed, there was not much information in this regard, although Kuanliang and Sorensen (2008) found that being married would be negatively associated with prison violence.

- Race and ethnicity

In terms of race and ethnicity and their relationship with prison violence, research findings show that, in general, non-white inmates were more likely to engage in violent misconduct in prisons. For example, Harer and Steffensmeier (1996) analyzed federal prison data from 58 facilities to evaluate whether there were racial differences in violent misconduct and found that black inmates had higher rates of violent behavior. In the same vein, Cao, Zhao, and Van Dine (1997) found that non-white inmates were more likely to get involved in prison misconduct in Ohio prisons, and De Lisi, Berg, and Hochstetler (2004) found that minorities were at higher risk of engaging in violent misconduct. Similarly, Lahm (2009) applied a multilevel analysis to study inmate-staff assaults and found that, when facility-level effects were considered, a larger proportion of non-White inmates were predictors of assault toward staff members, in line with Steiner's study (2009) that found that prisons with higher proportions of African American inmates had more violence.

Berg and De Lisi (2006) analyzed the specific role of racial, ethnic and citizenship-related variables with regard to prison violence. They employed administrative data from the "offender classification system" and, after controlling for other relevant variables, found that

among males, those relatively more involved in violence were Hispanics and Native American and that among women, African Americans and Native Americans were more involved in violence. Citizenship was not predictive of prison violence.

- *Sex*

Most studies have found that being male is positively associated with prison violence (Kuanliang & Sorensen, 2008; Sorensen & Cunningham, 2010; Berg & DeLisi, 2006; Craddock, 1996; Gover et al., 2008; Harer & Langan, 2001; Jiang, 2005). Only one study found in the opposite direction (Cao, Zhao & Van Dine, 1997), showing that being female was positively associated with obtaining a disciplinary ticket for prison misconduct in Ohio prisons.

- Educational level

The review found only one study addressing educational level and prison violence. The work of Cao, Zhao, and Van Dine (1997) showed that education level was negatively related to prison violence.

- History of prison violence

In terms of the association of previous history of violence and current violent behavior, research findings have shown that, in general, having a history of violence is a good predictor of current violent behavior in prison, either under normal custodial regimes (De Lisi, Berg, & Hochstetler, 2004; De Lissi et al., 2010; Arbach-Lucioni, Martinez-García & Andrés-Pueyo, 2012) or among inmates in close custody (Cunningham & Sorensen, 2007). Moreover, Drury and De Lissi (2010) found that among a variety of other predictors, previous prison misconduct and institutional adjustment were the most important predictors for current violent misconduct.

- Previous conviction

In general, many authors have found that prior confinement is positively associated with prison violence (De Lisi, Berg, & Hochstetler, 2004; Cunningham & Sorensen, 2007; Kuanliang & Sorensen, 2008; Steiner & Wooldredge, 2008; Sorensen & Cunningham, 2010), yet some have argued that the specific link between the two would be the prior adjustment, rather than having served a prior term in itself (Drury & De Lisi, 2010).

- Type of crime for current sentence

Sorensen and Cunningham (2010) analyzed administrative data from the Florida Department of Corrections to test whether those who had committed serious crimes were also more prone to committing violent acts in prison. They found that inmates convicted for murder were not more likely to get involved in disciplinary infractions, including violent misbehavior.

- Substance abuse

When the relationship between substance abuse and prison violence was examined, findings show that in general, both were positively associated, even when other variables were controlled. For example, Kuanliang and Sorensen (2008) found that rule violations were positively associated with substance abuse. Byrne and Hummer (2007) found an association between drug abuse and violence, estimating that about 23% of those who have reported a history of physical abuse in prison were substance abusers (versus 15% of substance abusers who had no history of violence). De Lissi et al. (2010) found that substance abuse was positively related to higher levels of misconduct. Arbach-Lucioni, Martinez-García, and Andrés-Pueyo (2012), who analyzed official data on violent misconduct in Cataluña, found that having drug and/or alcohol problems were factors positively linked to prison violence.

- Gang affiliation

In general terms, gang affiliation and prison violence have been found to be positively related variables. Byrne and Hummer (2007) analyzed prison violence and its correlates and found significant differences between those involved and their gang activity. Similarly, Cunningham and Sorensen (2007) found that gang affiliation was positively linked to violence behind bars. The same authors (Sorensen & Cunningham, 2010) found that gang membership (suspected or confirmed) was positively associated with prison violence. Nevertheless, De Lisi, Berg, and Hochstetler (2004) explored the extent to which male inmates with high gang involvement were more prone to engaging in prison violence. Based on official administrative data on individuals from one southwestern state in the U.S., they found that gang variables significantly accounted for prison violence only in a full model. In addition, they found that, comparatively speaking, gang membership had a smaller effect than some other importation factors.

- Past victimization/trauma

Research on past victimization, trauma, and current prison violence was relatively scarce. Nevertheless, some research has linked having experienced physical abuse in the past with prison violence (Kuanliang & Sorensen, 2008) or having suffered traumatization or neglect during childhood and current institutional misconduct (De Lissi et al., 2010).

- Psychological variables

A variety of studies have started to incorporate the assessment of inmates in terms of some psychological or psychiatric personality-related variables and their association with prison violence.

    - Aggression

Lahm (2009) found a positive relationship between aggression (assessed through different psychological instruments) and prison violence. In addition, De Lissi et al. (2010) studied the impact of traumatization on institutional misconduct among a sample of juvenile delinquents in confinement and included a variety of psychiatric variables (assessed through the application of psychometric instruments) to assess the association between traumatization and misconduct; the researchers found that aggression was an important, individual-level predictor.

- Self-control

Hochstetler and De Lisi (2005) assessed the relationship among inmate characteristics, including inmates' self-control, and found that self-control had an effect on prison violence through both witnessing victimization and through inmate's participation in the informal economy

- Antisocial attitudes

Hochstetler and De Lisi (2005) included in their study the effect of inmates' attitudes to prison violence and found that antisocial attitudes were mediators of prison violence. In addition, Arbach-Lucioni, Martinez-García, and Andrés-Pueyo (2012) found a positive association between antisocial attitudes and prison violence among inmates in Cataluña, Spain.

- Mental health

Kuanliang and Sorensen (2008) analyzed inmate characteristics to determine which traits could be associated with disciplinary infractions. They analyzed data from the 1997 Survey of Inmates in State and Federal Correctional Facilities and found that rule violations were positively associated with having mental health problems

- Response to treatment

Arbach-Lucioni, Martinez-García and Andrés-Pueyo (2012) found that inmates who responded to psychological/psychiatric treatment were found to be negatively associated with violent misconduct

- Family and community characteristics

Despite the variety of articles that exist on the cycle of incarceration in families, only the study by Kuanliang and Sorensen (2008) showed that rule violations were positively associated with the incarceration of a family member.

Prison Violence in Latin America

Dammert and Zúñiga (2008) analyzed prison systems in Latin America and compiled some of the scant data available on prison violence in different countries. They found that most prison systems in the region suggested a prolonged abandonment by the state, which was evident in the levels of prison crowding (no country had less than 10% overcrowding, and most of them had severe prison overcrowding), in the low investment in prison personnel, in the inhumane living conditions that inmates face inside prisons, in the precarious prison infrastructure, and in scarce access to basic services and rehabilitation programs.

At the same time, the authors noticed that both zero-tolerance and tough-on-crime types of policies were being applied in the region, resulting in more individuals receiving prison terms and serving longer sentences. The added volume of prisoners put additional pressure on prison systems already overwhelmed and, as a result, overcrowding, inmate-on-inmate violence, hunger strikes, and even riots started increasing (Dammert & Zúñiga, 2008).

In terms of the magnitude of prison violence in Latin American countries, Dammert and Zúñiga experienced difficulty finding complete and reliable information that allowed them to explore the magnitude and evolution of the phenomenon. Nevertheless, some data showed that

Venezuela is one of the countries with higher levels of prison violence in the region, with more than one inmate dead daily; this high level of violence can be associated with the use of firearms inside prisons (often with the complicity of prison guards), with the absence of educational or other rehabilitative programs, and with the overall lack of control in many establishments (Dammert & Zuñiga, 2008, p.114).

The Brazilian case also presented incomplete information, but some data revealed that there were around 1,000 individual deaths per year. Prisons in Brazil have been affected for a long time by violent episodes, abuses, and torture by guards of inmates (Salla, Rodríguez, Espinoza y Litvachky, 2008).[6] More recently, it has been documented that this prolonged abandonment of the prisons by the state has resulted in the unification and strengthening of criminal organizations inside prisons as they offer inmates a sense of identity, belonging, and social organization. The appeal of these organizations in these types of prison climates has also resulted in stronger criminal organizations such as the "Primeiro Comando da Capital" (First Command of the Capital), which is currently believed to operate even outside prison facilities and to be responsible for dozens of assassinations and other coordinated attacks (Dias, 2011; Teixeira, 2012).

The Argentinian case, on the other hand, despite the fact that it does not have updated official data on dead or injured individuals, has shown that there are many inmates having suffered physical violence from guards, yet the exact figures are unknown. Moreover, studies show that in Argentinian prisons, institutional violence by agents of the state and even torture would be common realities (Salla, Rodríguez, Espinoza y Litvachky, 2008). Nevertheless, in all the examples that Dammert and Zuniga presented, there was no empirical evidence with regard

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[6] The most infamous, iconic case of brutality is known as the *Carandiru Prison Massacre*, which took place in São Paulo in 1992

to the causes of prison violence, beyond hypothesis or references to overcrowding. Isla and Miguez (2003) found evidence in Argentina that suggests a correlation between poor prison conditions and dysfunctional adaptation that inmates experience and a poor prison administration system. The poor administration is particularly evident with regard to high personnel absenteeism, low skill repertoires of prison workers (managers and wardens alike), and a dramatic lack conflict resolution tools. This research, though limited to a few prisons in Argentina, highlights the importance of attending to guard-related variables for an appropriate understanding and management of prison outcomes, including violence. In the same vein, Alzúa, Rodríguez, and Villa (2010) found evidence that educational programs reduced prison violence in different regions of Argentina, since education programs could change inmates' values and orientations or might have an effect simply as a result of having less useless time.

Finally, Morris (2008) conducted an exploratory study in Jamaica and analyzed how inmates experienced and responded to a disadvantaged prison environment. He found support for both the deprivation and importation theories of prison violence; his findings suggest that individual characteristics (gender, citizenship), pre-prison experiences (relatives in prison or not), personal convictions, and prison-specific factors (deprivation conditions, overcrowding, mistreatment by guards and daily violence) did play a role in inmates' adaptation. In addition, he found that theoretical constructs in penology (importation and deprivation theories of prison violence) were reasonably applicable to the Jamaican context and that there were variations among establishments in terms of the environments they created for inmates.

2.3 Some gaps in the literature on prison violence

- Lack of studies in developing countries and prisons overlooked in Latin America

A large body of literature has studied prison violence, especially in developed countries such as the United States, The United Kingdom, Finland, Canada, Australia or the Netherlands. With some exceptions, research on prison violence is rare in developing countries (Gendreau, Goggin, & Law, 1997; Wright & Cingranelli, 1985).

Research on prisons in developing countries has shown that most prison systems in these countries are highly overcrowded, deficient in terms of humane conditions and program access, and filled with poor managerial practices, including mistreatment or even torture (Wright & Cingranelli, 1985; Stern, 1990; Wright & Cingranelli, 1985; Lindegaar & Gear, 2014; Dammert & Zuniga, 2008; Espinoza & Martinez, 2007; Isla and Miguez, 2003; INDH, 2012). Nevertheless, little systematic research has been conducted on the topic of prison violence or any of its correlates.

- Importation theory receiving increasing attention in recent years

In organizing the literature review in chronological order, it became apparent to me that the importation theory has received more attention, along with an increasing interest for improving the classification of inmates according to their risk of violence, in more recent years. The other two approaches, both the deprivation and the administrative-control model of prison violence, have not appeared as frequently as the importation theory, which may reflect an underlying, implicit assumption that individuals are to be blamed for violence behind bars with preeminence over other explanations. Often, this assumption is supported by media portrayals of prisons that focus on violence led by "violent inmates."

- A great portion of the literature motivated by "classification purposes"

The collection of data only with the goal of categorizing inmates according to their "risk" of engaging in prison violence may result in atheoretical approaches to the question of why

prison violence occurs. In contrast, looking beyond classification offers researchers and

administrators the possibility of interpreting results in ways that lead to the development of new

theories and theoretical approaches that may also serve to enrich our understanding of the world.

Secondly, with the use of a classification focus, prison violence could be exclusively attributed to

individuals' characteristics (Cook, Wosniak & Johnstone, 2008). As suggested by Cunningham

and Sorensen (2007), it is important to expand the analysis toward including contextual

variables.

- Few studies testing different models all together

Among the reviewed literature, few studies have incorporated the study of two or more

perspectives on prison violence. Some studies have considered the deprivation model along with

the importation hypothesis; others have considered the deprivation and administrative-control

models of prison violence (Huebner, 2003; Lahm, 2009) Testing different theories all together is

important to promoting prison reform, as this enterprise has much to do with the prison structure

and leadership (Coyle, 2003) rather than the sole consideration of inmates' background

characteristics, many of which are not subject to change. Indeed, administrators and

policymakers cannot do much with regard to inmate characteristics, since they can do little more

than obey and manage what the Courts' decisions regarding sentenced individuals. On the other

hand, prison conditions (deprivation conditions) and officers' decision-making and leadership

attributes (administrative-control model) can be enhanced not only to reduce prison violence but

also to create a supportive environment for inmates' treatment overall (Liebling, 2004).

- Predominant use of administrative records

From the literature review, it is clear that most of the current research relies on

administrative and official records of misconduct. Since official records usually contain

information collected for administrative purposes, they have some limitations for research

purposes, such as the lack of control for the researcher over content, the use of administrative

definitions that may even vary over time, the variety of quality issues (missing or erroneous data,

information not updated), or the lack of contextual information in the administrative records

(Smith et al., 2004). Only a few studies use combinations of data (Rocheleau, 2013; Hochstetler

& De Lisi, 2005). Most studies that have tested the deprivation hypothesis have employed

indicators of the prison's level of security or overcrowding indexes, but only few of them have

incorporated some indicators of inmates' perceptions of the conditions of confinement, with rare

exceptions (Rocheleau, 2013).

2.4 The Current Study

Some of the gaps in prior research on prison violence, then, have to do with the lack of

research on prison violence in developing countries (particularly in light of very severe

overcrowding conditions that characterize prison systems there), the predominant use of

administrative data in testing violent misconduct in prisons (which are not even available or are

not reliable in many developing nations), the emphasis on "violent inmates," the need to improve

the classification systems for prison violence, and the lack of national-level data to test more than

two theoretical approaches.

My current research project will try to fill part of this knowledge gap by addressing some

of the aforementioned gaps in the study of prison violence: i) it will empirically test three

approaches, namely the deprivation, the importation, and the administrative-control models; ii) it

will employ a combination of data sources, including administrative records and survey data; and

iii) it will undertake the study of prison violence in a developing country, and in so doing, it will

take into account a context with high overcrowding levels, an overall deteriorated infrastructure, and ratios of inmates/guards that in many cases are more than 100/1.

Despite the fact that Chile has one of the highest incarceration rates in the Americas, with 267 inmates per 100,000 inhabitants (ICPS, 2013), to date there is no systematic information on prison violence for the entire prison system beyond anecdotal evidence or officers' claimed expertise. Thus, the main goal of this research is to investigate the correlates of prison violence in Chilean facilities. I do so by employing a combination of administrative data (at the facility level) and aggregate survey results (at the facility level, as well) during the 2012 calendar year in order to empirically test the deprivation, the importation and the administrative-control theories. By conducting the first systematic study on prison violence in Chile, I seek to contribute the field by providing a comparative perspective of inmate violence, as well as to obtain findings that could inform policies to help reduce prison violence.

Chapter III

Methods

The preceding chapters presented an overview of theoretical models that attempt to explain the causes of prison violence, as well as empirical findings on prison violence and its correlates. Prior chapters also presented a discussion of some of the limitations of the current literature. Some of the identified gaps in current research on prison violence have to do with the lack of research in developing countries, the infrequent consideration of the three models (deprivation, importation, and administrative-control) together, the lack of national-level data analysis, and the tendency of many studies to use only administrative data. Discussion in the previous chapters demonstrated that prison violence in Chile has rarely been studied and that doing so would contribute to filling a gap in the literature, as well as to promoting a discussion about prison reform in Chile. This chapter describes the study's research questions, main hypotheses, variables and measures, data sources, and the analytic strategy I plan to use.

3.1. Research Questions

Deprivation-oriented variables have been found to be relevant for understanding prison violence. Prior studies have supported the argument that overcrowding, security level and the intensity of the "pains of imprisonment" are positively associated with prison violence (Rocheleau, 2013; Gaes, 1994; Farrington & Nuttall, 1980; Sykes, 1958). At the same time,

other variables such as sentence length have a negative relationship with violence (Cunningham & Sorensen, 2007; Sorensen & Cunningham, 2010).

In addition, empirical findings on prison violence have linked violence to the role that prison officers and administrators can play in shaping prison violence. For example, there is evidence that lower levels of violence are associated with an effective and supportive prison management system (McCorkle et al., 1995; Reisig, 1998; Reisig, 2002; Craig, 2004). In addition, there is evidence that failures in prison management can lead to severe forms of inmate violence, including inmate-inmate aggression, inmate homicides, or collective riots (Snacken, 2005; Sparks et al., 1996; Useem & Kimball, 1989). Furthermore, research suggests that the managerial style of prison administrators and officers can predict job satisfaction and role strain among correctional staff (Reisig & Lovrich 1998; Stohr et al. 1994).

At the same time, different empirical studies that support the importation hypothesis have shown that some individual characteristics of inmates are associated with prison violence. For example, inmates' age is one variable that has consistently negative associations with violent events (Kuanliang & Sorensen, 2008; De Lisi et al., 2010; Sorensen & Cunningham, 2010). In addition, previous criminal involvement has positive associations with prison violence (Drury & De Lisi, 2010; Arbach-Lucioni, Martinez-García & Andrés-Pueyo, 2012; De Lisi, Berg & Hochstetler, 2004).

Thus, the purpose of this study is threefold. First, it attempts to determine which variables are correlated to violent events in Chilean prisons since, to date, there is no systematic information in this regard for the entire prison system beyond anecdotal evidence or prison officers' claimed expertise. Second, it aims to empirically test three theories of prison violence and see which variables among remain significantly associated with violent events when the rest

of the variable repertoire is included into the analyses. Lastly, this study seeks to determine the influence of total inmate population on the three models here presented, as well as to find out which model has more empirical support from the data here employed. Specifically, the three main research questions to be addressed in the study are as follows:

1. What are the main correlates of violent events in Chilean prisons?

2. Which model of prison violence here considered (deprivation, importation or administrative-control) is more supported by empirical findings when competing models of prison violence are analyzed together?

3.2. Research Hypotheses

The exploration of the correlates of prison violence in Chilean facilities is based on the following four hypotheses. Each of these hypotheses, listed below, will be tested to answer the study's research questions:

Hypothesis I: according to the deprivation theory, poor prison conditions are positively related to prison violence. Scholars have recognized that the prison system should create a supportive environment that facilitates inmates' safety and reintegration (Liebling, 2004), an environment where there can be a sense of legitimacy (Sparks & Bottoms, 1995) in sustaining the system. This kind of environment, in turn, creates a safer prison for guards and for officers (Coyle, 2003). On the other hand, harsh, oppressive conditions with excessive use of force or even brutality undermine the prison system's legitimacy and threaten order, security, and possibilities for rehabilitation (Sykes, 1958). Consequently, three sub-hypotheses are derived from the literature:

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H1a: Overcrowding level will be positively related to prison violence. Despite the fact

that there are different definitions of overcrowding in the literature (Wooldredge & Steiner,

2009) and that some scholars have found no association between crowding and violence (Steiner,

2009), some research evidence has suggested that overcrowding is positively associated with

prison violence (Martin, Lichtenstein, Jenkot & Forde, 2012; Huey & Mcnulty, 2005; Farrington

& Nuttall, 1980). Taking into consideration the under-development and poor prison conditions

in Latin America, it becomes meaningful to hypothesize that overcrowding might have a positive

relationship to violence in Chile (INDH, 2012; Dammert & Zúñiga, 2008; Espinoza & Martinez,

2007).

H1b: Inmates' self-reported perception of mistreatment by guards would be positively

associated with prison violence. According to the deprivation model, conflicts between guards

and inmates would be one of the manifestations of the pains of imprisonment and reflect the

oppositional subculture that takes place in prison settings (Clemmer, 1940; Sykes, 1958; Sykes

& Messinger, 1960). Thus, a proxy measure of deprivation conditions would be the reported

level of conflict between inmates and guards. More recent research has employed inmates' self-

reporting on the mistreatment they receive from guards as a proxy variable of deprivation

(Rocheleau, 2013; Paterline & Petersen, 1999).

Hypothesis II: according to the administrative-control theory of prison violence, an

effective and supportive prison management is associated with lower levels of violence. The

literature has competing explanations for the role of management in prison violence. While

some have argued that maintaining tight control is critical to ensuring a prison's high level of

function (Di Iulio, 1987), others have argued that an excessive focus on control without positive

incentives (work programs, remunerative forms of control) can even be counterproductive in

terms of security and order (Huebner, 2003; Reisig, 2002; McCorkle et al., 1995). Derived from the literature, then, there are two sub-hypotheses:

H2a: Inmates' participation in prison programs would be associated with decreased aggregate levels of violence within the facility. As noticed by the research literature, there is an association between higher proportions of prisoners participating in prison programming and a reduction in the rates of violence (McCorkle et al., 1995; Walrath, 2001; Huebner, 2003).

H2b: It is hypothesized that the proportion of inmates who have been subjected to solitary confinement is positively associated with prison violence only when the use of disciplinary housing is too low or too high, taking the form of a U-shape. On the one hand, research findings have shown that the use of coercive controls are not associated with prison violence and that, moreover, strict rule enforcement and emphasis on control and security may increase prison violence (Huebner, 2003; Reisig, 1998). On the other hand, the use of disciplinary housing has been found to be related with lower levels of violence both cross-sectionally and longitudinally (Steiner, 2009).

Hypothesis III: According to the importation theory of prison violence, inmates' individual characteristics, the repertoire of previous experiences and other background traits inmates bring from the outside to prison, are very influential in the occurrence of violent events (Cunningham, 2007; Arbach-Lucioni, Martinez-Garcia & Andres-Pueyo, 2012). Among the variety of individual characteristics that are associated with violence, this study takes into account two of them, namely age and criminal engagement.

H3a: According to the literature, inmates' age is negatively associated with violent events in prisons. While this dissertation has no data at the individual level, inmates' average ages by

facility have been obtained from the *Gendarmería*. Thus, the expectation is that prisons with lower average ages would have more violent events.

H3b: Inmates' average level of criminal engagement would be positively associated with the occurrence of violent events. Thus it is expected that in facilities where there are higher proportions of inmates classified as "highly-engaged", more violent events may occur.

3.3. Data Source and Study Sample

Data for this dissertation were obtained from two sources: i) administrative data on prison violence and ii) indicators on the perception of prison life from a national-level inmate survey. Below is a detailed description of the two datasets.

--Administrative Dataset on Violent Events by Prison Facility in 2012 [ADM]

This dataset, ADM, is an Excel file generated by the Statistical Unit of the *Gendarmería* in Santiago that contains information on the number of recorded violent events (according to the criteria mentioned above) by each facility in the nation during 2012. It includes official information on violent events at the facility level for 83 facilities that was gathered from computational records that are updated and maintained in the central office of the *Gendarmería* in Santiago. The dataset contains no individual-level information at all and only facility-level data were available. This excel file also contains information on additional variables of interest, such as overcrowding level by month in 2012, total inmate population by month in 2012, type of prison (public or private), and the level of security of each prison in 2012.

--First Survey on Inmates' Perception of Quality of Prison Life – 2013 [SURVEY]

SURVEY was a nationally representative, face-to-face survey of Chilean adults aged 18 or older living in prison facilities in Chile during the 2013 calendar year. It was the first comprehensive assessment on inmates' perception about their conditions of imprisonment in Chile. This evaluation work was sponsored by the Chilean Bureau of Prisons (*Gendarmería de Chile*) and led by the same author of this dissertation while he worked for the Unit for Protection and Promotion of Human Rights within *Gendarmería* in 2013. The research team conducted the survey in 75 facilities nationwide (out of 82) and the principal investigator (Sanhueza himself) trained research team members (individuals with very scant or no social research training) in basic survey techniques, research ethics and basic research skills.

As a result, 2,093 individuals were surveyed to answer 42 questions regarding different topics of prison life: i) perception of prison conditions, infrastructure and amenities (food, bathrooms, ventilation, etc.); ii) perception of physical, psychological and sexual mistreatment by guards or other inmates; iii) participation in prison programming; iv) having been in solitary confinement or administrative segregation (in the current prison); and v) priorities for change in this facility, among others. The entire questionnaire took about 25 minutes (on average) to be completed by respondent inmates (who were usually gathered in small chapels, administrative offices, prisons' sport facilities or in other physical spaces to respond) with an overall response rate of 78% for the entire country.

This dataset contained only facility-level data and no individual-level information was available based on ethical reasons. Indeed, despite that SURVEY initially employed a randomized, stratified sampling strategy that identified individuals and gathered information from them, once questionnaires were completed and entered into a database, identifiers were

removed and deleted from the dataset in order to i) secure confidentiality and anonymity of the

information provided by inmates and ii) to avoid possible adverse effects, reprisals or retaliation

effects towards inmates by prison guards or administrators. This decision was taken by the

principal investigator of SURVEY and found the support and understanding from his superior of

the time at *Gendarmeria*.

In next page, Table 2 summarizes the total responses and provides details regarding the

response rates by facility from SURVEY.

Table 2: SURVEY's Total Responses and Response Rates by Facility
(Facilities have been ordered geographically, from north to south)

Region of the country / facility name	expected sample	actual sample	Response Rate (%)
XV			
C.P. DE ARICA	**90**	67	0.74
I			
C.C.P. DE IQUIQUE	**62**	46	0.74
C.D.P. DE POZO ALMONTE	**17**	17	1.00
C.P. ALTO HOSPICIO	**45**	43	0.96
II			
C.C.P. DE ANTOFAGASTA	**36**	34	0.94
C.D.P. DE CALAMA	**42**	42	1.00
C.D.P. DE TALTAL	**25**	24	0.96
C.D.P. DE TOCOPILLA	**33**	16	0.48
C.P.F. DE ANTOFAGASTA	**35**	31	0.89
III			
C.C.P. DE CHAÑARAL	**35**	35	1.00
C.C.P. DE COPIAPO	**42**	36	0.86
C.D.P. DE VALLENAR	**37**	34	0.92
IV			
C.D.P. DE COMBARBALA	**9**	7	0.78
C.D.P. DE ILLAPEL	**32**	19	0.59
C.D.P. DE OVALLE	**36**	34	0.94
C.D.P. DE VICUÑA	**11**	10	0.91
C.P. LA SERENA	**67**	39	0.58
V			
C.C.P. DE LOS ANDES	**37**	34	0.92

C.C.P. DE SAN ANTONIO	**36**	19	0.53
C.C.P. DE SAN FELIPE	**21**	19	0.90
C.D.P. DE CASABLANCA	**19**	13	0.68
C.D.P. DE LA LIGUA	**21**	19	0.90
C.D.P. DE LIMACHE	**-**	-	-
C.D.P. DE PETORCA	**9**	7	0.78
C.D.P. DE QUILLOTA	**-**	-	-
C.P. DE VALPARAISO	**104**	70	0.67
RM (Santiago Area)			
C.C.P. DE COLINA I	**22**	22	1.00
C.C.P. DE COLINA II	**41**	34	0.83
C.C.P. DE CORDILLERA	**-**	-	-
C.C.P. DE PUNTA PEUCO	**-**	-	-
C.D.P. DE PUENTE ALTO	**37**	23	0.62
C.D.P. DE SANTIAGO SUR	**168**	168	1.00
C.D.P. DE TALAGANTE	**21**	18	0.86
C.D.P. SANTIAGO I	**-**	-	-
C.P.F. DE SAN MIGUEL	**83**	51	0.61
C.P.F. DE SANTIAGO	**261**	134	0.51
UNIDAD ESPECIAL ALTA SEGURIDAD	**-**	-	-
VI			
C.C.P. DE RENGO	**15**	10	0.67
C.C.P. DE SANTA CRUZ	**32**	27	0.84
C.D.P. DE PEUMO	**21**	17	0.81
C.P. RANCAGUA	**95**	49	0.52
VII			
C.C.P. DE CAUQUENES	**37**	26	0.70
C.C.P. DE CURICO	**23**	14	0.61
C.C.P. DE LINARES	**21**	19	0.90
C.C.P. DE TALCA	**25**	14	0.56
C.D.P. DE CHANCO	**22**	22	1.00
C.P.F. DE TALCA	**24**	17	0.71
VIII			
C.C.P. DE BULNES	**17**	15	0.88
C.C.P. DE CHILLAN	**38**	35	0.92
C.C.P. DE CORONEL	**21**	18	0.86
C.C.P. DEL BIO BIO	**23**	15	0.65
C.D.P. DE ARAUCO	**18**	10	0.56
C.D.P. DE LEBU	**20**	11	0.55
C.D.P. DE LOS ANGELES	**22**	14	0.64
C.D.P. DE MULCHEN	**21**	17	0.81

C.D.P. DE QUIRIHUE	**16**	16	1.00
C.D.P. DE SAN CARLOS	**21**	21	1.00
C.D.P. DE YUMBEL	**21**	21	1.00
C.D.P. DE YUNGAY	**21**	14	0.67
C.P. DE CONCEPCION	**91**	88	0.97
IX			
C.C.P. DE LAUTARO	**17**	13	0.76
C.C.P. DE NUEVA IMPERIAL	**21**	14	0.67
C.C.P. DE TEMUCO	**23**	12	0.52
C.C.P. DE VICTORIA	**30**	28	0.93
C.D.P. DE ANGOL	**30**	20	0.67
C.D.P. DE CURACAUTIN	**17**	17	1.00
C.D.P. DE PITRUFQUEN	**15**	7	0.47
C.D.P. DE TRAIGUEN	**20**	20	1.00
C.D.P. DE VILLARRICA	**33**	19	0.58
C.P.F. DE TEMUCO	**19**	17	0.89
XIV			
C.C.P. DE RIO BUENO	**21**	19	0.90
C.P. DE VALDIVIA	**46**	39	0.85
X			
C.C.P. DE OSORNO	**40**	39	0.98
C.D.P. DE ANCUD	**22**	15	0.68
C.D.P. DE CASTRO	**21**	21	1.00
C.P. DE PUERTO MONTT	**44**	43	0.98
XI			
C.C.P. DE COYHAIQUE	**19**	19	1.00
C.D.P. DE CHILE CHICO	**-**	-	-
C.D.P. DE COCHRANE	**-**	-	-
C.D.P. DE PUERTO AYSEN	**17**	15	0.88
XII			
C.D.P. DE PORVENIR	**8**	7	0.88
C.D.P. DE PUERTO NATALES	**14**	14	1.00
C.P. DE PUNTA ARENAS	**23**	20	0.87
TOTAL	2,699	2,093	**0.775**
		75	surveyed prisons
		8	not-surveyed prisons
		83	total prisons

Identifiers were deleted from the dataset after survey application, so no information at the individual level (except for gender) is, or will be, available to anyone using the dataset. Although the SURVEY was conducted in 2013, one year *after* the administrative data on violent events for the 2012 calendar year, the assumption is that the structural characteristics of prisons and their populations would have change little between 2012 and 2013. In the next paragraphs, I describe in detail each of the measures and data sources available for each variable.

3.4. Description of the Study Variables

According to many scholars in the field of prisons, prison order is a concept that encompasses legitimacy, mutual respect, and decency, i.e. not merely the absence of violence (Sparks & Bottoms, 1995; Liebling, 2004; Ward, Gannon & Birgden, 2007). Nevertheless, the absence of violence is a necessary condition for an orderly facility, which in turn is a prerequisite for treatment and rehabilitation (Di Iulio, 1987; Coyle, 2003). This is not to say, though, that the problem of prison violence should be only reduced to a single, aggregate-level indicator. Rather, the use of this a single measure—number of violent events, for example—is thought to be helpful for facilitating an initial account of prison violence in Chilean facilities, especially in light of the scant previous findings in the field in developing nations (Gendreau, Goggin, & Law, 1997).

Prior research has identified a variety of variables as correlates of prison violence. As discussed in the literature review section, three main theories have proposed explanations for prison violence: the importation, deprivation, and administrative-control models. The importation model assigns the causes of violence to the characteristics that inmates bring into the prison from their own backgrounds and argues that violence merely mirrors what inmates have experienced on the outside. The deprivation model, on the other hand, posits that harsh and

oppressive prison conditions inflict "pains of imprisonment" on inmates, generating a subculture of resistance and opposition that, in turn, generates violence. Finally, the administrative-control (also called prison management) model argues that prison officers and administrators are key actors in influencing prison outcomes and inmate behavior; thus, violence would be the result of inadequate prison management. These three models were tested in this study, and a description of the variables included in the analyses is presented below. The description begins with the dependent variable and is followed by the description of the independent and control variables.

3.4.1 Dependent Variable – Violent Events at the Facility Level

Given the broad and multifaceted nature of prison violence (McGuirre, 2008) and that it seems that there is no agreed-upon benchmark for how in-prison violence should be conceptualized (Jackson & Brownstein, 2004), it is necessary to provide a definition for "prison violence" (including its operational definition) in order to ensure precise use of the term in the present study. This is important because even in developed countries, the research on prison violence has shown that it occurs in different forms and has multiple dimensions (Wolff et al., 2008), not to mention that the methodologies employed to measure prison violence also vary considerably (Wolff, Shi & Bachman, 2008). Furthermore, I have chosen to examine violent events at the facility level, and the rationale for this choice is rooted in the literature on prison violence. Indeed, data on a facility's level of misconduct can reflect degrees of order within a correctional institution (Steiner, 2009). Moreover, the inclusion of aggregate, facility-level predictors of violence constitute elements in the overall environment of a prison, and changes occurring in its social structure may impact a prison's levels of violence (Bottoms, 1999; Camp, Gaes, Langan & Saylor, 2003).

Thus, in this study "prison violence" will be understood as the *total number of violent events* at the aggregate prison level during 2012. Its main operational criteria are:

- The occurrence involves physical violence.

- The occurrence is interpersonal and involves intentional violence (Jackson & Brownstein, 2004).

- "Prison violence" here refers to a violent event registered as such in official records, i.e. as a serious violent offence, including those only resulting in serious injury (requiring medical treatment, e.g. cut, bleeding, unconscious, etc.). (Thornberry et al, 1995).

- According to the Penitentiary Code (number 78, letter K), a violent event may be deadly or non-deadly but it involves the use of a weapon or an object used as such (usually a handmade one), for the purpose of damaging the other person.

- "Prison violence" as used here only refers to inmate-on-inmate violence (not inmate-staff violence).

In contrast, "those acts in which someone was hurt or injured, but perhaps only in a minor way (…) hitting, getting into fights and so on" (Thornberry et al, 1995, p.224) will not be included in the present study. In addition, the present study also excludes attempted-but-not-committed physical violent acts, any sort of sexual assault, and any form of exercising psychological violence.

Before proceeding to the next section, it is important to notice several limitations in the prison violence measurement employed here. First, the administrative data does not contain information regarding inmate-staff assaults, which is another important indicator of prison violence in the literature. Second, although the measurement covers violent events at the prison level, it does not include other forms of more common violence such as minor fights,

psychological victimization, or even sexual abuse, despite preliminary evidence that suggests

that violence is a common experience in Chilean prisons (INDH, 2013; Sanhueza, *in press*).

Third, due to limited information in both SURVEY and the administrative records provided by

Gendarmeria, it was not possible to link violent events to with the individual characteristics of

inmates. Only a couple of aggregate proxies were available for this research, namely average age

per facility and average levels of "criminal engagement" by facility, according to the

Gendarmería's assessment.

3.4.2. Independent Variables

Measurements for the deprivation and administrative control model of prison violence are

no easy task, as these theories have been operationalized using different criteria from the

literature. To facilitate the presentation of and the rationale for the choice of variables,

independent variables have been divided into two sub-sections based on whether they are

ascribed to either the deprivation or the administrative control/management model of prison

violence.

3.4.2.1 Independent Variables for the Deprivation Theory

- Occupancy Rate: a number that indicates prison design capacity vs. real occupancy,

    based on administrative information at the facility level provided by *Gendarmería*

    records. For example, a rate of 100 would indicate total occupancy of the facility

    with no overcrowding. An occupancy rate of 200 would mean that, in a space

    designed to house 100 inmates, there were actually 200 individuals living there.

    Different scholars have found a relationship between overcrowding as a measure of

    deprivation and prison violence (Gaes & McGuire, 1985; Lester, 1990). In addition,

    in Latin American prisons, the reality of overcrowding surpasses the standards

overcrowding in developed nations. In many cases, the environment of overcrowding

is degrading in terms of providing decent conditions (INDH, 2012; *Gendarmería*,

unpublished report).

- Mistreatment by guards: average percentage of inmates reporting physical and

  psychological mistreatment by guards, based on aggregated, facility-level data of the

  2013 Survey on Inmates' Perception of Prison Life. In order to facilitate both model

  calculations and interpretations, the percentage reporting mistreatment by guards was

  multiplied by 100 to create a new variable called <mistreatguar100>. According to

  Sykes (1958) and other deprivation scholars (Rocheleau, 2013; Gaes, 1994; Cooley,

  1993), the oppressive conditions to which inmates are subjected would generate an

  oppositional subculture between guards and inmates which, in turn, would generate

  conflict and violence.

3.4.2.2 Independent Variables for the Administrative-Control Model

- Program participation: composite score for inmates' access to six different types of

  in-prison programs (work-for-pay, job skills training, prison school, psycho-social

  interventions, sport activities, arts) in each facility, based on aggregated, facility-level

  data from the 2013 Survey on Inmates' Perception of Prison Life. Thus, a score of

  0.5 would indicate that, on average, each inmate has participated in a half-program or,

  better said, that, on average, half of inmates have had access to only one program

  (this could be any program). A program score of 2.0 would mean that, on average,

  each inmate in that prison has participated in two programs. The inclusion of this

  indicator within the administrative-control model is consonant with research findings

from a variety of studies (i.e. Fleisher, 1989; Kimmet & Martin, 2002; Huebner, 2003; Walrath, 2001)

- Inmates who report having been in solitary confinement in the facility: percentage of inmates who responded that they have been in solitary confinement in the facility while staying there, based on aggregated, facility-level data from the 2013 Survey on Inmates' Perception of Prison Life. In order to facilitate both model calculations and interpretations, the proportion of inmates reporting mistreatment by guards was multiplied by 100 to create a new variable called <propsolitary100>. This variable corresponds to part of the administrative-control model in the sense that coercive controls have also been found to be relevant to the decrease of violence (Steiner, 2009).

3.4.2.3 Independent Variables for the Importation model

- Inmates' average age at the facility level: provided by the *Gendarmería*'s Statistical Unit, these data show the average age of the inmate population at the end of the 2012 calendar year. Age consistently has been found to be negatively associated with inmate misconduct, with younger inmates showing more frequent or more violent behavior than older inmates (Drury & De Lisi, 2010; Sorensen & Cunningham, 2010; Kuanliang & Sorensen, 2008). Thus, it is expected that more violent events would occur where the average age of inmates is lower.

- Proportion of inmates classified as "highly engaged in criminal activities": once sentenced, each inmate is assessed and classified according to a protocol established by the *Gendarmería* in order to properly identify the extent to which the individual could have been involved in criminal activities. Despite the fact that this assessment

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is currently under review by the *Gendarmería* itself, it is still a valid proxy for an

inmate's criminal history and, as such, a proxy for inmate misconduct. In order to

facilitate both model calculations and interpretations, the proportion of "highly

engaged" inmates was multiplied by 100 to create a new variable called <phigh100>.

Thus, it is expected that prisons with higher concentrations of "highly engaged"

individuals would exhibit higher levels of violence.

3.4.3 Control Variable

Both prior research and the penitentiary's professional wisdom suggest that although

many of the observed differences in prison violence may respond to deprivation-related factors,

to management-related variables, or to individuals' characteristics, violent events in prison may

also have to do with underlying variables, such as the total population size (Wooldredge &

Steiner, 2009; Drury & DeLisi, 2010; McCorkle, Miethe & Drass, 1995), which should be

controlled in the statistical analysis. Thus, aside from the main independent variables from

deprivation, administrative-control or importation models, the total population size has been

included as a control variable because it is expected that, as the number of inmates increases, the

likelihood of violence may increase as well.

- Total inmate population: An average count of the total inmate population based on

  administrative information at the facility level provided by the *Gendarmería* at the

  end of the 2012 calendar year. Despite the fact that some scholars have argued that

  this variable should be included within a deprivation approach (McCorkle, Miethe &

  Drass, 1995), total population size may also have an effect on violence simply

  because there are more individuals to allow for conflict to happen. Thus, this study

  follows previous studies where total population size has been included as a control

covariate (Wooldredge & Steiner, 2009; Farrington & Nuttall, 1980). Figure 1

summarizes the variables:

Figure 1: Summary of variables employed in this study

Dependent variable
           Violent events
Independent Variables
(Deprivation Theory)
           Occupancy Rate
           Mistreatment by Guards
(Administrative-Control Theory)
           Inmates' Participation in Prison Programming
           Proportion of Inmates in solitary confinement
(Importation Theory)
           Inmates' average age per facility
           Proportion of inmates "highly-engaged" in criminal activities
Control Variable
           Total Inmate population

3.5. Analytic Strategy

This study includes two types of analyses. First, descriptive information is presented on

the dependent, independent, and control variables and on the associations between them. Then,

seven multivariate count models (negative binomial regression models) were run to analyze the

associations between violence and the three theories of prison violence here employed.

Additional predicted counts for violent events were run and graphically displayed in the full

model.

Descriptive statistics and bivariate correlations

First, descriptive statistics, including means, standard deviations, and percentages are

generated to summarize the aggregated characteristics of the dependent variable (violent events),

the characteristics of the facilities in the sample (since the units of analysis will be prisons, not

individuals), and the main characteristics of the independent and control variables.

Second, a correlation matrix and cross tabulations were employed to identify associations between violent events and the different independent variables and to identify potential problems with multi-collinearity. In any case where a pair of independent variables might surpass the rule of thumb of r >0.7, an additional test for multi-collinearity was conducted, namely the variance inflation factor [VIF].

Multivariate analyses

Data for the dependent variable *"violent events by facility"* show that, among the 83 operating facilities throughout the country, there are reports on violence for 52 of them, with 31 registering no serious violent incidents in 2012. The facilities are over dispersed, positively skewed, and many facilities report zero incidents during the observation period. In what follows, data will be analyzed using negative binomial regression[7], following the approach employed in similar cases in other prison violence studies (e.g. Drury & DeLisi, 2009; Keith, 2006; Sorensen & Cunningham, 2008). All data analyses were conducted with STATA 13.0 (StataCorp, 2013).

In order to facilitate parsimonious analyses, four different models were run to test the three theories of prison violence aforementioned, as well to analyze and contrast the different theories all together. Thus, Model 1 tested the deprivation hypothesis of prison violence; Model 2 tested the administrative-control theory; Model 3 tested the importation hypothesis; and Model 4, the Full Model, included the deprivation, the administrative-control and the importation variables.

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[7] I run different statistical procedures to test whether negative binomial regression model was the most appropriate approach to analyze the data, in comparison to alternative approaches such as the zero-inflated or the Poisson negative binomial. I selected negative binomial over the zero-inflated model because the observed variance was much larger than the mean, in whose case negative binomial is preferred. In addition, to compare the negative binomial model against the Poisson model I interpreted the information provided by the value of "alpha" that is shown while using the multivariate negative binomial regression command; the chi-square value associated with the alpha was different from zero, which meant that the use of the negative binomial was more appropriate for analyzing the data than the Poisson model.

Thus, Model 1 analyzed the deprivation model and included two variables that had been selected as representative of such an approach, namely occupancy rate and mistreatment by guards, including the total inmate population as a control variable in the equation. Following the same strategy, Model 2 tested the administrative-control model and two characteristic variables: program participation and the proportion of inmates in solitary confinement, adjusting for total inmate population. Model 3 tested the importation hypothesis of prison violence and included two typical variables: inmates' average age at the facility level and a proxy variable for "criminal history," the proportion of inmates classified by the *Gendarmería* as "highly engaged" in criminal activities. Again, the total inmate population was included as a control variable. Finally, Model 4, the Full Model, includes the six variables representing the theories of prison violence, along with total population size as a control variable. Figure 2 (below) summarizes the four models to be tested.

Figure 2: models analyzed and variables included in each model

Variable	Model 1 Deprivation model	Model 2 Administrative-Control model	Model 3 Importation model	Model 4 Full Model 1+2+3 all together
Occupancy Rate	*			*
% mistreatment by guards	*			*
Program participation		*		*
% Solitary confinement		*		*
Inmates' average age			*	*
% inmates highly-engaged			*	*
Total inmate population	*	*	*	*

Thus, the four models to be tested would look as follows:

Model 1: testing the Deprivation Model

1. Number of violent events = occupancy rate + % mistreatment by guards*100 + total inmate population

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Model 2: testing the Administrative-Control Model

2. Number of violent events = inmates' participation in prison programs + proportion of inmates in solitary confinement*100 + total inmate population

Model 3: testing the Importation Model

3. Number of violent events = inmates' average age + proportion of inmates classified as highly-engaged in criminal activities*100 + total inmate population

Model 4: Full Model

4. Number of violent events = occupancy rate + % mistreatment by guards*100 + inmates' participation in prison programs + proportion of inmates in solitary confinement*100 + average inmates' age + proportion of inmates highly engaged in criminal activities*100 + total inmate population

Incidence Rate Ratios and Analyses for Predicted Counts

This study employed negative binomial regression models to model the counts of violent events in Chilean prisons. Although the use of this statistical technique is appropriate for analyzing this type of data (counts), from the point of view of the interpretation of the results, the value of the coefficients is difficult to understand by someone who is not very familiar with statistics; thus, the coefficients represent the difference in the logs of expected counts (to decrease or increase) by the amount indicated in the coefficient. Thus, since negative binomial regression coefficients are difficult to interpret, the results of each model were presented using "Incidence Rate Ratio" (IRR), which refers to the estimated rate of change (increase or decrease) in the number of violent events, for a one-unit increase in the predictor variable, given the other variables being held constant in the model.

After analyzing data using univariate, bivariate, and multivariate statistics, additional tables and figures will be used to illustrate predicted counts for violent events and, in particular, to illustrate the results of the negative binomial regression in the Full Model (Model 4). Predicted counts (or predicted probabilities) is a statistical procedure that helps to interpret the effect of a certain independent variable of interest on the dependent variable, while holding the rest of the independent variables constant at their means or at any other fixed value (Powers & Xie, 2008). The command <margins> that is available in Stata 13.0 will be employed to conduct this type of analysis. In addition, in order to facilitate an interpretation of the results, illustrations of the predicted probabilities will be employed using the command <marginsplot> that is available in Stata 13.0 (Statacorp, 2013). This graphical aid will be employed for each of the independent variables in the full model to help in the interpretation of the results.

3.6. Data Strengths and Limitations

Before moving forward, there are some limitations that need to be made explicit about this study in advance. First, data for this dissertation mostly consisted of aggregated, facility-level variables with no individual-level information available. This is a limitation because inmates' characteristics are important to understanding prison violence (Drury & De Lisi, 2010; Kuanliang & Sorensen, 2008). The main reason for such lack of individual data had to do with ethical reasons: the possibility of identifying inmates' individual responses and the risk of reprisals or future retaliation against them (let us recall that that was the main reason why data from SURVEY were anonymized –identifiers removed and deleted—after data collection took place in 2013). Thus, no individual-level information was available from that dataset. Nevertheless, two aggregate-level variables that represent individuals' characteristics with regard to age and criminal engagement were obtained from the *Gendarmería*, which supplied, at least

partially, the requirement for information about individuals. A second limitation had to do with the use of secondary, administrative data, which implies the possibility of some inconsistency while recording violent events across different prisons. Although the use of administrative records are not usually thought for research purposes, various double-check mechanisms were applied to make sure that administrative records (particularly those involving the dependent variable *violent events*) could be taken as valid and reliable indicators of prison violence. Some of these mechanisms included interviews with prison officers and guards, a review of the Chilean penitentiary law, and different working meetings with the Statistical Department of *Gendarmería*. Finally, a last limitation that needs to be taken into consideration is the fact that findings from this study were cross-sectional in nature, making it impossible to establish causality for the models included here. Nonetheless, this study was the first systematic assessment of the entire prison system and prison life in Chile ever done and, thus, it is expected that future research can contribute to monitor longitudinal changes.

Nevertheless, the overall strengths of the data and the types of analyses used counterbalance the limitations. One particular strength is that the data for this dissertation come from a combination of administrative records and survey data. Another strength, compared with many prior studies, is the use of multiple indicators representative of three of the theories on prison violence; the use of multiple indicators is an advantage because there are few studies that jointly analyze three approaches. The use of multiple indicators will deepen our understanding of how different approaches could be associated with prison violence. Finally, the data allow for national analyses since 75 facilities (out of 83) from throughout the entire country were included in the analyses. In sum, this study should enhance our understanding of the correlates of prison violence in Chile, making this study a significant contribution to the field.

Chapter IV

Findings and Analyses

The analyses in this study include two parts. In this first part, descriptive statistics—including means, standard deviations, percentages, and a correlation matrix—are generated to summarize the main characteristics of the dependent variable (violent events), the distribution of both the independent and control variables in the sample of facilities (since the units of analysis are prisons, not individuals), and the associations between the variables. The second part is a presentation of five multivariate models that employ negative binomial regression to explore the association between the deprivation and the administrative-control models with the dependent variable, once we have controlled for other confounding variables.

4.1 Descriptive Findings

Table 3 (next page) shows the distribution for both the dependent and independent variables, as well as for the control variable, considering data for the entire sample. Most missing data had to do with the fact that the SURVEY conducted in 2013 on the perception of quality of prison life was not carried out in all facilities nationwide. Indeed, out of the 83 prisons that were operating at that time, the SURVEY was conducted in only 75 of them (Table 2 in the Methods Chapter, pages 46-48, showed the total responses and response rates by facility). Thus, data on mistreatment by guards, participation in prison programming, and the proportion of inmates in

solitary confinement were missing for 8 prisons.[8] Any other facilities with incomplete data were

already among those with incomplete data on the aforementioned variables.

TABLE 3: Descriptive characteristics of dependent and independent variables *(entire sample n=83)*					
Variable	Observations	Mean	Std. Deviation	Minimum	Maximum
Number of violent events	83	7.67	16.15	0	91
Occupancy rate (%)	79	128.19	59.3	32.5	346.4
Mistreatment by guards (%)	75	.367	.203	0	.812
Program participation	75	1.63	.49	.67	2.67
% Solitary confinement	75	.327	.192	0	.75
Inmates' average age	81	34.17	2.48	29.8	45.3
Proportion highly engaged	81	.148	.134	0	.68
Inmate total population	81	586.7	884.9	13	5,095

Thus, after excluding missing data, the analytic sample comprised 75 prison facilities.

Table 4 (in the next page) shows the distribution of the variables in the analytic sample. Among

the 75 prison facilities that were considered in this study, the average number of violent events

was 7.9 violent events per prison during 2012, with a broad range of variation between 0 and 91.

Moreover, whereas there were 27 facilities with no violent events during 2012, most of the

violent incidents that took place during that year were concentrated in some metropolitan prisons

in large cities, such as Santiago, Valparaíso, Concepción, Antofagasta, and Talca. Appendix 1

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[8] The eight facilities that could not be visited in 2013 were: 1) "CDP Santiago I," which housed about 3,500 in transit, held-for-trial individuals. The reasons for not visiting had to do with logistical problems and the distinctive nature of this private prison; 2) CDP Limache, due to logistical reasons; 3) CDP Quillota, due to a prison fire very close to the date planned for assessment in 2013; 4) "CDP Cochrane" and 5) "CDP Chile Chico," both due to their distant and inaccessible geographic location; 6) "CCP Punta Peuco," due to the fact that it houses former military personnel for crimes against human rights during Pinochet's regime and because it is already known for having better conditions; 7) "CCP Cordillera," closed by an executive decision from the presidency; and 8) "Carcel de Alta Seguridad," because of the distinctive, nature of the crimes (terrorism) its inmates committed.

presents the complete list of prison facilities ordered according to the number of recorded violent events in 2012.

TABLE 4: Descriptive characteristics of dependent and independent variables
(analytic sample n=75)

Variable	Observations	Mean	Std. Deviation	Minimum	Maximum
Number of violent events	75	7.9	16.9	0	91
Occupancy rate (%)	75	125.7	54.7	32.5	346.4
Mistreatment by guards (%)	75	.367	.203	0	.812
Program participation	75	1.63	.49	.67	2.67
% Solitary confinement	75	.327	.192	0	.75
Inmates' average age	75	34.2	2.53	29.8	45.3
Proportion highly engaged	75	.144	.120	0	.68
Inmate total population	75	569.8	837.4	13	5,095

In terms of the independent variables, the average occupancy rate of the prison system was 125.7, meaning that there were, on average, around 126 inmates in a space designed for housing only 100 (representing 25.7% overcrowding). The standard deviation of 54.7 suggests that there is considerable variation between establishments, and the range confirms this. Indeed, whereas it was possible to find prisons with occupancy rates as high as 287.2%, other facilities were only occupied at a 32.5% of their capacity.

In terms of the proportion of inmates that reported mistreatment from guards, the composite score indicates an average of 36.7% for mistreatment, meaning that, on average, more than one-third of inmates in Chile would have suffered from either physical and/or psychological mistreatment from guards in that facility. The standard deviation of 20.3% suggests a great deal of variation between establishments, and the range seems to reaffirm this, since no mistreatment

was reported by inmates in some prisons, while in others, reports of mistreatment reached proportions as high as 81%.

The involvement of inmates in prison programming was measured as a composite score with possible values ranging from 0 to 5, with zero meaning no participation, and 5 meaning participation in five programs during the length of stay of respondents in a particular prison. The observed mean of 1.63 suggests that one may expect a typical inmate to participate in 1 or 2 programs in every facility during his/her stay at that particular prison. The standard deviation of .48 indicates that there is little variation in program participation and seems to confirm the problems of unproductive free time and a lack of activities that affect Chilean prisons.

The percentage of inmates who report having been in solitary confinement in the facility suggests that about one third of respondents (32.7%) would have been in solitary confinement in that particular prison. The standard deviation (.19) suggests that such an average hides important variations by prison with regard to solitary confinement, since up to 75% of respondents in some prisons reported solitary confinement.

The average age in the analytic sample was 34.2 years, with a standard deviation of 2.5 years. Nevertheless, there were facilities housing inmates whose average age was 29.8 whereas others housed inmates who with the average age of 45.3 years.

The proportion of inmates assessed by the *Gendarmería* as "highly engaged" in criminal activities had a mean of 14.8%, but also showed important variations between establishments. Whereas some facilities housed no highly engaged inmates, in others, highly engaged inmates composed almost half of their population (47.1%).

In terms of the control variable, the total inmate population had an average value of 570 in the analytic sample, yet important variations in prison size were observed (with a standard

deviation of 837 individuals). Indeed, whereas some prisons were operating with as few as 13

inmates, many others housed more than 1,000 individuals.[9]

In terms of the associations between the independent and dependent variables, a

correlation matrix is employed to identify potential problems with multi-collinearity. Table 5

shows the results of the inter-correlation matrix using the Pearson's r statistic:

TABLE 5: Correlation Matrix (using Pearson's r) for the dependent and independent variables

	Violent events	Occupancy rate	Mistrea tment by guards	Program participation	% solitary confin.	Inmates' average age	% highly engaged	Total Inmate pop.	Rate of violent events* 1000
Violent events	1.00								
Occupancy rate	.218	1.00							
Mistreatment by guards	.417*	.211	1.00						
Program participation	-.083	-.402*	-.311*	1.00					
% solitary confinement	.296*	.303*	.735*	-.298*	1.00				
Inmates' average age	-.218	-.243*	-.518*	.238*	-.536*	1.00			
% highly engaged	.554*	.090	.490*	-.201	.449*	-.346*	1.00		
Total inmate population	.760*	.121	.474*	-.127	.334*	-.209	.573*	1.00	
Rate violent events*1000	.426*	.176	.243*	-.045	.309*	-.360*	.356*	.439*	1.00

NOTE: (*) indicates a significant value p<.05

Among the dependent and independent variables, the strongest bivariate correlation that

was observed was between total inmate population and violent events (r =.76), which anticipates

an influential effect of the population size on the occurrence of violent events. In addition, a

moderate correlation could be observed between the proportion of inmates classified as "highly

engaged" in criminal activities and the occurrence of violent events (r =.554). Another

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[9] The Santiago Penitentiary (CDP Santiago Sur) is a particular case as it holds more than 5,000 individuals and is one of the most emblematic, oldest, and largest prison in South America.

significant association was found between the proportion of inmates who reported mistreatment by guards and the number of violent events that happened in 2012 (r =.417). The last significant association between an independent and dependent variable was the correlation between the proportion of inmates in solitary confinement and violent events, whose r coefficient was .296.

In terms of the correlations between the independent variables, the highest, most significant correlation was between the proportion of inmates who reported having been in solitary confinement and the proportion of inmates who reported having suffered mistreatment by guards (r = .735). It has been argued that when the correlations among the independent variables exceeds the criterion of r >= 0.7, multi-collinearity may become problematic (Berry & Feldman, 1985; Wittink, 1988).

On the other hand, this high correlation was observed only among one pair of variables, not affecting the entire set of independent variables. Nevertheless, in order to clarify whether this high correlation may imply a problem for the model, it was necessary to apply a statistical technique called "variance inflation factor" [VIF]. The VIF statistic indicates the points where the standard error would be "inflated" considering the current degree of multicollinearity between the variables. An acceptable "rule of thumb" for a VIF value that would not create excessive problems is 10. The results of VIF are shown in Table 4.

TABLE 6: *Variance Inflation Factor (VIF)*		
Variable	*VIF*	*1/VIF*
Mistreatment by guards	2.45	0.407640
% solitary confinement	2.45	0.408362
Inmates' average Age	1.57	0.635452
%highly-engaged criminal act	1.44	0.696404
Program participation	1.28	0.782896
Occupancy Rate	1.27	0.788856
Mean VIF	1.74	

The results for the VIF statistic indicate that there should not be multi-collinearity problems between the independent variables because neither the highest value of VIF nor the observed mean value of VIF value exceeded the most conservative acceptable limit of VIF=4.

In terms of the rest of the independent variables, there was a moderately significant correlation between the total inmate population and the proportion of inmates classified by the *Gendarmería* as "highly engaged" in criminal activities (r =.573). Two other independent variables found to be positively correlated were the inmate total population and inmates reporting mistreatment by guards (r = .474), and an additional positive correlation was found between inmates reporting mistreatment by guards and the proportion of inmates classified as highly engaged in criminal activities (r =.490). On the other hand, significant negative associations were found between the average age of inmates and (1) the proportion of inmates in solitary confinement (r = -.536) and (2) the proportion of inmates reporting mistreat by guards (r = -.518).

Given that none of these other correlations between independent variables exceeded the criterion of r > 0.7, we can assume that multicollinearity would not be problematic for the estimation of models of violent events.

4.2 Multivariate Analyses

Figure 3 (below) shows the distribution of the dependent variable violent events by facility. Among the 75 facilities in the analytic sample, 48 had reports on violence for 48, with 27 facilities registering no violent incidents in 2012. Given that the dependent variable is over-dispersed and positively skewed, with many facilities reporting zero incidents during the observation period, data will be analyzed using negative binomial regression.
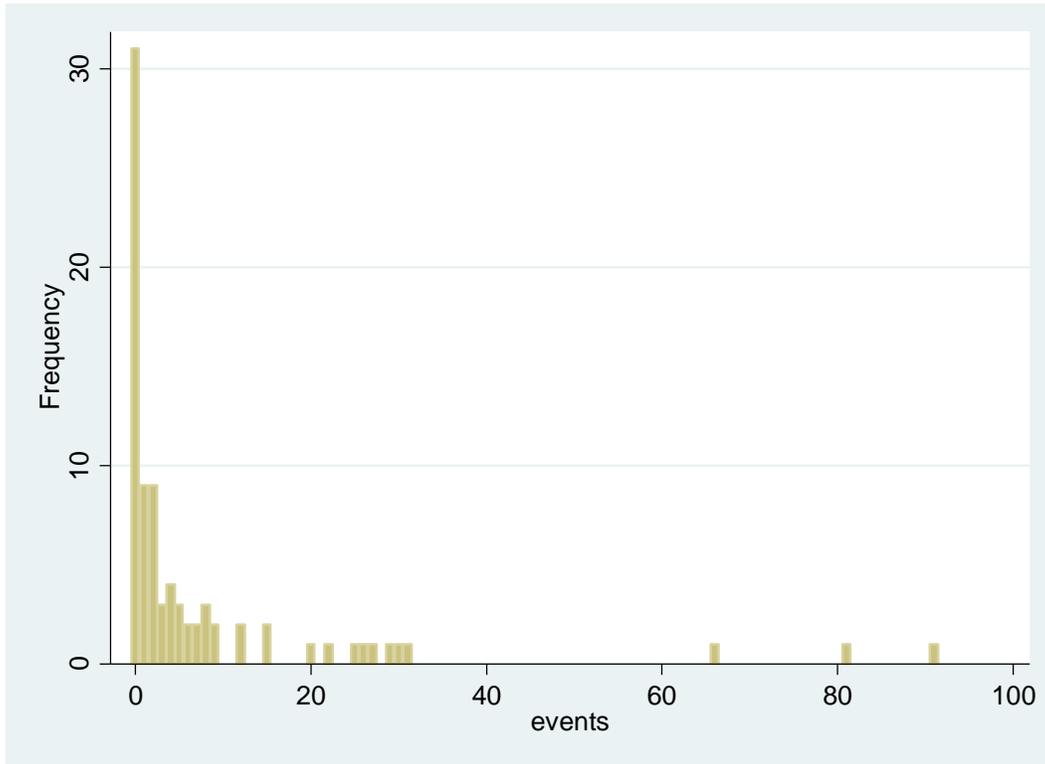
The main research questions that guide this dissertation seek to identify correlates of prison violence in Chilean prison in 2012. In order to do so, the dependent variable (violent events) was modeled by predictor variables representing three theories of prison violence: the deprivation, the administrative-control, and the importation theories. The central idea was to examine how much each model could separately account for variation in violent events in order to analyze and contrast the three models at the same time. Thus, four different models were conducted to separately test the three theories of prison violence aforementioned and to analyze what happened when the different theories are simultaneously considered.

Results for Model 1 are shown in Table 7. Here, the deprivation model of prison violence was tested by including two variables representative of such an approach—occupancy rate and mistreatment by guards—and adjusting for inmate population size.

TABLE 7: Model 1 Deprivation Theory						
Negative Binomial Regression				Number of Obs = 75		
				LR χ^2 (3) = 55.92		
Dispersion = mean				Prob > χ^2 = 0.0000		
Log Likelihood = -177.996				Pseudo R2 = 0.1358		
Events	IRR	Std. Error	Z	P> z	[95% Confidence Interval]	
Occupancy Rate	1.0077	.0029	2.62	0.009	1.0019	1.0135
Mistreatment guards (*100)	1.021	.0093	2.27	0.023	1.0028	1.0395
Total inmate population	1.0012	0.00026	4.74	0.000	1.0007	1.0017
Constant	.2775	.1439	-2.47	0.013	1.0037	.7671
Lnalpha	.2263	.2331			-.2305	.6832
Alpha	.1254	.2923			.794	1.980
Likelihood-ratio test of alpha = 0:			chibar2(01) = 382.64		Prob>Chibar2 = 0.000	

The results from negative binomial regression for Model 1, which aimed to test the deprivation theory of prison violence, show that the model was statistically significant (LR χ^2= 55.92, p=0.000), meaning that at least one of the regression coefficients would not be equal to zero (ats.ucla.edu[10]) or that there would be an effect by the predictor variables on the occurrence of violent events.

However, negative binomial regression gives a pseudo R-squared measure whose interpretation cannot be analogous to the R squared measure used for goodness of fit in OLS regression because maximum likelihood estimates are arrived at through an iterative process (citation). Nevertheless, the McFadden's pseudo-R squared can be used to compare different models using the same dataset. Thus, higher values of the pseudo-R squared would indicate a

better fit for that model over the one with a lower pseudo-R squared (ats.ucla.edu[11]). The pseudo

R-squared value for Model 1, which tested the deprivation hypothesis of prison violence, was

13.58%.

Let us recall that, in order to simplify the interpretation of findings from negative

binomial regression models, incidence rate ratios (IRR) are re-shown instead of negative

binomial coefficients. Thus, in terms of the variables included in Model 1, the occupany rate

variable had a positive, statistically-significant IRR coefficient of 1.0077 (p=0.009), meaning

that that there would be a positive association between overcrowding and the occurrence of

violent events; more precisely, this means that for each additional one-percent increase in the

occupancy rate a prison had, it is expected an increase in the rate of violent events by 0.8%

(IRR=1.0077).

The mistreatment by guards variable *(*100)* showed an IRR value of 1.021 (p=0.023),

which was statistically significant. This means, first of all, that a positive association was found

between the proportion of inmates reporting having suffered mistreatment by guards in a

particular facility and the occurrence of violent events in that prison. More precisely, this means

that for each additional 1% increase in the aggregate report of mistreatment at a prison,[12] there is

an expected 2.1% increase in the rate of violent events.

Finally, the log-transformed-over-dispersion parameter (/lnalpha) was estimated. If this

alpha value is close to zero, then a Poisson model would have been more appropriate to use than

a negative binomial regression model. On the other hand, if the likelihood ratio test showed an

alpha other zero, a negative binomial regression model would be more suitable for analyzing the

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[11] http://www.ats.ucla.edu/stat/mult_pkg/faq/general/Psuedo_RSquareds.htm
[12] Let us recall that mistreatment by guards is an average measure of physical and psychological mistreatment by guards reported by inmates who responded to SURVEY in 2013 at 75 facilities.

data. In Model 1, the chi-squared value was 382.64 with one degree of freedom (p=0.000), which suggests that alpha is non-zero and that the negative binomial model was more appropriate than the Poisson model for analyzing these data. This procedure was repeated for each of the models, and the negative binomial regression was always found to be the appropriate technique.

Following the same strategy, Model 2 tested the administrative-control model and its two variables: program participation and the proportion of inmates in solitary confinement (multiplied by 100), adjusting for inmate total population, as well. The results of the model are presented in Table 8:

TABLE 8: Model 2 Administrative-Control Theory						
Negative Binomial Regression				Number of Obs = 75 LR chi2 (2) = 67.41		
Dispersion = mean Log Likelihood = -172.25				Prob > chi2 = 0.0000 Pseudo R2 = 0.1636		
Events	IRR	Std. Error	Z	P> z	[95% Confidence Interval]	
Program participation	.472	.130	-2.71	0.007	.2743	.8122
% in solitary confinement (*100)	1.033	.0082	4.10	0.000	1.017	1.049
Total Inmate Population	1.0012	.0001	6.47	0.000	1.0008	1.0016
Constant	1.625	.901	0.88	.381	.548	4.819
/lnalpha	-.024	.248			-.511	.462
Alpha	.975	.242			.599	1.587
Likelihood-ratio test of alpha = 0:			chibar2(01) = 320.94		Prob>Chibar2 = 0.000	

The results from negative binomial regression for Model 2, which aimed to test the administrative-control theory of prison violence, showed that the model was statistically significant (LR χ^2= 67.41, p=0.000), meaning that at least one of the regression coefficients would not be equal to zero (web citation[13]) or that there would be an effect by the predictor variables from the administrative-control model on the occurrence of violent events.

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[13] Source: http://www.ats.ucla.edu/stat/stata/output/stata_nbreg_output.htm

In addition, the pseudo R-squared measure for Model 2 that tested the administrative-control hypothesis of prison violence was 16.36%, which was a bit higher than the pseudo R-squared value for Model 1; this difference suggests that, when both the deprivation and the administrative-control models are compared, the administrative-control model would have a slightly higher explanatory power for the occurrence of violent events than the deprivation hypothesis.

In terms of the variables included in Model 2, the variable program participation had an IRR coefficient of .472 (p=0.007), meaning that there would be a negative association between inmates' participation in prison programming and the occurrence of violent events. More precisely, this means that for each additional program that is implemented in a prison *for all inmates*,[14] it is expected that there will be a decrease in the rate of violent events by approximately 53% (IRR=.472).

Regarding the variable proportion of inmates in solitary confinement *(*100)*, there was a statistically significant value of IRR at 1.033 (p=0.000). This means, first of all, that there was found a positive association between the proportion of inmates who reported having suffered mistreatment by guards in a particular facility and the occurrence of violent events in that prison. More precisely, this suggest that for each additional one-percent increase in the aggregate report of inmates in solitary confinement at a prison, there is an expected an increase in the rate of violent events by 3.3%.

Table 9 (below) shows the results of Model 3, which tested the importation hypothesis of prison violence by considering inmates' average age at the facility level and the proportion of

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[14] Since program participation was defined as a composite score on the *total average number of programs* that are available for all (surveyed) inmates in a particular facility, a one-unit change of this composite score supposes an average increment of one program in that particular prison for *all inmates*. Let us recall that the actual values of this composite score ranged from 0.67 to 2.6 in the analytic sample of 75 facilities.

inmates classified by the *Gendarmería* as "highly engaged" in criminal activities (multiplied by 100), while controlling for the total inmate population.

The results from the negative binomial regression for Model 3 showed that the model was statistically significant (LR χ^2= 78.23, p=0.000), meaning that at least one of the regression coefficients would not be equal to zero (web citation[15]) or that there would be an effect from the predictor variables in the importation model on the occurrence of violent events.

TABLE 9: Model 3 Importation Theory						
Negative Binomial Regression				Number of Obs = 75 LR chi2 (3) = 78.23		
Dispersion = mean Log Likelihood = -166.84				Prob > chi2 = 0.0000 Pseudo R2 = 0.1899		
Events	IRR	Std. Error	Z	P> z	[95% Confidence Interval]	
Age (Average)	.701	.061	-4.04	0.000	.590	.833
% of highly-engaged inmate (*100)	1.049	.0168	2.99	0.003	1.016	1.08
Total Inmates Population	1.0008	.0002	3.99	0.000	1.0004	1.0012
Constant	139238.8	416877.8	3.96	0.000	393.80	4920000
/lnalpha	-.1702	.2493			-.659	.3184
Alpha	.8434	.2103			.5173	1.375
Likelihood-ratio test of alpha = 0:			chibar2(01) = 246.34		Prob>Chibar2 = 0.000	

In addition, the pseudo R-squared measure for Model 3 (testing the importation hypothesis of prison violence) was 18.99%, a higher value in comparison to both the deprivation and the administrative-control model (Models 1 and 2) . This finding suggests that importation model would have a higher explanatory power for the occurrence of violent events than the other two hypotheses.

In terms of the variables included in Model 3, the variable inmates' average age had a statistically-significant IRR coefficient of .701 (p=0.000), meaning that there would be a

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[15] Source: http://www.ats.ucla.edu/stat/stata/output/stata_nbreg_output.htm

negative association between program inmates' age and the occurrence of violent events in a prison facility. More precisely, this means that for each additional increment of a inmates' average age a prison, there is an expected decrease in the rate of violent events by approximately 30% (IRR=.701).

Regarding the variable proportion of inmates in solitary confinement *(*100)*, there was a statistically significant value of IRR at 1.049 (p=0.003), suggesting that there would be a positive association between the proportion of inmates classified as highly engaged in criminal activities (a proxy for criminal history) and the occurrence of violent events in that particular prison. More precisely, the IRR value indicates that for each additional one-percent increase in the proportion of highly engaged inmates housed at a prison, there is an expected increase in the rate of violent events by 4.9%. Table 10 shows the results from Model 4, the Full Model, which included variables from the deprivation, from the administrative-control and from the importation models.

TABLE 10: Model 4 Full Model						
Negative Binomial Regression				Number of Obs = 75		
				LR chi2 (2) = 87.41		
Dispersion = mean				Prob > chi2 = 0.0000		
Log Likelihood = -162.25				Pseudo R2 = 0.2122		
Events	IRR	Std. Error	Z	P> z	[95% Confidence Interval]	
Occupancy rate	1.0032	.0028	1.11	0.267	.9975	1.0089
mistreatment by guards (*100)	.9991	.0090	-0.10	0.923	.9814	1.0170
Program participation	.688	.1986	-1.29	0.195	.3907	1.2118
% in solitary confinement (*100)	1.015	.0097	1.58	0.114	.9963	1.0344
Average Inmate Age	.786	.0679	-2.78	0.005	.6641	.9315
% highly-engaged inm.	1.042	.0149	2.89	0.004	1.0134	1.0719
Total Inmate Population	1.0008	.0002	4.20	0.000	1.0004	1.0012
Constant	2203.26	6564.82	2.58	0.010	6.409	757353.3
/lnalpha	-.443	.272			-.977	.091
Alpha	.642	.175			.376	1.095
Likelihood-ratio test of alpha = 0			chibar2(01) = 196.85		Prob>Chibar2 = 0.000	

The results from the Model 4, which aimed to test all together the deprivation, the administrative-control, and the importation theories of prison violence (along with the control variable), showed an statistically significant model (LR χ^2= 87.41, p=0.000), meaning that at least one of the regression coefficients would not be equal to zero (ats.ucla.edu[16]) or that there would be an effect from the predictor variables on the occurrence of violent events.

In terms of the variables included in the Full Model, only three of the indicators were found to be significant: inmates' average age, proportion of inmates classified as highly-engaged in criminal activities, and total inmate population. The first two variables were related to the importation theory of prison violence, and the third was the control variable.

The first significant variable in the Full Model, inmates' average age, showed an IRR of .786 (p=0.005), indicating a negative association between inmates' average age and the occurrence of violent events in a prison facility. More precisely, this means that for each additional increment in inmates' average age at a prison, there is an expected decrease in the rate of violent events by approximately 30% (IRR=.701), while holding the rest of the variables constant. In other words, a higher concentration of younger inmates is a predictors of the occurrence of violent events.

The second significant variable, the proportion of inmates classified by the *Gendarmería* as highly-engaged in criminal activities *(*100)*, showed a statistically-significant IRR of 1.042 (p=0.004), indicating a positive association between the proportion of inmates classified as highly engaged in criminal activities (a proxy for criminal history) and the occurrence of violent events in that particular prison in Chile. More precisely, the IRR value indicates that for each

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[16] Source: http://www.ats.ucla.edu/stat/stata/output/stata_nbreg_output.htm

additional one-percent increase in the proportion of highly engaged inmates housed at a prison, the rate of violent events it is expected to increase by 4.2%. In other words, prisons with higher proportions of highly-engaged inmates would be at more risk of having violent events.

The third significant variable of the Full Model was the control variable, total inmate population, with an IRR of 1.0008 indicating a positive association between the number of prisoners at a facility and the expected occurrence of violent events. In addition, the IRR suggests that for each additional inmate a prison houses, the rate of occurrence of violent events can be expected to increase by 0.08%. In other words, for each additional 100 individuals that enter into a certain prison, it is expected that the rate of violent events would increase by 8%.

Thus, the results of the Full Model seem to lend preliminary support for the importation model of prison violence, since two out of three of the significant variables were representative of the importation model. Nevertheless, it is important to notice that the pseudo R-squared measure for Model 4 was 21.22%, which is the highest pseudo R-squared value in comparison to the previous models (Models 1, 2 and 3). This value suggests, therefore, that the three theories could be complementary explanations for prison violence rather than competing ones.

In sum, results from the Full Model mean that even after controlling for other variables and adjusting for prison population size, prisons with either higher concentrations of younger inmates or with higher concentrations of highly engaged prisoners should have a higher number of violent events in a year. In addition, in larger prisons (those which house more inmates) one would also expect a higher number of violent events to happen.

The other variables—occupancy rate, the proportion of inmates reporting mistreatment by guards, program participation, and the proportion of inmates who report having been in solitary confinement—were non-statistically significant in the Full Model.

In order to facilitate an interpretation of the results presented in the Full Model, two additional procedures were conducted: marginal effects and margins plot. Marginal effects were applied to estimate the changes in the prediction of violent events when changes in a specific independent variable are applied, while holding the rest of the independent variables constant at a fixed value. Cameron & Trivedi refer to marginal effects as "partial effects" and describe them as follows: "A ME [marginal effect], or partial effect, most often measures the effect on the conditional mean of y of a change in one of the regressors, say X_k. In the linear regression model, the ME equals the relevant slope coefficient, greatly simplifying analysis. For nonlinear models, this is no longer the case, leading to remarkably many different methods for calculating MEs" (p. 333). In this study, the rest of the independent variables were fixed at their means values. This was done by employing the command <margins> that is present in Stata 13.0 (Stata Corp, 2013).

In addition, the command <marginsplot>, also available in Stata 13.0 (StataCorp, 2013), was applied in order to give a graphic representation of the changes in the predictions of violent events, while changing the values of a certain independent variable and holding the rest of the independent variable set constant (at their means, in this case). This representation is helpful not only for visualizing the predicted count of the mean value for violent events in each facility, but also for seeing the 95% confidence interval around such a prediction.

Thus, results from Table 11 (net page) show the predicted counts for violent events at various levels of occupancy rates, while holding the other independent and control variables constant at their means.

TABLE 11: Predictive Counts for Violent Events at various levels of Occupancy Rates

Predictive Margins Model VCE: OIM						Number of observations: 75	
Expression: Predicted Number of Events, predict ( )							
Delta Method							
		Margin	Std. error	Z	p>Z	95% Confidence Interval	
1._at	Occupancy = 0	7.12	3.55	2.01	0.045	.161	14.08
2._at	Occupancy = 25	7.17	3.45	2.23	0.026	.938	14.49
3._at	Occupancy = 50	8.36	3.38	2.47	0.013	1.73	14.98
4._at	Occupancy = 75	9.05	3.46	2.71	0.007	2.50	15.61
5._at	Occupancy = 100	9.81	3.39	2.89	0.004	3.15	16.47
6._at	Occupancy = 125	10.63	3.58	2.96	0.003	3.6	17.67
7._at	Occupancy = 150	11.52	3.96	2.91	0.004	3.75	19.29
8._at	Occupancy = 175	12.48	4.55	2.74	0.006	3.56	21.41
9._at	Occupancy = 200	13.53	5.38	2.51	0.012	2.98	24.07
10._at	Occupancy = 225	14.66	6.45	2.27	0.023	2.01	27.31
11._at	Occupancy = 250	15.88	7.78	2.04	0.041	.635	31.13
12._at	Occupancy = 275	17.21	9.3	1.84	0.066	-1.15	35.58
13._at	Occupancy = 300	18.65	11.24	1.66	0.097	-3.38	40.68

Results from Table 11 show the computed predictive margins for violent events when occupancy rates are modified and the rest of the predictor and control variables are held constant. Predictive margins were computed based on occupancy rates ranging from 0% up to 300% (an uncommon, but real value for a couple of the prisons in the country). The margins for violent events varied from about 7 up to almost 19 events. As the occupancy rate increased, so did the predicted counts for violent events, yet the margins were not significant when the occupancy rate was extremely high (275% or above). These results are graphically displayed in Figure 4 (next page).

Here, the 95% confidence intervals for the predicted margins of violent events remained relatively tight when occupancy rates ranged between 25% and 150%. Once occupancy rate surpasses 150%, the confidence intervals of the prediction expand both in lower bound and in upper bound and the predictions, though still significant, become much wider and imprecise.

FIGURE 4: Predictive Margins for violent events at various levels of occupancy rates
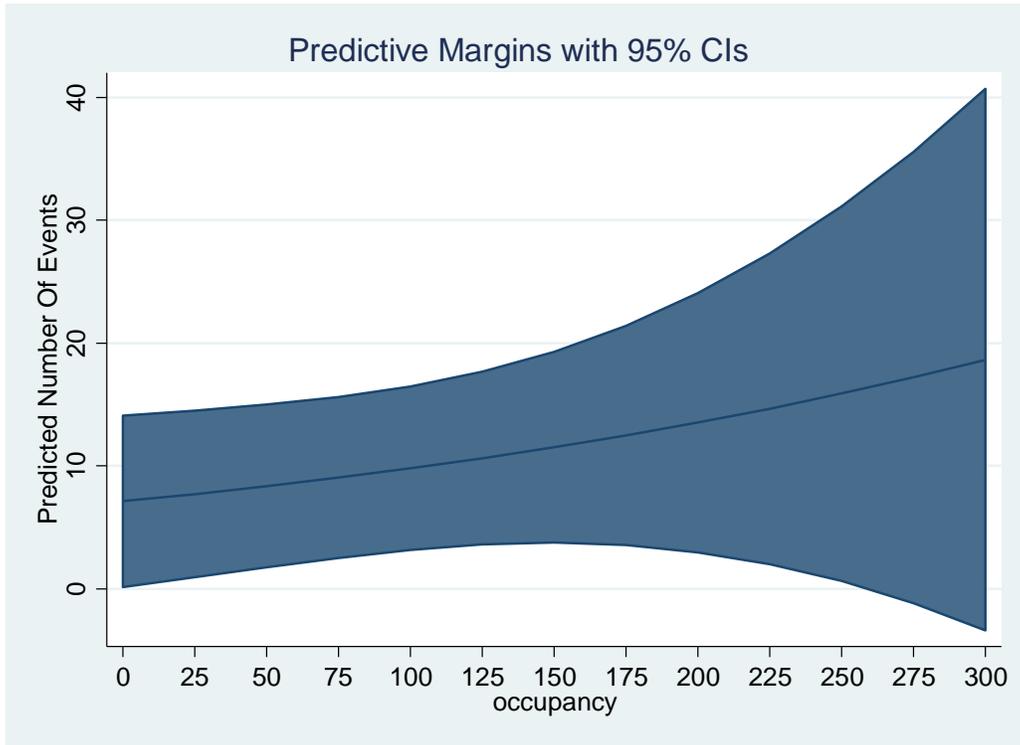
In other words, when modifying the occupancy rate and holding the rest of the predictor and control variables constant at their means (for a "typical prison"), one may expect that the occurrence of violent events would appear as shown in Figure 4 (above). Let us recall that a "typical prison" would have the following traits: 36% of inmates reporting mistreatment by guards; half of inmates participating in one program and the other half in two (mean program participation=1.63); about one third of inmates (32.7%) having been in solitary confinement; an average inmate age of 34.2 years; and 14.4% of the prison population classified as "highly engaged" in criminal activities.

Results from Table 12 (next page) show the predicted counts for violent events at various levels of average inmate ages, while holding the other independent and control variables constant at their means.

		Margin	Std. error	Z	p>Z	95% Confidence Interval	
TABLE 12: Predictive Counts for Violent Events at various inmates' average ages							
Predictive Margins Model VCE: OIM						Number of observations: 75	
Expression: Predicted Number of Events, predict ( )							
Delta Method							
		Margin	Std. error	Z	p>Z	95% Confidence Interval	
1._at	Age = 28	44.7	31.3	1.43	0.154	-16.7	106.1
2._at	Age = 29	35.1	22.3	1.57	0.116	-8.6	78.9
3._at	Age = 30	27.6	15.9	1.73	0.083	-3.5	58.9
4._at	Age = 31	21.7	11.4	1.91	0.057	-.61	44.1
5._at	Age = 32	17.1	8.2	2.07	0.038	.92	33.2
6._at	Age = 33	13.4	6.1	2.21	0.027	1.4	25.4
7._at	Age = 34	10.5	4.6	2.28	0.023	1.4	19.7
8._at	Age = 35	8.3	3.6	2.26	0.024	1.1	15.5
9._at	Age = 36	6.5	3.0	2.17	0.030	.62	12.4
10._at	Age = 37	5.1	2.5	2.02	0.044	.15	10.1
11._at	Age = 38	4.0	2.1	1.85	0.064	-.24	8.3
12._at	Age = 39	3.1	1.8	1.68	0.093	-.53	6.9
13._at	Age = 40	2.5	1.6	1.52	0.128	-.72	5.7

Results from Table 12 show the computed predictive margins for violent events when inmates' average ages are modified and the rest of the predictor and control variables are held constant. Predictive margins were computed based on average ages ranging from 28 to 40 years. The margins for violent events varied from about 45 to almost 3 events. As the age increased, the predicted counts for violent events decreased, yet the margins were significant only between the average ages of 32 and 37. These results are graphically displayed in Figure 5 in next page.

The 95% confidence intervals for the predicted margins of violent events remained wide when inmates' average age ranged between 28 and 30 years. Once average reached 31 years, the confidence intervals of the predicted counts became tighter.
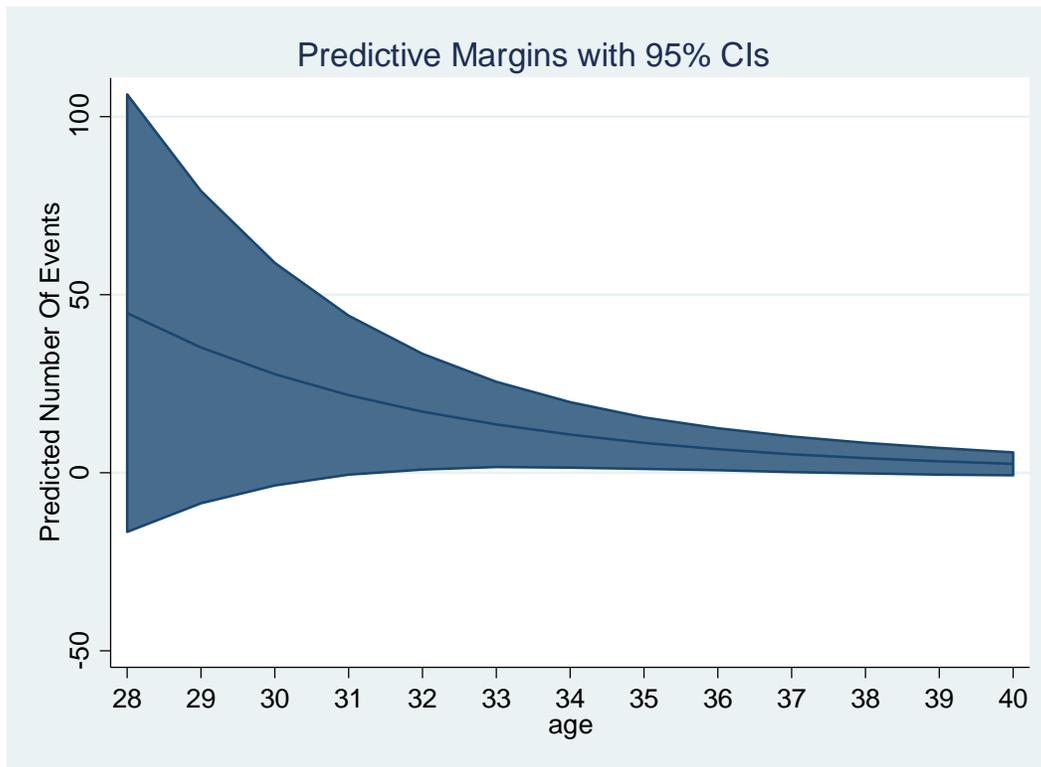
In other words, when modifying the inmates' average age and holding the rest of the predictor and control variables constant at their means (in a "typical prison"), one can expect that occurrence of violent events would appear as shown in Figure 5. Let us recall that a "typical prison" would have the following traits: it would have an occupancy rate of 126% (or 26% overcrowding); 36% of inmates would report having experienced mistreatment by guards; half of inmates would participate in one program and the other half in two (mean program participation=1.63); about one third of inmates (32.7%) would have been in solitary confinement in that facility; and 14.4% of the population would be classified as highly engaged in criminal activities.

Results from Table 13 show the computed predictive margins for violent events when the proportion of inmates classified as "highly engaged" in criminal activities varies, for the "typical prison" (meaning one that has an occupancy rate of 126% [or, an average overcrowding of 26%];

36% of inmates report having experienced mistreatment by guards; half of inmates participate in one program and the other half in two [program participation=1.63]; about one third of inmates (32.7%) have been in solitary confinement in that facility; and an inmates' average age is 34.2 years).

		Margin	Std. error	Z	p>Z	95% Confidence Interval	
1._at	% high = 0	3.3	1.8	1.79	0.074	-.32	6.9
2._at	% high = 10	5.0	2.2	2.25	0.025	.64	9.4
3._at	% high = 20	7.6	2.6	2.84	0.005	2.3	12.8
4._at	% high = 30	11.5	3.4	3.32	0.001	4.7	18.3
5._at	% high = 40	17.4	5.4	3.19	0.001	6.7	28.1
6._at	% high = 50	26.3	10.1	2.60	0.009	6.5	46.2
7._at	% high = 60	39.9	19.4	2.05	0.040	1.8	77.9
8._at	% high = 70	60.3	36.6	1.65	0.099	-11.4	132.1

TABLE 13: Predictive Counts for Violent Events at various proportions of inmates highly-engaged in criminal activities (multiplied by 100)

Predictive Margins — Model VCE: OIM — Number of observations: 75

Expression: Predicted Number of Events, predict ( )

Delta Method

Predictive margins were computed based on various combinations of proportions, ranging from 0% (small prisons usually having no highly engaged inmates, since small facilities do not meet the security criteria for housing them) to up to 70% (the usual case for some large, private prisons). The mean value of the predictions for violent events (or margin) varied from about 3 up to almost 60 events, where almost all of the values are significant except for the first and the last ones. As the proportion of highly engaged inmates increased, so did the predicted counts for violent events, showing a positive association between the occurrence of violent events and inmates' criminal history.

Figure 6: Predictive counts for various proportions of inmates highly-engaged in criminal activities
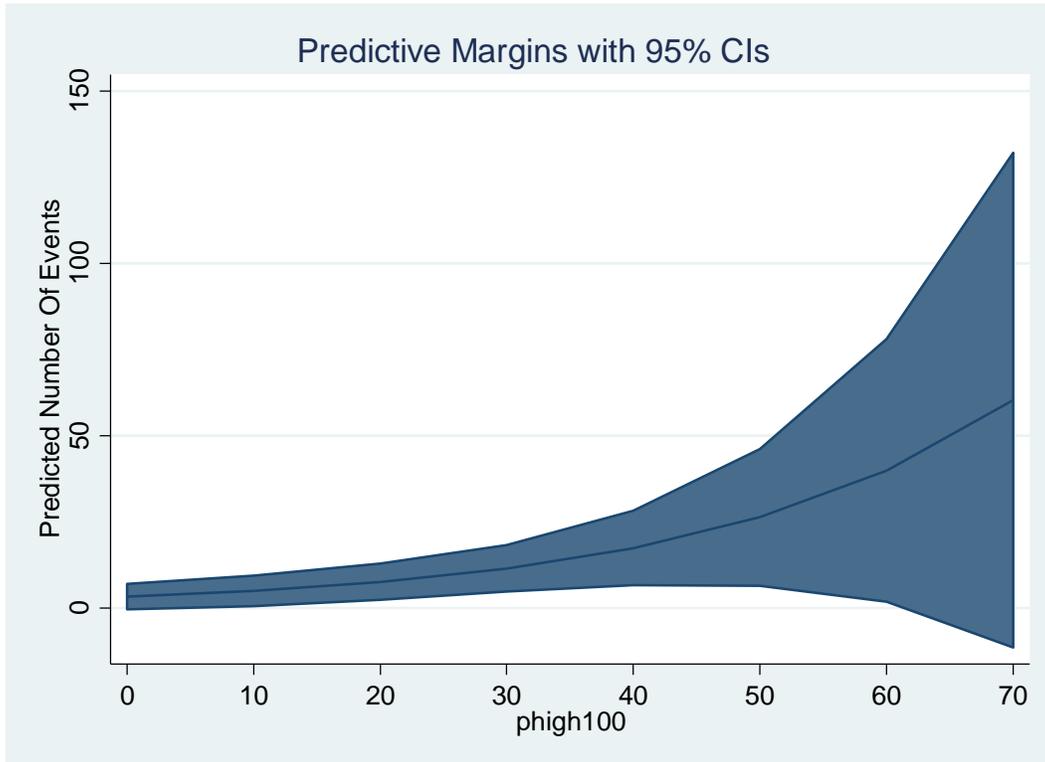
At the same time, as shown in Figure 6, the 95% confidence intervals for the predicted margins of violent events remained relatively tight when the proportion of highly-engaged inmates ranged between 0% and 30%. Beyond that percentage, the predicted count sharply increased and the margins of violent events became wider.

Results shown in Figure 7 (next page) illustrate the predictive margins for violent events when the control variable, the total inmate population, is modified and the independent variables are held constant at their mean values, i.e. a prison that with an occupancy rate of 126% (or, an average overcrowding of 26%); 36% of inmates reporting having experienced mistreatment by guards; half of inmates participating in one program and the other half in two (program participation=1.63); one third of inmates (32.7%) having been in solitary confinement in that facility; and an average inmate age of 34.2 years.

Figure 7: Predictive margins for violent events at various levels of total inmate population
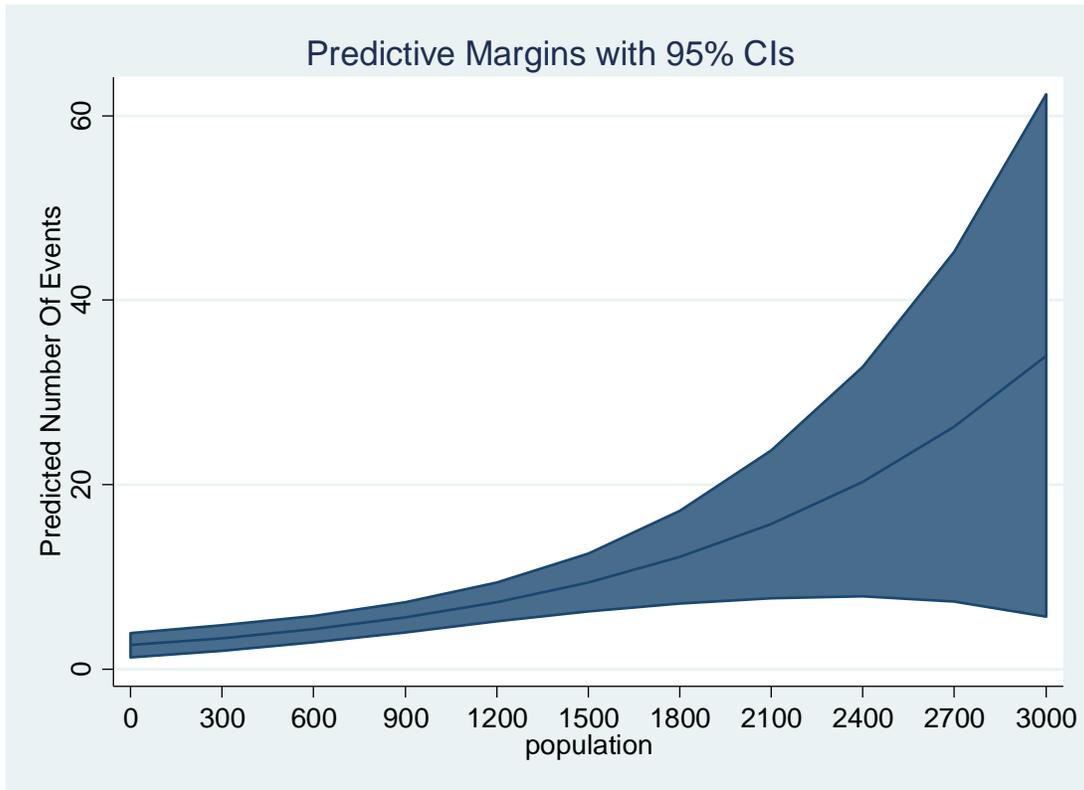
Results from Figure 7 show that as the total inmate population increased (with the other predictor variables held constant), so did the predictive margins for violent events. Small prisons showed very small predictive margins, too, but when population size reached 1,500 individuals, the predicted counts sharply increased and the confidence intervals broadened as well.

Chapter V

Conclusion and Discussion

Scholars on prison violence have argued that violence behind bars will be caused by different factors. Some have argued that the forced deprivations to which inmates are subjected while incarcerated will cause violence, while others have maintained that poor prison management and other organizational-related factors will be the cause of violence inside prisons. A third group has reasoned that the roots of prison violence can be located in the background and history prior to incarceration that inmates bring to prison. Nevertheless, up to the present date, no previous research had systematically examined the topic of prison violence in Chilean prisons, despite some anecdotal evidence or statistical records on the annual number of deaths or injured inmates, none of which incorporates any analysis of covariates.

Thus, using administrative data from 75 Chilean facilities, this dissertation studied the correlates of violent events that were officially registered as such by the *Gendarmería de Chile* in 2012. The main goals of this research project were to examine what variables were the main correlates of violent events in Chilean prisons, which model of prison violence (from among deprivation, importation or administrative-control theories) had more empirical support when competing models were analyzed altogether, and how the correlates of prison violence change when the influence of population size is taken into account. In sum, the findings of this research offer a first initial account for prison violence in Chilean prisons.

In line with the study's expectations, findings reveal that the three explanations for prison violence (deprivation, administrative-control, and the importation theories) seem to be complementary explanations rather than competing ones, at least for the Chilean case. Indeed, when models of prison violence were separately analyzed (Models 1, 2 and 3), each model showed pseudo various R-squared values that ranged between 13.58% and 18.99%, which did not seem to represent a major dominance in terms of the degree to which each model accounted for variations in violent events. In addition, the variables representing each theory were all found to be significantly associated with violent events while running models 1, 2, and 3 separately.

In addition, in the Full Model, inmates' average age remained as a significant predictor of violent events, even after including variables from the other two theories and while also controlling for population size. Inmates' age and violence were found to be negatively associated, which was consistent with previous studies on prison violence in developed countries, as well as with the daily experience of officers, guards, and my own visits to dozens of Chilean prisons in 2013. Through informal interviews and conversations that the author had with prison officers and guards, it became apparent that there are some changes in the inmate composition in recent years in Chile in terms of, for example, inmates' average age and that they would be more prone to violent behavior, even among their fellow prisoners: these days –they said—it is more common to see younger inmates arriving to prison facilities. In this regard, an older prisoner said: *"things have changed a lot here… in the past, we had rules: just robbing, no killing if unnecessary (…) today, youngsters kill people for a few bucks and they have no respect for authority…they just came and think they can do whatever they want to…"* (inmate in his 40's, Penitentiary of Santiago).

In addition, and in line with the study's expectations, the proportion of inmates identified by the *Gendarmería* as highly engaged in criminal behavior, used here as a proxy variable for criminal history, was also found to be positively associated with the occurrence of violent events in the Full Model in our sample. Using Drury and De Lisi's (2010) expression, findings supported the idea that "the past is prologue" for current violence, at least for the dependent variable here considered. Despite that *Gendarmería* itself has criticized this indicator for being only self-reported, it seems that it is still helpful for classification purposes.

In line with my expectations, too, the total inmate population was positively associated to the occurrence of violent events, and its influence resisted the statistical influence of many other variables. One explanation for this positive association could be related to the competition for scarce prison resources that takes places as the inmate population increases. A complementary explanation for this positive association could be that as the prison population increases, prison life becomes more anonymous and inmates may feel that their needs are not met by an increasingly more-distant administration not just in terms of food or clothes but also in terms of "attention" and opportunities to be recognized as an individual human being. In this regard, some inmates used to tell me that *"here, guards do not talk to you... they just open up and close the cage's doors but are not interested in how you are or who you are..."* (young inmate, southern, mid-size Chilean prison).

On the other hand, my hypotheses for the administrative-control theory of prison violence maintained that either coercive controls (the proportion of inmates in solitary confinement) and/or remunerative controls (inmates' participation in prison programming) were both going to be significant predictors of violence, with positively associations in the first case and negative associations in the second. Nevertheless, and contrary to my expectations, neither program

participation nor the proportion of inmates in solitary confinement were significant predictors of violence in the Full Model.

It is possible that the non-significant coefficient for program participation may have had to do with the composite score employed for developing such a measure; indeed, this study created a composite score for program participation by simply combining responses on six programs of very different nature, including sports, job skills, access to an in-prison paid job, arts, psycho-social intervention, and a high school in-prison program (i.e., educational programs). These different programs may serve different purposes, and it's possible that participation in all of them may not necessarily serve to reduce violence or to tackle a criminogenic need (Andrews, Bonta & Wormith, 2011). The six programs may all have the common characteristic of occupying time, but there is a difference between individuals "using" time versus those "filling in" time (Alzúa, Rodrigues & Villa, 2008), not to mention the limited access of inmates to in-prison programs or concern over the internal consistency of these programs, which has been identified as a pre-requisite for program success (Andrews & Bonta, 2006). A complementary, possible explanation for this lack of significance is the relatively low proportion of inmates having access to a *decent* program, meant by that an structured, monitored set of activities with a purpose of developing certain skills and/or prepare inmates for their future release. Indeed, in Chilean prisons, program access to a *decent program* is pretty much of a luxury and, thus, this variable operates in practice more of a *constant* rather than as a *variable* in the prison system. In this regard, the Chilean Institute of Human Rights (INDH, 2012) has criticized current policies that associate job skills and working opportunities to good behavior, whereas the literature on offenders' treatment has suggested precisely that programs *should*

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target most difficult inmates in order to reduce future recidivism (Andres, Bonta & Wormith, 2011).

The non-statistical significance of the proportion of inmates in solitary confinement may be due to the fact that the use of solitary confinement is widespread in many Chilean facilities, generally under inhumane conditions. Indeed, the practice is often neither "solitary" (the author of this study himself observed up to six inmates locked up in a 3 meter- by 3 meter-cell), nor "confinement" (because the expression used to name these cells really means "punishment cells," and they were such in practice). Alternatively, this lack of significance may be explained by the use of solitary confinement as a response by guards (and/or by instructions from prison officers or higher-ups) to a violent environment and, thus, in a cross-sectional study, it is difficult to clearly figure out the direction of these two variables (use of solitary confinement and violent events).

Besides, the two variables representing the deprivation hypothesis of prison violence (occupancy rate and mistreatment by guards) were found to be non-significantly associated with prison violence in the Full Model. The non-significance of occupancy rate may perhaps have to do with the fact that overcrowding is widespread across Chilean prisons. Indeed, overcrowding and infrastructure problems were reported by inmates and also corroborated by the principal investigator during inspection visits throughout the country, with rare exceptions. These problems affect the entire system (the average occupancy rate supposedly reaches 127%), but there were great variations from prison to prison (occupancy rates in some cases rise above 300%). Improvement for overcrowding probably needs to be addressed by the central government, in the mid- or long-term, since it may be necessary either to build more prisons or to make legal modifications so that fewer people are sent to prison. Nevertheless, the way in

which the mere concept of "capacity according to design" (which serves as the basis for the subsequent definition of the term "overcrowding") has been defined may be subject to more public and academic discussions, since it might be the case that it is inconsistent with international standards for the humane treatment of prisoners. In this regard, it may be illustrative a visit to the Chilean prison system that a group of British experts from the Inspectorate of Prisons conducted in October 2013, when they lectured on their monitoring work and showed photographs of "the worst facility in the country (UK)"; the Chilean audience immediately noticed that even the worst UK prison had higher standards of space and comfort than the best Chilean facility.

In addition, perhaps some of the reasons why the proportion of inmates reporting mistreatment by guards was not significant had to do, again, with the common and widespread experience of mistreatment by guards that inmates experience in Chilean prisons. Liebling (2004) has argued that the quality of prison life must include an emphasis on the moral performance of prisons with regard to the concepts of trust, respect, fairness, order, and well-being. For her, "performance" departs from a mere managerial focus or from mere concerns about infrastructure and argues that along with the *exterior* legitimacy (Sparks, 1994), what matters most in daily prison life is the *interior* legitimacy: how prison life is lived by staff and prisoners and a focus on finding what "mattered most," relationships, fairness, order, and the quality of treatment. In addition, she proposed a way to empirically assess these dimensions in five prisons in the United Kingdom and found significant differences across facilities in these five areas of prison life.

After having visited in person around 50 facilities nationwide in 2013 and led the research team that visited the other 25 prisons, I could reasonably say that Chilean prisons do not

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fulfill basic requirements that may put them even close to achieve exterior legitimacy; as one moves inside prisons, it becomes apparent that not even decent levels of interior legitimacy are achieved and one questions why the entire system does not, simply, collapse in light of current situation. In this regard, while some prison guards use to jokily say that "*God must be prison guard...otherwise, we do not know how it is possible that the system still does not collapse*", others recognize that "*we know for sure that there is going to be another San Miguel [recalling the infamous 2010 prison fire that killed 81 inmates]...what we do not know exactly is when...*".

In terms of personnel, prisons in Latin America also have considerable deficits with regard to sufficient numbers of qualified, well-trained, and well-paid personnel that can maintain order and discipline while also contributing to the inmates' rehabilitation: "*everything here is so precarious that you have no guidelines or rules on how to do many tasks...but you got to do what you got do and so (...) for example, if you need to make 200 inmates to get out of their collective [dormitory], you need to make that happen somehow...*". Unfortunately, corruption and violence are not uncommon, and these render prison environments places of even broader human rights violations (Salla & Ballesteros 2008). Although some have argued in favor of separating the functions of custody and rehabilitation, stating that uniformed prison personnel would—and should—privilege order and security above everything else, during the experience of conducting the nationwide assessment, we perceived that many prison guards and officers do subscribe to the rehabilitative ideal (Cullen, Latessa, Burton & Lombardo, 1993). Further, the deficits of the system in this regard may have to do, at least partially, with a mix of inappropriate training, limited social recognition, and insufficient human and material resources from the state.

Limitations of this research

Despite its potential contribution to the literature on prison violence, this work has some limitations that must be taken into account when considering the findings. Some of them have to do with the definition of violence used in this study, the use of administrative records and surveys, the small sample size with only 75 cases, the cross-sectional nature of the study, and the lack of individual-level information.

In terms of the definition of violence used by this study, it is worth noting that it was circumscribed by violent events recorded as such by each prison facility nationwide, according to legal provisions included in the Penitentiary Code. This study employed these records as the dependent variable but the phenomenon of prison violence may include different manifestations than simply physical, interpersonal fights among inmates. Indeed, I have not included in this study the inmate-staff category of physical violence, nor the violence exercised by staff or guards towards inmates. Having said that, double-check mechanisms were applied to make sure that at least the definition employed in this study could be a valid and reliable initial proxy of prison violence.

A second limitation of this dissertation could be the fact that it employed aggregated, facility-level variables with no individual-level information available. This was certainly a limitation because inmates' characteristics are important to understanding prison violence (Drury & De Lisi, 2010; Kuanliang & Sorensen, 2008). However, the main reason for such lack of individual data had to do with ethical reasons: the possibility of identifying inmates' individual responses and the risk of reprisals or future retaliation against them (let us recall that that was the main reason why data from SURVEY were anonymized –identifiers removed and deleted—after data collection took place in 2013).

A third limitation had to do with the use of secondary, administrative data, which implies the possibility of some inconsistency while recording violent events across different prisons. Administrative records usually have not been thought to inform social research and, consequently, they have not considered scientific criteria for their formulation, nor have they passed through control mechanisms. Besides, despite of there are legal provisions that instruct prison guards on when and how to recognize and record "a violent event," administrative records may have been recorded according to different subjective criteria, as prison environments may vary in the way individual officers and guards perceive and register a "violent event" (Hemmens & Marquart, 2000). Nonetheless, various double-check mechanisms were applied to make sure that administrative records (particularly those involving the dependent variable *violent events*) could be taken as valid and reliable indicators of prison violence; some of these mechanisms included interviews with prison officers and guards, a review of the Chilean penitentiary law, and different working meetings with the Statistical Department of *Gendarmería*.

The use of survey data had limitations too. Indeed, SURVEY included 42 questions many of which were binary (yes/no format) and asked the respondent to think about his stay in the current facility. It is known that the reality of prisons is much more complex than yes/no type of answers, and it is not known what factors may have influenced inmates to respond the way they did. Neither are we sure about how much of a recall problem inmates responding to the SURVEY may have had. In addition, since the unit of analysis was prisons and not individuals, the sample size was small, composed of only 75 prisons. This factor, combined with the relatively large number of independent variables (six in total, plus one control) that were used in the models, resulted in a very tight variable/case ratio. Thus, although the use of multivariate

negative binomial regression models seemed to be appropriate for analyzing these data, this technique would probably work better if employed with larger sample sizes.

A last limitation that needs to be taken into consideration is the fact that findings from this study were cross-sectional in nature. Indeed, data used for this project did not provide any reference to a previous history of violence by facilities, nor the data revealed possible administrative-related changes with regard to the arrival and influence of new officers or administrators at the regional level.. Nonetheless, this study was the first systematic assessment of the entire prison system and prison life in Chile ever done and, thus, it is expected that future research can contribute to monitor longitudinal changes.

The Study's Strengths

Many variables for this study were taken from the SURVEY that was conducted in 2013 in 75 facilities with a response rate of 78%. Despite the fact that there is no perfect survey, the high response rate (which is pretty uncommon for prison studies); the random, stratified strategy that it employed; the procedures employed by researchers (for example, guards were never present when the SURVEY was applied); and the number of prisons visited (75 out of 83) allow me to feel confident that the data taken from that study is valid and reliable. In addition, this study employed a combination of administrative data and survey data with information at the aggregate, prison level, providing an innovative approach to studying prison violence. In addition, this study included indicators for three theories of prison violence and empirically examined them all together, namely the deprivation, the importation, and the administrative-control theories. Finally, this study is the first in-depth and comprehensive study of prison violence in Chilean prisons, which would allow for valuable policy implications for prison

administrators and policymakers in the design and implementation of programs to reduce prison violence.

Policy recommendations and future research

Issues of overcrowding in Latin American prisons assume a dramatic picture that greatly differs from even the most crowded prison in a developed country. From visits to a couple of Chilean facilities in 2013 and from meeting with British experts from Her Majesty's Inspectorate of Prisons [HMIP], it was clear that although the official figures reveal certain percentages of overcrowding for facilities in both countries, overcrowding is far worse in Chile than in the UK as a result of operational standards employed to define "capacity according to design" and "overcrowding" standards in both countries. In addition, the prison context in many facilities in Latin America is shaped by marked corruption, drug dealing, and a lack of governance; these elements make "linear" comparisons with developed nations very problematic.

Thus, in terms of policy recommendations, different scholars have argued that it is important to consider the development of proactive strategies that attempt to attack the underlying causes of violent events (rather than their effects) and to allow for the implementation of coherent programs that can prevent such negative occurrences. In this regard, Byrne and Hummer (2007) proposed a variety of recommendations to deal with prison violence, including finding the "tipping point between formal and informal social control mechanisms" (p. 77), implementing systemic-level changes such as (1) increasing transparency in the prison system in order to promote accountability and continuous improvement; (2) adopting and implementing evidence-based practices in prison management; and (3) developing new, innovative measures of performance and quality for the prison system. Regarding this last point, perhaps the work and suggestions of Liebling (2004) might be of interest for deepening this discussion.

These efforts will probably imply additional investment in terms of reducing overcrowding, improving infrastructure for prison programming, developing more specific training for prison guards and officers and increasing the accountability of the system, but, in the long run, these measures will also prove themselves cheaper than just waiting for the next violent event to take place in a prison (National Research Council, 2004; National Center for State Courts, 2003; National Research Council, 2001; Center for Civic Innovation, 2000).

In addition, since it is not possible to modify inmates' ages or individual-related factors associated with those who are sent by law to serve in-prison sentences, there might space to improve current in-prison program coverage which, according to the SURVEY, only reached a minority percentage of inmates. In the same vein, though, it is important to look at program participation not only in terms of coverage, but also in terms of consistency with tackling criminogenic needs. Indeed, although sports program have reached about half of inmates, they have not been found relevant to decreasing recidivism, to changing inmates' attitudes, or to effecting signification modifications to anti-social behavior in the long run. This is not to say, of course, that such programs should be eliminated but, rather, it is a call for prison reform in the sense that programs and other rehabilitative efforts should be more consistent and concatenated to rehabilitative purposes.

In addition, efforts should be made to maintain prison population sizes at manageable levels, thus avoiding the extreme cases that are currently observable in the Chilean prison system, namely the coexistence of facilities with a few dozen inmates with the existence of prisons housing thousands of individuals. This occurrence may tend to nullify possible the anti-violence effects of other relevant variables, such as in-prison programs.

From a social work perspective, those who mostly fill out prisons in Latin America are disadvantaged individuals whose initial disadvantages are not going to improve after the experience of incarceration. At the same time, imprisoned populations in Chile remain relatively invisible for the rest of the society and so are the potential social causes associated with higher concentrations of poorer individuals incarcerated. In this regard, future research might make more visible part of these gaps in terms of educational levels, neighborhood disadvantage, poverty and so forth in order to generate empirical evidence that may help to reduce "social violence" associated to disadvantage and incarceration.

Besides, the debate over deprivation, importation or administrative-control could be enriched inside Chilean prisons if further research, probably undertaken through a more ethnographic-oriented framework, could contribute to disentangling the mechanisms by which violence takes place in prisons. Indeed, survey or administrative data cannot answer how violence reproduces on prisons and further studies might examine in a more in-depth manner when, where, and how violence occurs inside specific facilities and what correlates (organizational, overcrowding, inmates' characteristics) accompany those violent events in those specific places inside prisons. It is noteworthy to recall that there are architectural, compositional, and organizational arrangements that may vary enormously from one site to another, even inside the same prison. Future studies should attempt to identify and to analyze these differences in order to produce more detailed research on prison violence, especially in a developing country like Chile. In sum, this study offered a preliminary, systematic contribution to the knowledge base on factors associated with prison violence in Chilean prisons. Hopefully, this work will serve as a baseline for further studies in Chile and perhaps in Latin America.

The debate could also be enriched by conducting longitudinal studies on prison violence throughout the country, perhaps replicating this study's methods and variables. This is important since the Chilean prison system experiences changes, from time to time, that have to do with the three theories aforementioned. For example, prison officers are moved to a different facility with varying periodicity, or prison conditions may be improved (or worsened) through administrative decisions. Similarly, the number and the composition of inmates in a prison may vary as a result of administrative decisions or variations in sentencing policies. Monitoring these changes and examining their potential impact on the occurrence of violent events will be important for establishing an evidence-based, preventive approach to minimize violence inside prisons.

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