Universidade do Minho

Escola de Psicologia

Leonel da Cunha Gonçalves

Inmate Adjustment to Prison and Correctional Practices: Explaining Institutional Infractions, Health Care Utilization, and Coping Strategies

April, 2014

Universidade do Minho

Escola de Psicologia

Leonel da Cunha Gonçalves

Inmate Adjustment to Prison and Correctional Practices: Explaining Institutional Infractions, Health Care Utilization, and Coping Strategies

Doctoral Thesis
Justice Psychology

Under the supervision of:
Professor Doctor Rui Abrunhosa Gonçalves
Professor Doctor Carla Martins

April, 2014

DECLARAÇÃO

Nome: Leonel da Cunha Gonçalves
Endereço electrónico: leonel.cg@gmail.com
Título da tese:
Inmate Adjustment to Prison and Correctional Practices: Explaining Institutional Infractions,
Health Care Utilization, and Coping Strategies
Orientadores:
Professor Doutor Rui Abrunhosa Gonçalves e Professora Doutora Carla Martins, Escola de
Psicologia, Universidade do Minho
Ano de conclusão: 2014 (Abril)
Designação do Doutoramento:
Psicologia da Justiça

DE ACORDO COM A LEGISLAÇÃO EM VIGOR, NÃO É PERMITIDA A REPRODUÇÃO DE
QUALQUER PARTE DESTA TESE

Universidade do Minho, 30/04/2014

Assinatura:

ACKNOWLEDGMENTS

Inmate Adjustment to Prison and Correctional Practices: Explaining Institutional Infractions, Health Care Utilization, and Coping Strategies

GENERAL ABSTRACT

Prison populations are growing contrasting with a decline on correctional budgets, which generates challenging conditions for the rehabilitation of inmates and the management of prison facilities. Increasing knowledge on inmate adjustment to prison and correctional practices may be a viable way to improve prisons' efficiency. Even though literature on prisoners' adjustment is substantial, the understanding of this topic is fairly limited in Portugal and there are still several gaps that deserve inquiry. For instance, although many correlates of adjustment to prison have been identified, several predictors and outcomes are still understudied, and the results have been inconsistent. Furthermore, young prisoners have received less attention from research, despite being a group of increased risk and needs. Similarly, and despite the atypical nature of the context, knowledge on prisoners' strategies for coping with prison is scarce.

Thus, the aim of this thesis is twofold: (a) to examine predictors of prisoners' infraction rates and health care use, and (b) to examine prisoners' coping strategies. More knowledge on risk factors for infractions and health care use in prison is important for a better classification of the inmates. Likewise, learning more about how prisoners' experience and cope with prison life is important to understand how their ability to adapt can be enhanced. To achieve this goal, different research methods (quantitative and qualitative) and populations (adult, young, and first-timer prisoners) are used, according with the specific objectives of each study.

The present thesis comprises five chapters. Chapter I frames the thesis in the context of actual problems regarding prisoners' adjustment and the management of prison facilities. The concept of adjustment to prison and its theoretical background is introduced, followed by a description of the Portuguese prison context, prior research and limitations, and the societal relevance of the present investigation. This chapter ends with an outline of the thesis.

Chapter II presents a meta-analysis of prior research on predictors of prisoners' adjustment. The study quantifies the effects of different personal and contextual variables on prisoners' infraction rates and their health care use, also analysing the impact of moderator variables. Data consist of 90 studies from 13 countries that were aggregated in 75 independent samples. Regarding infractions, the results evidenced that, at the personal level, the strongest predictors were prior prison misconduct, aggressiveness, impulsiveness, antisocial traits, institutional risk, and younger age. At the contextual level, higher infraction rates were observed

in prisons with more gang activity, and in prisons housing more inmates and a larger proportion of maximum security inmates. Major correlates of health care use were prior mental health problems, older age, and physical symptoms. Moderator effects were observed for prison sample size, sample selection, length of follow-up, geographic location, and type of analysis.

Chapter III examines changes in infractions and health care use among 75 young males during their first year in a specialized prison. The effect of various covariates on their adjustment patterns is also examined. The results of multilevel modeling showed that patterns of severe infractions are irregular. Minor infractions increased until the sixth month and decreased thereafter. While health care use for mental health problems remained stable, treatment for physical problems was highest during the first month and then declined. Infractions were associated with fewer visits, being single and non-White, having higher hostility levels and being a property offender. Health care use was related with shorter time in prison, mental problems, Portuguese nationality, older age at first imprisonment, criminal history, and severe infractions.

Chapter IV explores what coping strategies first-timer prisoners use to adapt to prison life and the reasons why they use such strategies. In-depth interviews were carried out with a sample of 25 respondents detained in two prison facilities, which were then analyzed using a grounded theory approach. Based on the previous methodology, five generic coping categories related to the process of adaptation emerged: (1) staying out of trouble, which involves adhering (a) the prison system, and (b) the inmate population; (2) managing stress and emotions; (3) keeping safe; (4) passing time; and (5) getting support. Coping strategies serve different purposes and interact with each other in order to reach a balance, though neither uniform nor stable.

Finally, Chapter V presents the general discussion of the thesis. The main findings are summarized and discussed in the context of prior research in Portugal and abroad, as well as their implications for theory, research and practice. The chapter ends with a discussion on the limitations of the present research, suggestions for future studies, and a brief conclusion.

Despite limitations, this thesis enlarges knowledge on prisoners' adjustment by answering a variety of unexplored questions with appropriate methods that may help to improve inmate management and successful reentry in the community, especially in our country. The results point out the need for a scientific classification of the inmates as well as programs and policies to enhance their coping skills. The results also indicate that, despite similarities in adjustment to prison across prisoners' of different ages and countries, classification and treatment methods should be adapted for specific age groups and prison contexts.

A Adaptação dos Reclusos e as Práticas Prisionais: Explicando Infrações Disciplinares, Utilização de Serviços Clínicos, e Estratégias de *Coping*

RESUMO GERAL

A população de reclusos tem vindo a crescer contrastando com a queda no orçamento dos sistemas prisionais, o que gera condições adversas para a reabilitação dos reclusos e a gestão das prisões. Aumentar o conhecimento sobre a adaptação dos reclusos e as práticas prisionais pode ajudar a melhorar a eficiência das prisões. Apesar da literatura sobre a adaptação à prisão ser substancial, a compreensão deste tema é bastante limitada em Portugal e ainda existem várias lacunas que merecem ser investigadas. Por exemplo, apesar de terem sido identificadas muitas variáveis associadas à adaptação dos reclusos, diversos preditores e respostas de adaptação foram menos explorados, e os resultados têm sido inconsistentes. Para além disso, os jovens reclusos têm recebido menos atenção da investigação, apesar de serem um grupo de risco e necessidades acrescidas. À semelhança, e apesar da natureza atípica do contexto, o conhecimento sobre as estratégias dos reclusos para lidar com a prisão é escasso.

Esta tese tem dois principais objetivos: (a) examinar preditores das infrações e utilização de serviços clínicos dos reclusos, e (b) examinar as estratégias de *coping* dos reclusos. Mais conhecimento sobre factores de risco para as infrações e o uso de serviços clínicos é importante para melhorar a classificação dos reclusos. Mais conhecimento sobre como os reclusos experienciam e respondem à prisão é importante para melhorar a sua capacidade de adaptação. Para alcançar estes objetivos, diferentes métodos de investigação e populações foram utilizados, de acordo com as questões específicas de cada estudo.

A tese inclui cinco capítulos. O Capítulo I enquadra-a no contexto dos atuais problemas relacionados com a adaptação dos reclusos e a gestão das prisões. O conceito de adaptação à prisão e o seu enquadramento teórico são apresentados, bem como o contexto prisional português, estudos anteriores e limitações, e a relevância social desta investigação.

O Capítulo II apresenta uma meta-análise sobre preditores da adaptação dos reclusos. O estudo quantifica o efeito de variáveis pessoais e contextuais nas infrações disciplinares e utilização de serviços clínicos dos reclusos, analisando também o impacto de variáveis moderadoras. A base de dados consiste em 90 estudos provenientes de 13 países, os quais foram agrupados em 75 amostras independentes. Quanto às infrações disciplinares, os preditores de maior efeito, ao nível pessoal, foram infrações disciplinares em penas anteriores, agressividade, impulsividade, traços anti-sociais, o risco institucional e idade mais jovem. Ao nível

contextual, taxas mais elevadas de infrações foram observadas em prisões com maior atividade de *gangs*, com populações mais elevadas de reclusos, e com maior proporção de reclusos em segurança máxima. Os principais preditores da utilização de serviços clínicos foram problemas anteriores de saúde mental, idade mais avançada e sintomas físicos. Efeitos moderadores foram observados em relação ao tamanho da amostra de prisões, seleção da amostra, duração do período de observação, localização geográfica e tipo de análise de dados.

O Capítulo III examina mudanças nas infrações e utilização de serviços clínicos em 75 reclusos jovens durante o seu primeiro ano de detenção, bem como preditores deste processo. Os resultados demonstraram que os padrões de infrações graves são irregulares. Infrações simples tendem a aumentar até ao sexto mês. Os acessos aos serviços clínicos para tratamento da saúde mental permaneceram relativamente estáveis. O tratamento para problemas de saúde física foram superiores no primeiro mês, diminuindo significativamente depois. As infrações estavam associadas com menos visitas, ser solteiro e de origem Negra, níveis mais elevados de hostilidade, e crimes contra a propriedade. A utilização de serviços clínicos estava associada com menos tempo na prisão, problemas mentais, nacionalidade portuguesa, idade mais elevada aquando da entrada no sistema prisional, história criminal, e infrações graves.

O Capítulo IV explora quais estratégias de *coping* usam os reclusos primários para se adaptarem à vida na prisão e as razões pelas quais usam essas estratégias. Foram realizadas entrevistas abertas com uma amostra de 25 reclusos detidos em duas prisões, as quais foram depois analisadas usando um método de *grounded theory*. Emergiram cinco categorias de *coping* relacionadas com o processo de adaptação dos reclusos: (1) evitar problemas, o que inclui aderir (a) ao sistema prisional e (b) à população reclusa; (2) gerir de stress e emoções; (3) manter-se em segurança; (4) passar o tempo; e (5) obter apoio.

Por fim, o Capítulo V apresenta a discussão geral da tese. Os resultados são sumarizados e discutidos no contexto de estudos anteriores em Portugal e no estrangeiro, bem como as suas implicações para a teoria, investigação, e prática. O capítulo termina com uma discussão sobre as limitações da presente tese, sugestões para futuros estudos e uma breve conclusão.

Os resultados apontam para a necessidade de uma classificação científica dos reclusos, bem como programas e políticas para melhorar as suas capacidades de adaptação. Os resultados também indicam que, apesar da semelhança na adaptação à prisão em reclusos de idades e países diferentes, os métodos de classificação e tratamento necessitam de ser adaptados para reclusos de faixa etária e contextos prisionais específicos.

CONTENTS

LIST OF TABLES, FIGURES, AND APPENDIXES

LIST OF SYMBOLS, ABBREVIATIONS AND ACRONYMS

ANOVA — analysis of variance

AQ — Aggression Questionnaire

AUC — area under the curve

BIC — Bayesian information criterion

BSI — Brief Symptom Inventory

CI — condidence interval

CP – central prison

CPT – Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment

DGRSP – General Directorate of Reintegration and Prisons

FCT – Foundation for Science and Technology

FE – fixed effect

GSI – Global Severity Index

GTM – grounded theory method

km – kilometers

LS/CMI – Level of Service Case Management Inventory

LSI-R – Level of Service Inventory Revised

M – mean

Mdn – median

MLM – multilevel modeling

MMPI – Minnesota Multiphasic Personality Inventory

NB – negative binomial

OR – odds ratio

P(#) – Participant number #

PAI – Prison Adjustment Index

PAQ – Prison Adjustment Questionnaire

PCS – Pew Center on the States

Ph.D. – Doctor of Philosophy

RE – random-effect

RM-ANOVA – repeated measures-analysis of variance

RP – regional prison

RS – random slope

SD – standard deviation

SP – special prison

U.K. – United Kingdom

U.S. – United States of America

CHAPTER I

General Introduction

"*Inmate adjustment problems are important on several counts to people who believe that prisons should perform correctional or rehabilitative functions. When inmates experience continued states of emotional crisis, it is difficult to work toward long-range behavioral change. Less dramatic reactions to confinement provide opportunities for inmates and therapists to focus on current experiences, emotions, and behavior, with an eye toward personal growth and development*" (Adams, 1992, pp. 275-276).

1.1. Introduction

This research is focused on inmate adjustment to prison and its implications for correctional practices. As imprisonment is the conventional way of dealing with serious crime (Zamble & Porporino, 1990) and constitutes the most severe sanction than can be imposed in many countries, this topic deserves special attention. In fact, prison populations increased in 78% of the countries compared to 2009 and, currently, there are more than 10 million people imprisoned worldwide (Walmsley, 2011). Likewise, the prison population has been growing in Portugal. By the end of 2012, there were 13,614 prisoners, the largest number of the last nine years (http://www.dgsp.mj.pt). Since so many persons are being incarcerated, it is important to better understand how they adjust to prison life in order to improve the way how prison sentences are executed.

Several conditions contribute for the growing prison populations. First, the world population has been increasing continuously and will continue to grow in the near future (Cohen, 1995; Population Reference Bureau, 2013), which tends to correspond to an increase of prisoners. Second, during the past four decades, a more punitive approach within many justice systems culminated in a substantial growth in the use of incarceration, extension of sentence lengths, and reduction of early releases (Dirkzwager & Kruttschnitt, 2012; Haney, 2003; Shermer, Bierie, & Stock, 2013). Third, recent changes in economic factors have been associated with increases in a variety of criminal behaviors (United Nations Office on Drugs and Crime, 2012; Xenakis & Cheliotis, 2013). In Portugal petty crime and persons who are sent to prison for being unable to pay their fines are escalating (Committee for the Prevention of Torture and Inhuman or

1

Degrading Treatment or Punishment [CPT], 2013a; 2013b; Minder, 2012). Although such developments require additional space and resources to run prison systems, due to the financial crisis, correctional budgets have declined (Fernandez & Neiman, 1998; Morris, Longmire, Buffington-Vollum, & Vollum, 2010). For instance, in Portugal, the construction of 10 new prisons was planned but put on hold. Currently, only one is being constructed and work is being carried out to increase the capacity of other prisons.

It is well known that increasing prison populations may result in overcrowding and affect prison safety, the conditions of confinement, staff-inmate relationships, and prisoners' access to meaningful programming (Bierie, 2012; Charton, Couture-Poulin, & Guay, 2011; Dirkzwager & Kruttschnitt, 2012), situations that appear to be happening in our country. The media has been exposing that crowding and austerity are straining Portuguese prisons (Minder, 2012) and there are growing reports and protests of inmates, their families and public organizations about the deterioration of living conditions (Cardoso, 2013; CPT, 2013a; 2013b). Complaints include ill-treatment by prison staff, increased violence, worsening material conditions, lack of proper medical care, rehabilitation programs and activities, and the way how prisoners are assigned into security levels. The austerity has been affecting prison staff as well. Their reduced working conditions resulted in several strikes during the last years, further damaging the services provided to the inmates and the overall well-being in prisons.

Inmate adjustment to prison carries a host of implications for correctional systems. It should be noted that imprisonment is one of the most stressful life experiences (Holmes & Rahe, 1967). Although the effects vary from individual to individual and are often reversible, adjustment to prison is always a difficult process that carries post-release consequences (Haney, 2003). Prison life includes several deprivations against human nature like the loss of liberty, goods and services, sex, autonomy and security (Sykes, 1958) that may be further aggravated when the environment becomes more strained (Adams, 1992). In this scenario, imprisonment more often results into adjustment difficulties that may be reflected on disciplinary infractions, health care problems and maladaptive coping responses (e.g., violence and drug use). These, in turn, restrict prison safety and rehabilitation efforts, while increasing institutional costs and the risk for recidivism (Bierie, 2012; Zamble & Porporino, 1988).

Besides the fact that prisoners have a constitutional right to a proper treatment and rehabilitation is a major goal of imprisonment, due to the conflict between growing

prison populations and costs on one hand, and budget cuts on the other hand, prison systems are forced to increase their efficiency (Shermer et al., 2013). One way to achieve this goal is developing knowledge on inmate adjustment to prison and, in turn, correctional practices. In this research we focus on disciplinary infractions, health care utilization and coping strategies. Specifically, more knowledge on risk/protective factors for infractions and health care use in prison is important for a better classification of the inmates. Likewise, learning more about how prisoners' cope with imprisonment is important to figure how correctional services can enhance their successful adaptation. Both can help to improve inmate management and rehabilitation.

1.1.1. Institutional infractions and health care use

The risk for misconduct and mental/physical health problems are part of the classification of the inmates. Classification refers to formal tools and procedures that assist prison administrators in determining the risk of the inmates (e.g., low, medium, high), their treatment needs (e.g., intervention programs, work/school), and the conditions of their sentence (e.g., prison regime, early release) (Andrews & Bonta, 2007; Craddock, 1992; Fernandez & Neiman, 1998). The purpose is to match inmates to appropriate institutional settings (e.g., maximum security, mental health units) and programs (e.g., anger management, social skills training) in order to promote prison safety and inmate rehabilitation. This way, classification tools help to ensure that services are well distributed and provided in cost-efficient ways (Motiuk, 1997).

To improve inmate classification, many studies explored covariates of adjustment to prison and numerous predictors were identified over time. Empirical findings contributed to the development of objective classification tools and procedures that have been progressively introduced into correctional practices (Loza & Loza-Fanous, 2002). However, classification is still based either on clinical judgment or on arbitrary variables rather than standardized tools in many correctional systems worldwide as in Portugal (Endrass, Rossegger, Frischknecht, Noll, & Urbaniok, 2008; Gonçalves & Gonçalves, 2012; Lee & Edens, 2005), making it difficult for prison staff to make fast and efficient decisions, and for inmates to adjust to their sentence.

Furthermore, there are still gaps in knowledge about predictors of adjustment to prison bringing into question which variables and tools are more useful for correctional practices. First, the results on many predictors have been inconsistent and quantitative

reviews of findings are lacking. Second, though the influence of the prison environment on inmate adjustment has long been recognized, still little is known about the effect of contextual variables (e.g., prison population size). Third, research has been focused on predictors of institutional infractions for risk classification. Less is known about predictors of health care use, even though mental and physical assessments are also part of the classification process.

In addition, although adjustment to prison is a well-covered topic among adults, less is known about young prisoners. Yet, it is known that younger prisoners are more likely to be involved in misconduct including assaults on other inmates and prison staff (Gendreau, Goggin, & Law, 1997; Kuanliang, Sorensen, & Cunningham, 2008), and the prevalence of behavioral, psycho-emotional, personality, and substance use disorders is particularly high among this population (Fazel, Doll, & Långström, 2008; Murrie, Henderson, Vincent, Rockett, & Mundt, 2009). Therefore, young prisoners are a group of special risk on which more research should focus considering that their treatment needs may differ from those in adults.

1.1.2. Coping in prison

Coping refers to conscious efforts to deal with situations perceived as challenging (Lazarus & Folkman, 1984). Thus, coping patterns are related to the way how a person handles stressful experiences and adapts to the context. Adjusting to prison life is particularly difficult because stressors are common and the environment reduces the choice of available strategies (Ireland, Brown, & Ballarini, 2006). However, prisoners differ in their ability to cope, and those with more limited resources can be stimulated to develop more adaptive ways of responding. Likewise, policies can be implemented so to reduce the extent of stressors that prisoners face (Brown & Ireland, 2006). Enhancing prisoners' coping skills may improve their well-being and reduce maladaptive behaviors, both in prison as society (Zamble & Porporino, 1988).

Although coping is a well-covered topic in areas like health and clinical psychology, less research has been carried out in prisons. Quantitative studies seem to indicate that prisoners use more emotional and avoidant strategies rather than problem focused ones, strategies that tend to lead to poor adjustment (Dear, Thomson, Hall, & Howells, 1998; Ferrer et al., 2010; Gullone, Jones, & Cummins, 2000; Ireland, Boustead, & Ireland, 2005; Zamble & Porporino, 1988). Qualitative studies gave insight

4

about what prisoners do to adapt to prison life. For example, Leahy (1997) reported that coping among U.S. prisoners include staying away from others, living day by day, creating a group of friends, getting a job, and religiosity.

Unfortunately, quantitative studies use standardized tools developed for the general population that do not include strategies specifically used to cope in prison, which arguably differ from those to adapt in the outside (Liebling, 1999). On the other hand, qualitative studies often use structured interviews and content analyses that make difficult to understand the meaning of prisoners' responses as they are restricted to answer to particular topics that are already defined as their ways of adapting (Harvey, 2007). Studies using in-depth interviews and inductive methods are more enlightening. Yet, they often do not focus on coping directly or explore narrow aspects of prisoners' behaviors, thus failing to provide a detailed list of different coping strategies and explanations for their function in the prison context.

1.1.3. The present research

In sum, to improve prison efficiency, there is an urgent need to develop scientifically supported classification schemes, especially in countries like Portugal where those are still based on clinical judgment and arbitrary variables. For such situation contribute the lack of studies on the validity of different psychometric tools and other variables in predicting inmate adjustment to prison (and recidivism) in our country, preventing guidance of correctional agencies in the development of an adapted and sound method of classification. In addition, to understand prisoners' needs and, in turn, enhance their personal and social skills, it is important to explore the meaning of their experiences and behaviors in the process of adaptation. For that, more research focusing prisoners' emic perspective must be made.

Trying to fill these gaps in knowledge, the aim of this thesis is twofold: (a) to examine predictors of inmates' infractions and health care utilization, and (b) to examine prisoners' coping strategies. The thesis is focused on males – adults, young offenders, first-timers – across different studies according with the objectives of each one. Specifically, three main research questions are investigated:

1. To what extent different personal (e.g., age) and contextual variables (e.g., crowding) are related to inmates' infractions and health care use? This first research question was the aim of the literature review titled "Predicting

Infractions and Health care Utilization in Prison: A Meta-Analysis" presented in Chapter II.

2. To what extent social-support, mental problems, institutional risk, and other (personal level) covariates are related with young inmates' infractions and health care use over time in prison? This research question is investigated in Chapter III, in the paper named "Prison Adjustment among Young Offenders: A Longitudinal Study".

3. What coping strategies first-timer prisoners use to adapt to prison life and what they gain from these strategies? This question is addressed by the study "Prisoners' Coping Strategies in Portugal: An Exploratory Study" presented in Chapter IV.

To achieve these objectives, quantitative (to examine predictors of adjustment) and qualitative methods (to examine coping strategies) were employed, resulting in generalizable knowledge about how different inmates adjust to imprisonment and a comprehensive view on coping in prison from those living this process in the first person. The quantitative studies of this thesis use meta-analytic and multilevel modeling methods aimed at summarizing findings from prior research and exposing empirical results from the Portuguese population. Variables seldom explored (e.g., psychometric tools, health care use), changes on inmate adjustment along incarceration, and the role of different moderators (e.g., design, time) are also examined. As this research will show, the answer to the questions above exposed has implications for theory, research and practice on inmate adjustment to prison and the society at large.

1.2. The Concept of Adjustment to Prison

Rooted in biological theories of evolution, adjustment (or adaptation) has been defined in different ways according to the area of knowledge in which this concept is used. Also among psychologists this term has been applied in a variety of contexts (e.g., physiological, cognitive, and socio-cultural) and assortment of ways (Bevan, 1965; see also Gonçalves, 2002/2008). As a whole, adjustment may be defined as "*any process whereby behavior or subjective experience alters to fit in with a changed environment or circumstances or in response to social pressure*" (Colman, 2001, p. 12).

As the concept of adjustment in general, adjustment to prison has been defined in different ways (Van Tongeren & Klebe, 2010; Walters, 1992). Based on sociological perspectives, early studies were focused on the concept of "prizonization" coined by Clemmer (1940), which refers to the assimilation, in greater or less degree, of the folkways, mores, customs, and culture of the penitentiary. Prisonization was related to the development of an "inmate code" that regulates conducts and establishes hierarchies among the inmate subculture (Sykes, 1958). Though popular, the concept of prisonization has been criticized (Welch, 2011) and is rarely analyzed nowadays.

Other authors developed instruments and scales to assess inmate adjustment. Several of those were adapted from the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943) but personality-based tools were critiqued for producing inconsistent results and lacking validity (Gonçalves, 2002/2008; Walters, 1992). Among other tools, some rely on institutional records, like the Prison Adjustment Index (PAI; Wolfgang, 1961) and measure adjustment through objective indices, such as the stability on prison jobs and the disciplinary record. Others, like the Prison Adjustment Questionnaire (PAQ; Wright, 1985), measure self-perceptions of adjustment, focusing on prisoners reports on problems such as argues and fights, trouble sleeping, anger, fear, illness, and injuries. While the first have the advantage of focusing on observable outcomes and not requiring inmates' reports, the second provide a broader concept of adjustment, including a variety of latent constructs.

Since the 1980s, aiming to accurately predict inmate behavior for purposes of classification and treatment, researchers started to focus on specific psycho-emotional reactions (psychological adjustment) and behavioral responses (behavioral or institutional adjustment) (Dhami, Ayton, & Loewenstein, 2007). Psychological adjustment includes outcomes like depression, anxiety, and well-being. On the other hand, behavioral/institutional adjustment comprises responses such as violence, self-harm, and victimization. Most studies focus on disciplinary infractions, which is understandable given the fact that concerns for security are paramount in prisons (Adams, 1992; Trulson, 2007). Although less studied, health care utilization is another important indicator. The prison situation can result into a range of clinical problems and associated treatment needs (mental/physical treatment, use of medication) that also indicate adjustment difficulties and carry managerial issues (Wright, 1985).

Another line of studies regards adjustment in terms of coping strategies, focusing on what inmates do to adapt to prison life instead of their performance on predefined measures of adjustment. This approach is more centered in the process than the results and thus is useful to promote changes. Though early research explaining the inmate code (e.g., Sykes, 1958) and adaptation modes (e.g., Goffman, 1961) described a variety of strategies to adapt to prison life, interest in the processes by which how people deal with adverse situations grew substantially since the transactional model of stress and coping (Lazarus & Folkman, 1984) and, in prisons, with Zamble and Porporino's (1988) study on prisoners' coping strategies, influenced by the former theory.

Conceiving adjustment as a multidimensional construct, and considering actual needs for research and practice, this study focuses on the institutional adjustment of the inmates (including infractions and health care use) and their coping strategies. Because information on disciplinary infractions and health care use documents the operation of the agency, the data are conducive to policy-relevant issues. Coping has a number of considerations for promoting inmates' adjustment, including the features of the environment that act as stressors, how individuals appraise the situation, and their repertoire of responses (Adams, 1992).

1.3. Theoretical Background

Since Clemmer's (1940) pioneering work on "*the prison community*", several theoretical frameworks have been used to explain inmate adjustment to prison life. Early theories were sociological and mainly dedicated to explain the origin of inmate subcultures and their role in the process of adapting to prison. These theories are the deprivation and the importation models and remain the two dominant today.

The deprivation theory focuses on characteristics of the prison situation and argues that adjustment to prison is mainly affected by "the pains of imprisonment" that deprives persons of basic needs (Goffman, 1961; Sykes, 1958). Research proved that prisoners' behavior is influenced by contextual factors like prison security level, staff experience and management approaches (for reviews see Gadon, Johnstone, & Cooke, 2006; Gendreau et al., 1997). In opposition, the importation theory argues that prisoners' behavior is the result of personal characteristics, being an extension of previously held values, attitudes and experiences (Irwin & Cressey, 1962; Schrag, 1961). Adjustment to prison have been frequently related to personal attributes like age,

education, substance abuse, personality, and criminal history (for reviews see Gendreau et al., 1997; Schenk & Fremouw, 2012). Though receiving vast empirical support, both theories were criticized for being too general and deterministic (Goodstein & Wright, 1989) and the importance of combining both personal and contextual variables in theoretical frameworks was recognized (Paterline & Petersen, 1999).

Later, psychological theories were applied and provided more integrated perspectives of inmate adjustment. For instance, the situational theory argues that adjustment to prison is a conjunction of contextual, temporal, and social factors (Steinke, 1991). It was found that variables like the temperature, period of the day, prison architecture, certain prison areas, and staff characteristics have influence on how prisoners' behave (Jiang & Fisher-Giorlando, 2002; Morris & Worrall, 2010; Steinke, 1991). Interactionist theories emphasized the interaction between the inmate and its environment (Toch, 1977) and exposed that adjustment problems can be reduced if inmates are placed in appropriated settings (Wright, 1985). Research also proved that the effect of individual characteristics like age, race, and prior incarceration can be moderated by institutional factors such as the prison security level, availability of programs, and crowding (Steiner & Wooldredge, 2008; 2009; Wooldredge, Griffin, & Pratt, 2001). Similarly, coping theories explained prisoner adjustment as an interaction between the environment, individual perception of the situation, and coping strategies acquired over-time (Adams, 1992). Inmates with limited coping resources have been linked with negative outcomes, including prison infractions and medical problems (Sappington, 1996; Zamble & Porporino, 1988).

Another group of studies emphasized the role of prison officials, administrators and governance (Hochstetler & DeLisi, 2005). The most influential perspective is the administrative control theory, which posits that misconduct is more common in poorly managed facilities where staff fail to correctly exercise authority (DiLulio, 1987). Institutions with well-adjusted coercive and remunerative controls were less likely to show high rates of misconduct (Huebner, 2003). Characteristics like "esprit de corps" among officers, policies to reduce prison gangs and increase work offer, officers' competency, and assertive inmate-staff relationships were found to decrease institutional infractions (Huebner, 2003; Reisig, 2002; Steiner, 2009; Useem & Reisig, 1999).

Criminological theories were applied to explain inmate adjustment more recently. Among those, the general theory of crime suggests that persons with low self-control

engage in behaviors that are impulsive and risky guided by the pursuit of pleasure and avoidance of pain (Gottfredson & Hirschi, 1990), which also received support in correctional settings (DeLisi, Hochstetler, Higgins, Beaver, & Graeve, 2008; Gover, Pérez, & Jennings, 2008). Life-course theories emphasized the influence of an early and more elaborated criminal career in the continuity of antisocial behaviors in prison (DeLisi, Trulson, Marquart, Drury, Kosloski, 2011; Walters, 2007a; 2007b), arguably because habitual offenders are more involved in criminal networks and develop a crime-conductive identity (Hochstetler & DeLisi, 2005). Social control theories argue that individuals with stronger bonds to conventional society are less likely to commit crimes. Research confirmed that higher commitment to conventional goals like marriage, education, and work predict better outcomes in prison (Steiner, 2009; Steiner & Wooldredge, 2009). Similarly, social support theories state that persons with better social support are less likely to offend (Cullen, 1994) and better able to cope with stressful situations (Cohen & Wills, 1985). A few studies seem to confirm the influence of support in reducing prisoners' misconduct and mental health problems (Cochran, 2012; DeLisi, Berg, & Hochstetler, 2004; Monahan, Goldweber, & Cauffman, 2011). Finally, the general strain theory explains that situational strains lead to negative emotions, like anger and frustration, than can result into deviant behaviors (Agnew, 1992). Recently, Morris, Carriaga, Diamond, Piquero, and Piquero (2012) proved that inmates housed in units with more strains (e.g., larger prison population, more gang activity and maximum security inmates) were more likely to misbehave (see also Blevins, Listwan, Cullen, & Jonson, 2010).

In sum, since the early 1940s until today, several theories from different areas of knowledge were explored to explain inmate adjustment to prison and greatly improved the state of art on this topic. Yet, a general theory is far to be empirically proved and several perspectives need further research. Currently, inmate behavior is best understood as interplay of different variables, and any unilateral consideration of this concept would be limited (Graeve, DeLisi, & Hochstetler, 2007; Morris & Worrall, 2010; Soderstrom, Castellano, & Figaro, 2001). Thus, the present research integrates different types of variables, representing deprivation and importation theories, but also other frameworks seldom explored (e.g., social support theory), adding to theoretical knowledge.

1.4. Portuguese Prison Context

1.4.1. Legislative and correctional changes

Imprisonment serves several purposes including incapacitation (removing offenders' capacity to commit crimes), deterrence (dissuading prisoners and persons in the community from committing crimes), and rehabilitation (changing the offender and thereby preventing future criminal behavior; MacKenzie, 1997). Though serving incapacitation and deterrence functions, the ideology of the Portuguese penal system is now rehabilitation oriented:

"… *the execution of prison sentences and other security measures privative of liberty aims to reintegrate individuals in society, preparing them to live in a socially responsible way, without committing crimes, also serving to protect legal rights and society*" (Law No. 115/2009, p. 7425).

The first correctional reform in the country was made in 1936 (Decree-Law No. 26:643) and established a move from the current "separate system" to the "silent system", implementing a "progressive" regime in which prisoners were initially isolated and then gradually acquire the right for living in group. Though alluding to rehabilitation, incapacitation and deterrence were still the major purposes of imprisonment at that time, and isolation continued the standard regime. Besides the deterrent effect of imprisonment, work, education and religiosity were the major ways to reform the inmates. Prisons were classified into (a lot of) different types for different typologies of offenders (e.g., abnormal, habitual, or political delinquents)[1] first emphasizing the individualization of the sentences.

The next penal reform was made only after democracy in the country (25 April, 1974). In 1979, the new Code on Execution of Criminal Sanctions (Decree-Law No. 265/79) definitely abolished the separate system and recognized rehabilitation as the major purpose of imprisonment.[2] Prison types were rearranged (i.e., regional, central and special) and divided into different security levels. Also, a variety of criteria for

---

[1] Those typologies were influenced by Lombroso (1876) theory on criminal atavism defending that criminality was inherited and that criminals could be identified by physical characterisitcs.

[2] This is contrary to many other Western countries that, after emphasizing inmate rehabilitation since World War II, started to be more punitive in the 1970s (Dirkzwager & Kruttschnitt, 2012). Such reverse in ideology occurred in the 1990s in Portugal.

inmate allocation were established[3] and separation by sex, age, health status (e.g., psychiatric patients), penal status (remand vs. sentenced), and incarceration history (first-timer vs. recidivists) was mandated. Emphasis was placed on the rehabilitation plan through work, school, training courses, activities for free time occupation (e.g., books, magazines, radio and TV were allowed), better medical and religious assistance, and also more contact with the outside world. Prison benefits like the early parole, temporary leaves, and the open regime were facilitated. In addition, in 1982 a new Criminal Code (Decree-Law No. 400/82) was issued encouraging alternatives to imprisonment (e.g., sanctions' suspension, probation, community services) and reducing penal sanctions from 25 to 20 years for most crimes (Gonçalves, 2002/2008).

However, the next Criminal Code (Decree-Law No. 48/95), in 1995, placed emphasis on deterrence again. Though rehabilitation continued the major objective of the justice system, penal sanctions were elevated to 25 years for more severe crimes (e.g., homicide) and the access to parole was limited in those cases (Gonçalves, 2002). In 1998, the prison population peak to the highest rate of the history equaling 14,598 prisoners (http://www.dgsp.mj.pt). Overcrowding was dealt with mostly through amnesties, pardons, and inflating prisons' official capacity (Gonçalves, 2002). Later, in 2007, the actual criminal code (Law No. 59/2007) aimed to reduce the prison population through the increased use of sanctions other than imprisonment and limitations on pre-trial detention. Yet, the number of prisoners started growing again since 2009.

Several changes were made in the correctional system recently. In 2007, based on efforts to reform the public administration, the Organic Law of the Prison System was revised (Decree-Law No. 125/2007). Measures were taken to simplify the structure of the prison system and aggregate the functions of various organisms, aiming to improve efficiency while reducing costs. In 2012, with a new government, prison and probation services were merged (Decree-Law No. 215/2012). Besides optimizing resources, it was argued that the now "General Directorate of Reintegration and Prisons" (DGRSP) allows better opportunities for social reintegration of the inmates. Due to this fusion, in 2013, another Organic Law (Ordinance No. 118/2013) was issued to determine DGRSP's structure and functions.

---

[3] Allocation criteria include security level, sex, age, penal-status, incarceration history, type of crime, sentence length, mental and physical health, needs for security, treatment, and social reintegration, proximity of family and social environment.

Correctional procedures also changed. In 2009, the new Code on the Execution of Criminal Sanctions (Law No. 115/2009) first defined the methods and objectives of the initial evaluation of the inmates. Newcomers are now assessed within 72 hours for collection of information that allows prison managers to determine: (a) their medical needs, (b) risk for security, and (c) urgent issues. The assessment takes into account the type of crime, sentence length, incarceration history, family and social background, education, mental and physical health status, personal vulnerability, and risks for safety and escape. This initial assessment must be completed within 60 days, guiding inmate allocation in different prisons/units and the elaboration of their rehabilitation plan. In addition, different prison regimes (i.e., security, common, open) and the disciplinary system (e.g., separation of severe vs. minor infractions and respective sanctions) were revised to their actual form. Intervention programs for enhancement of personal and social skills were for the first time referred in the law.

In 2011, a General Prison Regulation (Decree-Law No. 51/2011) was decreed to standardize prisons procedures, largely varying across facilities until then. Changes in the execution of prison sanctions were again introduced. Most noteworthy, inmates now must be assessed within 24 hours by a nurse that starts their clinical record, handles their immediate needs and indicate further necessary services. A deeper medical examination must be completed within 72 hours and inform on: (a) mental disorders, (b) suicide risk, (c) abstinence syndrome and injuries, and (d) communicable and chronic diseases.

Though this law served to improve and make correctional procedures more equal, some rules and schedules still vary. For example, while in some prisons the inmates are allowed to have video-games, to play cards, and to watch TV all night, in other facilities such conditions are still prohibited. Also, the time inmates under the same prison regime are open may vary as much as from four to 10 hour per day across facilities. The law also brought a lot of contestation among prisoners and their families. For instance, to improve safety and reduce managerial costs, food from the outside was limited to 1kg per visit and a variety of products were prohibited, tobacco was restricted to purchase inside the facility, and phone calls were reduced in quantity (one per day plus one to the lawyer) and duration (5 minutes).

1.4.2 Imprisonment in Portugal nowadays

By the end of 2012, when data collection ended,[4] there were a total of 13,614 prisoners performing a rate of 134 inmates per 100,000 habitants. The prison population was composed by 6% of females, 12% of prisoners under 25 years old, 20% on remand, and 19% foreigners. The most predominant crimes were those against property (29%) and the most prevalent sentences were those between three and six years long (31%). Generally, the parole may be obtained at the middle, 2/3 or 5/6 of the sentence. According to official statistics, during the year 2012, 50 inmates died in correctional facilities due to illness and 16 committed suicide. No homicide was reported (http://www.dgsp.mj.pt).

There are actually 49 prisons in Portugal divided into: regional (RP), central (CP), and special prisons (SP).[5] Generally, RPs are small prisons for remand prisoners or convicted to sentences below six months. CPs are larger institutions for convicted prisoners with sentences greater than six months. In practice, RPs and CPs may include sentence lengths and penal statuses different than those for which they were initially intended for. Nevertheless, inmates with more serious crimes and longer sentences tend to be confined in CPs. SPs include institutions for young prisoners (age 16 to 21 years, extendable to 25), women, and prison clinics/psychiatric hospitals. In the end of 2012, the occupancy rate of Portuguese prisons was equal to 113%, 29% of the inmates were engaged in formal activities (work and school), and there was a total of 5,688 prison staff (4,414 guards), performing a ratio of 2.4 inmates per staff (http://www.dgsp.mj.pt).

There are also three different prison regimes (i.e., security, common, and open) corresponding to other three security levels (i.e., special, high, and medium, respectively). In short, the security regime is for high risk offenders, limiting contacts with other inmates and the outside world (e.g., visits, phones calls), as well as activities. The common regime (the general one) allows more interactions between prisoners, activities inside the facility, and contact with the outside. The open regime is for low risk prisoners and favors even more the contact with the outside (e.g., longer visits,

---

[4] Those are also the most recent annual statistic available.

[5] This tipification is not included in the law anymore, though still commonly in use. Prisons are now only categorized according to their security level and management complexity (high and medium; see Law No. 115/2009).

temporary leaves) and working activities, inside or outside the institution, with more autonomy and less surveillance (Law No. 115/2009).[6]

There is a lack of comparative research, national inmate surveys, technical reports, and available statistics on important topics that would be helpful to frame imprisonment in Portugal in a global context.[7] Nevertheless, reports from international organizations like CPT (2013a; 2013b) provide some insight about conditions of confinement and correctional practices in our country.[8] Despite exceptions, imprisonment in Portugal does not seem a case of degrading treatment. However, some situations were considered alarming and have been aggravating. Among main concerns were the rising crowding rates, the lack of prison staff, and the reduced offer of productive activities, as the statistics above presented seems to confirm.

Of major applicability for the present research, CPT (2013a; 2013b) exposed that the disciplinary system should be improved, criticizing disciplinary procedures, the long periods of confinement during isolation sanctions (up to 22 or 23 hours a day) and the extension of those sanctions (up to 21 days or 30 in cumulated sanctions). They also alert that the restrictions on family contact (e.g., visits, phone calls) during disciplinary confinement should never amount to a total prohibition of contacts, which is the regular practice in our country. Importantly, and in accordance with our point of view, CPT reported that the reasoning for assigning and keeping inmates into security levels was brief and superficial, lacking a proper psychological assessment of the inmate. The seriousness of the offence committed had more importance than how prisoners actually behave, and no information was provided to them regarding the criteria on which their evaluation was based, generating feelings of anger and frustration:

"*An examination of a number of files pertaining to prisoners in the security units appeared to indicate that continued placement was punitive in nature. To begin with, the assessments were extremely brief with no analysis of the individual but merely an opinion by each prison department. In one typical case, both the*

---

[6] There is no available statistic about inmates' distribution across these different prison regimes for us to present.

[7] For this reason, we often rely on data from other prison systems along this thesis.

[8] Note that CPT does not make comparison between countries in their reports (nor aims to). CPT organizes visits to places of detention in order to assess how prisoners are treated. After each visit, CPT sends a detailed report to the respective country exposing their findings, recommendations, requests for additional information and responses to the issues raised. These reports provide information about different aspects of incarceration and correctional procedures that are not in accordance with the standards of the Council of Europe (http://www.cpt.coe.int/en/about.htm).

officers' and the educator's report stated – good behavior but given seriousness of offence and short time of stay in the unit, should remain – The director of the prison concurred and, subsequently, the Deputy Director General prolonged the prisoner's stay in the security unit by a further six months. Not surprisingly, the behavior of a number of inmates deteriorated the longer they were held in the security unit as they felt trapped" (CPT, 2013a, p. 27).

Similarly, CPT raised concerns about prisoners' health care assessment and treatment. The initial screening for health care needs was found to be based on a few oral questions and do not include a comprehensive mental nor physical examination, being insufficient for questions like suicide prevention, preventing the spread of diseases, and the timely recording of injuries. Aggravating this situation, to reduce costs, most medical staff in prison is nowadays affiliated to private companies that are engaged by public tender, casting doubts on the quality and continuity of health care services. Specialists qualified to provide therapeutic and rehabilitative psycho-social activities were considered further reduced. In addition, drug abuse and supply was reported as a problem in certain prisons and the access to treatment programs is not always accessible, aggravating potential situations of risk and distress.

In sum, though the Portuguese penal system is rehabilitative by nature and many progresses have been made in that sense after democracy in the country, deterrence and incapacitation were also introduced, either due to concerns of safety regarding violent offenders, or economic difficulties that increase the number of those who are sent to prison and forced governments to reduce managerial costs of correctional facilities. The legislation and correctional procedures were updated but problems like overcrowding, the lack of prison staff and activities, and also a sound classification and treatment of the inmates generate stressful conditions for those working and living in prison that prevent the execution of the sentences in the way they are idealized by the law.

1.5. Prior Research in the Portuguese Context and Limitations

Numerous studies on inmates' adjustment to prison life have been published, especially since the 1980s. Over time, studies have been conducted across various settings, outcomes and populations. Also, they become quite methodologically sophisticated (Sorensen & Davis, 2011). Actually, numerous correlates of inmates' adjustment to prison and their coping strategies are identified. As findings from prior

research were exposed in the previous sections and will be further addressed in each study of the thesis, they are not repeated here. We should however summarize prior research on inmate adjustment to prison in Portugal, which, compared with the international picture, is still in an incipient stage.

Among the most relevant studies to contextualize the present research, Gonçalves (1999; 2002/2008) observed that inmates in a CP that had lower scores on the PAI (i.e., poorer adjustment) were related to younger ages, single status, low education, and property crimes. Higher levels of psychopathy were also associated with a poor adjustment to prison. More recently, with a sample prisoners detained in a RP, Gonçalves (2010) reported that higher rates of disciplinary infractions were related to drug abuse history, recidivism in prison, sentenced status, property crimes, and not being married. Gonçalves and Gonçalves (2012), in a sample of inmates detained in a RP, found that a drug abuse history and higher levels of aggressiveness, as measured by the Aggression Questionnaire (AQ – Buss & Perry, 1992), were related with more infractions, while shorter sentences and higher levels of hostility (AQ scale) predicted more health care use. We are not aware of any study investigating coping strategies (directly) with a qualitative framework so far.

Other studies allude to inmate adjustment to prison but focus on outcomes different than ours or use the concept of adjustment to frame their research, not investigating this process directly. Studies reporting on coping strategies, directly or indirectly, have used either psychometric tools or structured interview schedules not designed to measure and explain different ways of coping in prison that only the prisoners can describe. To be sure, there may be other studies that meet the topics and methods of our research but we are not aware of their existence or they are not disseminated in scientific journals or books.

It should also be noted that though research became quite sophisticated in the criminal and penal field, it is not the case in Portugal. Studies tend to include small samples of prisons and inmates, retrospective designs, explore few variables, and use bivariate analyses or other unsophisticated methods, frequently not appropriate to the type of variables and/or questions under analysis (but see Gonçalves & Gonçalves, 2012). Qualitative studies are further sparse. In sum, though knowledge on inmate adjustment to prison in Portugal increased substantially since the 1990s (Gonçalves, 2002/2008), still much has to be done.

To justify the present research, it suffices to say that, though adjustment to prison is a well-covered topic abroad, it is not the case in Portugal, which limits the contribution of science for better correctional practices and legislations in the country. But there are other gaps in knowledge that this study addresses. Those are three in particular. First, although many correlates of inmates' adjustment have been identified, several predictors (e.g., contextual variables) and outcomes (e.g., health care use) are still understudied, and the results have been inconsistent (Drury & DeLisi, 2010; Morris et al., 2010; Steiner & Wooldredge, 2009). Second, certain groups of prisoners, like the youngster, have received less attention from research, despite being a group of increased risk and needs (Edens & Campbell, 2007; Kuanliang et al., 2008; Tasca, Griffin, & Rodriguez, 2010). Third, though a variety of strategies to cope with prison life has been identified, a classification of these strategies into broader dimensions according to their function is still to be established. These research problems frame the structure and objectives of the present thesis.

There are also methodological limitations in prior research. First, although empirical findings have been inconsistent across studies, little is known about how different methodological procedures of individual studies influence the results they obtain, preventing guidance for further research. Second, though it is commonly assumed that inmate adjustment changes over the course of incarceration, most studies use cross-sectional designs that are unable to provide information on developmental patterns of adaptation. Even fewer explore the moderator effect of time on the relationships between predictors and outcomes, making impossible to know when different risk factors are more likely to cause a particular response. In the present research, we aimed to surpass and shed light on these questions.

1.6. Societal Relevance of the Thesis

This research will contribute to develop knowledge on prisoners' adjustment twofold. First, examining predictors of institutional infractions and health care use this research generalizes knowledge on these two indicators, synthetizing results from previous studies worldwide and adding a perspective from an unexplored cultural context (Portugal). Second, exploring inmates' coping strategies through an inductive method, this research will help to identify strategies used specifically to adapt to prison life and gain an understanding on their underlying reasons. More knowledge on

institutional infractions, health care use, and coping strategies is important for correctional practice and society for various reasons.

First, institutional infractions carry a host of administrative, managerial, and legal issues that compromise the manageability of prison institutions (Gaes, Camp, Nelson & Saylor, 2004; Trulson, 2007). For instance, violence and other forms of deviance make prisons more dangerous and stressful for both inmates and staff (Adams, 1992; Taylor, Kemper, & Kistner, 2007). They also may lead to additional prosecutions, sentence extensions and associated prison crowding, as well as inmate reclassification, housing movements, and additional clinical treatment for injuries, costing large resources that are paid at the expense of the taxpayers (Charton et al., 2011; Mcreynolds & Wasserman, 2008; Skeem & Cauffman, 2003). In 1996, Lovell and Jamelka analyzed the costs of misconduct at a medium-security prison in the U.S. and estimated an average cost of $970 per infraction. Besides that, misconduct may result in administrative sanctions like segregation, loss of privileges, and non-inclusion in programs, further restricting inmate well-being and rehabilitation (Charton et al., 2011; Taylor et al., 2007; Trulson, DeLisi, Caudill, Belshaw, & Marquart, 2010).

Second, compared with the general population, prisoners are more likely to use health care services and to suffer from diverse physical and mental health problems, including substance abuse and infectious diseases, with high comorbidity (Condon, Hek, & Harris, 2007; Fazel & Baillargeon, 2011; Watson, Stimpson, & Hostick, 2004). In fact, clinical services absorb a substantial part of prison budgets. A report from The State Health Care Spending Project (2013) exposed that prison health care costs across 44 states of the U.S. totaled $6.5 billion in 2008, out of $36.8 billion in overall correctional expenses (18%). Of major concern, mental and physical health problems are risk factors for disturbing behaviors including violence, self-harm, suicide, and victimization (Doty, Smith, & Rojek, 2012; Fazel, Cartwright, Norman-Nott, & Hawton, 2008; Felson, Silver, & Remster, 2012; Wolff, Blitz, & Shi, 2007). Also, they may reduce prisoners' willingness or personal capacity to participate in daily activities and programs, also limiting their well-being and rehabilitation (Butler, Loney, & Kistner, 2007; Van der Laan & Eichelsheim, 2013).

Third, the way how prisoners appraise and respond to imprisonment is deeply associated with their process of adaptation (Adams, 1992). As in the free world, maladaptive coping strategies have been related to a variety of adjustment problems in

prison including psychological distress, drug use, violence, self-harm, and suicide attempts, as well as more institutional infractions and health problems (Dear et al., 1998; Eftekhari, Turner, & Larimer, 2004; Gullone et al., 2000; Ireland et al., 2005; Van Harreveld, Van der Pligt, Claassen, & Van Dijk, 2007; Zamble & Porporino, 1990). Furthermore, it is recognized that prisoners tend to have substantial coping deficits that prison conditions tend to maintain unchanged (Gullone et al., 2000; Zamble & Porporino, 1988), being an obstacle for their successful rehabilitation.

In fact, prison misconduct, mental health issues and coping strategies all have been associated with heightened chances for recidivism upon release (Baillargeon, Binswanger, Penn, Williams, & Murray, 2009; Cochran, Mears, Bales, & Stewart, 2012; Trulson, DeLisi, & Marquart, 2011; Zamble & Porporino, 1990). This continuity in harmful behaviors and symptoms cause the revolving door of the justice system. As an example, the Pew Center on the States (PCS; 2011) reported that 43% of the inmates released in 2004 across 41 states of the U.S. were re-incarcerated within three years. The inefficiency of prisons in rehabilitating offenders compromises the safety of society (Cullen, Jonson, & Nagin, 2011) and has a huge financial impact. For instance, it costs an average of €40.10 per day to keep an inmate imprisoned in Portugal (Lusa, 2014) and $78.95 in the U.S. (PCS, 2011). Therefore, more knowledge on prisoners' infractions, health care use, and coping strategies is important for those living and working in prison, but also the society.

This research may have implications for correctional practice in two major ways. First, more knowledge on predictors of institutional infractions and health care use can contribute to optimize inmate classification and management procedures (Fernandez & Neiman, 1998; Garrity, Hiller, Staton, Webster, & Leukefeld, 2002; Shermer et al., 2013). Second, prisoners perspectives on how they cope with prison life and why may help to identify their needs and respective programs and policies for them to develop alternative ways of responding (Johnson, 1996; Reed, Alenazi, & Potterton, 2009; Zamble & Porporino, 1990). Ultimately, developing knowledge on inmate adjustment to prison and in turn correctional practices may lower re-offending after release and associated impact in the community (Cullen et al., 2011).

1.7. Outline of the Thesis

As already mentioned, this research focuses on: (a) predictors of inmates' adjustment to prison, and (b) their coping strategies. Specifically, we first analyze predictors of institutional infractions and health care utilization using quantitative methodologies. Two studies concern this objective. The first meta-analyze findings from prior literature worldwide (Chapter II) and the second analyze longitudinally empirical data from a sample of young prisoners (Chapter III). Then, through a qualitative framework, we explore coping strategies and their specific purposes in a sample of first-timers (Chapter IV). The outline of the empirical chapters is presented in Table 1.1.

Specifically, Chapter II investigates to what extent different variables are related to inmate infractions and health care use, considering personal level (e.g., inmate age) and contextual level predictors (e.g., prison population size). We also compare the validity of these variables in predicting more specific outcomes (i.e., severe vs. minor infractions; mental vs. physical health care) and moderators that may account for variability in the results (e.g., design, follow-up length). Data consist of empirical findings of prior research. The search strategies and exclusion criteria resulted in the inclusion of 90 studies from 13 countries that were aggregated in 75 independent samples that comprise the dataset analyzed in the present meta-analysis. Random and mixed effect models are used to deal with the heterogeneity in the results. We focus male prisoners because those constitute the larger portion of the prison population and research samples, enlarging the data and implications of our study. Moreover, specific groups of offenders (e.g., juveniles, women) may have different risks and needs, and are subjected to different conditions of confinement and treatment (Harer & Langan, 2001; Gover, et al., 2008) which could bias the results.

Chapter III examines changes in prisoners' infractions and health care use over the first year in prison (i.e., 1st, 3rd, 6th, and 12th month), as well as the effect of various personal level variables (e.g., social support, mental problems, and institutional risk) on their adjustment patterns. The role of time in prison as a moderator of the effects is also investigated. The dataset comprises 75 young males (aged 17 to 22 years) detained in a specialized prison. To account for the hierarchical structure of the data (i.e., observations nested within inmates) and capture variation over time between individuals, multilevel regression analysis were employed, using random and mixed

effect models from the negative binomial family, because they are better suited to analyze count variables. In this study we focus on young prisoners because less is known about this population, they are a group of increased risk and needs, and they may be more amenable to rehabilitation than older offenders who become entrenched in criminal habits (Benda, Corwyn, & Toombs, 2001; Trulson, 2007).

Chapter IV explores what coping strategies prisoners use to adapt to prison life in Portugal and the reasons why they use such strategies. In-depth interviews were carried out with a sample of 25 males detained in two different prisons (i.e., RP and CP) because coping may vary across different prisoners and settings. Data were analysed through a grounded theory approach. In broad, units of meaning were integrated into similar concepts representing different coping strategies, strategies that were later grouped into generic categories according to their major function in the prison context. In this study, we focus on first-timer prisoners for whom imprisonment may be more stressful as the lack of experience in the prison world may restricts their ability to exert personal control and gain acceptance from the inmate population (Mitchell & Shaw, 2011; Schmid & Jones, 1993).

Finally, chapter V presents the general discussion of the thesis. The main findings are summarized and discussed in the context of prior research in Portugal and abroad, as well as their implications for theory, research and practice. The chapter ends with a discussion on the limitations of the present research, suggestions for future studies, and, by last, a brief conclusion.

Table 1.1: Outline of Empirical Chapters

	Chapter II	Chapter III	Chapter IV
Objectives	- To quantify the effects of personal and contextual variables on prisoners' infraction rates and their health care utilization - To compare the predictive utility of those variables for severe vs. minor infractions and mental vs. physical health care utilization - To explore moderators that may account for variability in the results	- To examine the influence of social support, mental problems, institutional risk, and other covariates on young prisoners' infractions and health care use over time - To examine changes in young prisoners' infractions and health care utilization over time	- To describe what coping strategies first-timer prisoners use to cope with prison life and what they gain from these strategies (i.e., why they are used)
Independent variables	- Personal level: socio-demographic, clinical, criminological - Contextual level	Personal level: socio-demographic, clinical, criminological	(not applicable)
Moderators	Geographic location, sample selection, prison sample size, design, outcome type, source of information, follow-up length, type of analysis, facility type	Time in prison	(not applicable)
Dependent variables	- Institutional infractions: total, severe, minor - Health care utilization: total, mental, physical	- Institutional infractions: severe, minor - Health care utilization: mental, physical	(not applicable)
Data	90 studies resulting in 75 independent samples coming from 13 countries	Longitudinal follow-up of 75 young males (17 to 22 years) over their first year in a specialized prison	25 first-timer males detained in two different prisons (local vs. central)
Analytical method	Quantitative. Meta-analysis: random and mixed effect models	Quantitative. Multilevel regression analysis: random and mixed effect negative binomial models	Qualitative. In-depth interviews and grounded theory method

CHAPTER II

Predicting Infractions and Health Care Utilization in Prison:
A Meta-Analysis[9]

2.1. Abstract

This meta-analysis was conducted to examine predictors of two indicators of inmates' adjustment to prison life: institutional infractions and health care utilization. Focusing on male prisoners, the final dataset consisted of 90 studies and produced 1,815 correlations. Predictors were grouped into personal and contextual characteristics. Regarding institutional infractions, the strongest personal predictors were prior prison misconduct, aggressiveness, impulsiveness, antisocial traits, institutional risk, and younger age. At the contextual level, higher infraction rates were observed in prisons with more gang activity, and in prisons housing more inmates and a larger proportion of maximum security inmates. Major correlates of health care utilization were prior mental health problems, older age, and physical symptoms. Moderator effects were observed for prison sample size, sample selection, length of follow-up, geographic location, and type of analysis. These findings may help to improve prison classification procedures in order to optimize prisoners' management and treatment.

Keywords: prisoners, adjustment, meta-analysis, infractions, health care

2.2. Introduction

The present study focuses on inmates' adjustment to life in prison. At present, more than 10 million people are being held in penal institutions worldwide and imprisonment rates have increased dramatically in many countries during the past decades (Walmsley, 2011). These increasing imprisonment rates may influence the management of prisons (Shermer, Bierie, & Stock, 2013). For example, increasing prison populations may result in overcrowding and may affect prison safety, the

conditions of confinement, staff–inmate relationships, and prisoners' access to meaningful programming (Bierie, 2012; Charton, Couture-Poulin, & Guay, 2011; Dirkzwager & Kruttschnitt, 2012). One of the primary goals of a prison system is to guarantee the safety of the public, prison staff, and inmates (Gaes, Camp, Nelson, & Saylor, 2004). Poor adjustment to prison life, however, can be associated with risky and unsafe situations, like self-harm (Harvey, 2007), suicide attempts (Liebling, 1999), and violent behaviors (Adams, 1992), all of which have major implications for the safety of inmates and staff. Therefore, adequate knowledge on predictors of inmates' maladjustment will be helpful to maintain a safe prison environment.

For instance, early identification of prisoners at risk for disruptive behaviors or health problems can assist prison management in classifying such prisoners to appropriate security levels, directing high-risk prisoners to appropriate treatment programs (e.g., anger management), and allocating health care resources more efficiently (e.g., mental health treatment). Subsequently, this may enhance the safety in prisons as well as inmates' well-being, and may reduce costs associated with managing disruptive behaviors of prisoners (Fernandez & Neiman, 1998; Garrity, Hiller, Staton, Webster, & Leukefeld, 2002; Shermer et al., 2013). In the long term, this may contribute to lower re-offending rates because both prison misconduct and mental health issues are associated with an increased risk for recidivism (Baillargeon, Binswanger, Penn, Williams, & Murray, 2009; Cochran, Mears, Bales, & Stewart, 2012; Trulson, DeLisi, & Marquart, 2011).

Although predictors of inmates' adjustment to prison life have been well studied, this research focused mainly on inmates' misconduct as an outcome and, in particular, on personal factors (e.g., age) as predictors. Therefore, knowledge is still limited with respect to other indicators of prisoners' adjustment (e.g., health care utilization) and the effects of characteristics of the prison environment on inmates' adjustment (e.g., prison population size). Both of these aspects (i.e., inmates' health and the effects of contextual factors) are also important for management purposes (Hassan, Rahman, King, Senior, & Shaw, 2012; Lahm, 2008; Steadman, Holohean, & Dvoskin, 1991; Steiner, 2009). In addition, study results have been inconsistent and systematic reviews on predictors of inmates' adjustment to prison life are scarce. The last meta-analysis on predictors of misconduct was published in 1997 and, to date, no meta-analysis has been conducted to summarize predictors of prisoners' health care utilization.

Therefore, to fill this gap in knowledge, the present meta-analysis aims to quantify the effects of both personal and contextual variables on inmates' misconduct and their health care utilization. Also examined are moderators that may account for variability in the results.

2.2.1. Theories explaining adjustment to prison life

Several theoretical frameworks are used to explain inmates' adjustment to life in prison. Two dominant theories in this field are the deprivation and the importation model. The deprivation model assumes that characteristics of the prison environment determine how prisoners adjust to life in prison. According to this perspective, prisons deprive inmates of a number of basic needs, which result in a number of "pains of imprisonment" (Sykes, 1958). Such deprivations can result in certain responses of prisoners, like stress, anger, or oppositional behavior. In contrast to the deprivation model, the importation model assumes that pre-existing characteristics of the prisoners determine how they respond to life behind bars (Irwin & Cressey, 1962). Offenders enter prison with different backgrounds, attitudes, and experiences, which will affect their adaptation to prison.

Empirical research has demonstrated that both importation and deprivation factors explain adjustment to prison life (Dhami, Ayton, & Loewenstein, 2007; Jiang & Fisher-Giorlando, 2002; Tasca, Griffin, & Rodriguez, 2010). For instance, deprivation factors like sentence length, custody level, level of gang activity, institutional activities, staff–prisoner interactions, and overcrowding are known predictors of prison adjustment (Bierie, 2012; Dhami et al., 2007; Kuanliang, Sorensen, & Cunningham, 2008; Lahm, 2008; Morris & Worrall, 2010). In addition, individual factors like age, educational level, race, prior substance abuse, prior mental treatment, type of crime, and criminal history are linked to inmates' misconduct and their medical problems (Fernandez & Neiman, 1998; Griffin & Hepburn, 2006; Morris, Longmire, Buffington-Vollum, & Vollum, 2010; Steadman et al., 1991; Steiner & Wooldredge, 2009).

The importance of integrating these two perspectives has been recognized (Paterline & Petersen, 1999). Instead of an either/or approach to understanding adjustment to prison life, the interaction between the prisoner and his environment has been stressed (Wright, 1985, 1991; Zamble & Porporino, 1988). Prisoners' pre-existing backgrounds and personal characteristics are likely to shape how they

experience and respond to environmental conditions. Although relatively few studies have examined interactions between importation and deprivation factors, there is some support for this view (Dhami et al., 2007; Steiner & Wooldredge, 2008, 2009; Wooldredge, Griffin, & Pratt, 2001; Wright, 1991). For instance, Steiner and Wooldredge (2008) observed that some personal factors, like age and prior prison experiences, were stronger predictors of infractions in the less harsh prison settings (e.g., prisons with a lower proportion of violent offenders, with more programs and jobs, and lower security levels).

In addition to the deprivation and importation model, other criminological frameworks have been applied to explain inmates' adjustment to prison life, such as the general theory of crime, social control theory, social support theory, life course theory, and the general strain theory. In line with these perspectives, a lower self-control (DeLisi, Hochstetler, Higgins, Beaver, & Graeve, 2008; Gover, Pérez, & Jennings, 2008), a lower commitment to conventional goals (Steiner, 2009; Steiner & Wooldredge, 2009; Wooldredge et al., 2001), lower levels of social support (Cochran, 2012; DeLisi, Berg, & Hochstetler, 2004; Jiang & Winfree, 2006), an early and more elaborate criminal career/lifestyle (DeLisi et al., 2004; DeLisi, Trulson, Marquart, Drury, & Kosloski, 2011; Walters, 2007), and being housed in prison units with more environmental strains (Morris, Carriaga, Diamond, Piquero, & Piquero, 2012) are related to an increased risk for institutional misconduct.

In summary, several theories have been explored and have improved our knowledge on prisoners' adjustment. Nowadays, inmate behavior and adjustment is best understood as a dynamic interplay between personal and contextual variables, and existing theories tend to be complementary rather than exclusive (Graeve, DeLisi, & Hochstetler, 2007; Jiang & Fisher-Giorlando, 2002; Morris & Worrall, 2010).

2.2.2. Prior research synthesizing empirical findings

Although several studies have examined predictors of inmates' adjustment to prison life, systematic reviews are scarce. The most comprehensive review was conducted by Gendreau, Goggin, and Law (1997). The authors performed a meta-analysis on personal and contextual predictors of prison misconduct based on 39 studies published between 1940 and 1995. Of the personal characteristics, the strongest predictors were younger age, antisocial attitudes and behaviors, and criminal history;

moderate predictors were social achievement, race, and early family factors; and the weaker predictors were cognitive abilities, personal distress, and religiousness. At the contextual level, institutional factors (aggregated measures of security level, staff–inmate ratio, etc.) were strong predictors, whereas the effect of crowding was moderate.

More recently, Schenk and Fremouw (2012) conducted a systematic review investigating the effects of personal characteristics on prison violence. They concluded that higher levels of aggressive behavior were associated with younger age, being non-White, a low educational level, shorter sentences, gang affiliation, a more extensive criminal history, infractions during prior prison terms, aggressive tendencies, symptoms of confusion, high self-esteem, lower levels of social support, major mental illness, and criminal thinking styles. In addition, several meta-analyses examined the effects of specific clinical constructs and institutional risk instruments. These studies showed that psychopathy, aggressiveness, institutional risk, and criminal lifestyle were significantly related to prison misconduct (Campbell, French, & Gendreau, 2009; Guy, Edens, Anthony, & Douglas, 2005; Leistico, Salekin, DeCoster, & Rogers, 2008; Singh, Grann, & Fazel, 2011; Walters, 2003).

Contextual variables have been studied less often. In addition to the meta-analysis of Gendreau et al. (1997), a systematic review by Gadon, Johnstone, and Cooke (2006) showed that risk factors for violence in prison include a higher security level, high traffic areas, mixing prisoners of different ages, the level of staff experience, certain days of the week, and management approaches (e.g., type of supervision). Also, Franklin, Franklin, and Pratt (2006) published a meta-analysis on the effect of prison crowding on inmates' misconduct. Based on a sample of 16 studies, the authors concluded that crowding was not a strong predictor, but the effect was substantial in younger samples (inmates aged 18-25 years).

Prior reviews of prisoners' health have demonstrated that, compared with the general population, prisoners are more likely to experience physical and mental health problems, including substance abuse (Fazel & Baillargeon, 2011; Watson, Stimpson, & Hostick, 2004). Prisoners are also more likely to use health care services (Condon, Hek, & Harris, 2007). Although considerable data are available on the prevalence of prisoners' health problems, less is known about predictors of their health care utilization. The empirical studies on this relationship observed higher utilization rates among older prisoners, convicted prisoners, and those serving shorter sentences, as well

as among prisoners with increased levels of medical and psychological problems, a history of mental health treatment and substance abuse (Garrity et al., 2002; Gonçalves & Gonçalves, 2012; Nesset, Rustad, Kjelsberg, Almvik, & Bjørngaard, 2011; Shaw & Morgan, 2011).

However, the empirical findings regarding predictors of prisoners' misbehavior and health care utilization are inconsistent. Results have low generalizability across outcomes, settings, type of offenders, and populations (Cooke, Michie, & Ryan, 2001; Endrass, Rossegger, Frischknecht, Noll, & Urbaniok, 2008; Guy et al., 2005; Leistico et al., 2008; Singh et al., 2011). In addition, differences in the results may be explained by different research methodologies, like representative versus convenience samples, retrospective versus prospective designs, and the use of self-reports versus official prison records (Guy et al., 2005; Leistico et al., 2008; Schenk & Fremouw, 2012; Singh et al., 2011).

2.2.3. The present study

In summary, systematic reviews of the predictors of inmates' adjustment to prison life are scarce despite their importance in explaining the discrepancy across empirical findings. With the aim to fill this gap in knowledge, the objectives of the present meta-analysis are to (a) quantify the effects of personal and contextual variables on prisoners' infraction rates and their health care utilization, (b) compare the predictive utility of those variables for severe versus minor infractions and mental versus physical health care utilization, and (c) explore moderators that may account for variability in the results.

Accurate knowledge on inmates' adjustment to prison life and its predictors is important for those working and living in correctional facilities. The early identification of risk factors for institutional maladjustment is relevant for inmates' classification. Generally, classification tools are used to assist prison administrators in classifying offenders to different levels of custody, in determining their treatment needs, and in allocating resources appropriately (e.g., Loza & Loza-Fanous, 2002). More knowledge on predictors of prisoners' misconduct and their health care use could support the development of more accurate and cost-efficient classification procedures. This may accomplish three things: reduce the risk of violence and distress in prison, improve offenders' treatment efficiency, and ultimately reduce recidivism upon release.

2.3. Method

2.3.1. Inclusion and exclusion criteria

This meta-analysis includes studies that (a) examined male prisoners housed in either prisons or jails, (b) reported effect sizes on predictors of prisoners' institutional infractions and/or their health care utilization, and (c) were published since 1996 for institutional infractions or since 1990 for health care utilization in the English, French, Spanish, or Portuguese language. For institutional infractions, the time frame is limited to studies available since 1996 because the comprehensive meta-analysis of Gendreau et al. (1997) included studies published up to 1995. Therefore, the present review will reflect more contemporary trends in inmate populations and penal conditions that have changed during the last 18 years. For health care utilization, the time period is extended (beginning 1990) due to the small number of studies measuring this outcome.[10] To cover a broader range of predictors, studies analyzing inmates, prisons/jails, or both units of analysis (multi-level) were included.[11]

We excluded studies that (a) measured adjustment outcomes other than infractions and health care utilization (e.g., standardized instruments like the Prison Adjustment Questionnaire; Wright, 1985); (b) measured the effects of interventions (e.g., treatment programs); (c) examined specific prison populations like female prisoners, juvenile offenders (*M* age < 18 years), sex offenders, inmates in death row or sentenced to life without the opportunity of parole, or special units (e.g., psychiatric hospitals); and (d) were purely descriptive (report only incidence rates) or separated the estimates by different groups/typologies of prisoners (e.g., latent classes).

2.3.2. Search strategies

To perform a thorough search for relevant literature, we combined several strategies. First, a variety of electronic bibliographic databases were consulted.[12] The

---

[10] For the same reason, studies based on a combination of male and female prisoners were allowed for this outcome when no statistics were reported for males only (six studies). Excluding them would prevent the meta-analysis of predictors of health care utilization. Several authors were contacted and asked for effect sizes based on males only; unfortunately, such requests were unsuccessful. However, the number of women in these studies is very small and moderator analyses showed no significant differences between studies with males only and studies combining males and females.

[11] As studies measuring the effects of contextual variables are scarce, penal institutions confining female inmates were also allowed (seven studies). Again, their number is very small and not significant in moderator analyses.

[12] The following databases were searched: EBSCO, Elsevier, ERIC, ISI, JSTOR, Medline, PsycARTICLES, PsycINFO, PubMed, Scielo, Scopus, Sociological Abstracts, Springer, Taylor & Francis, Wiley, BioMed, NCJRS, SAGE, and Google Scholar.

keywords used for the literature search include terms related to (a) the offender population (e.g., male, inmates, prison), (b) institutional infractions (e.g., misconduct, violence, assault), and (c) health care utilization (e.g., services, treatment, sick call). Keywords were used in different languages (mentioned above), and all searches were completed in October 2012. Second, we reviewed the references of all relevant studies resulting from the above-mentioned search strategy, and searched for studies citing those already retrieved to identify additional ones meeting the inclusion criteria. Third, we contacted researchers from different countries who were actively involved in the research of predictors of adjustment to prison life and asked about the existence of relevant studies.

This search strategy resulted in a list of 1,879 studies. After reading all abstracts, 631 studies were identified as potentially relevant. Subsequently, the full text of these 631 publications was reviewed for relevance and, after removing studies that met the exclusion criteria, a final sample of 90 studies were included in the meta-analysis (the entire list of studies included in the meta-analysis is exposed in Appendix 1). Selected studies based on the same data set were aggregated, which resulted in 75 independent samples coming from 13 different countries (when providing overlapping analyses, only the study with the statistical model that best fit the data was included in the list of 90 studies). These 75 samples comprise the data set that is analyzed in the present meta-analysis.

2.3.3. Definition of variables

In the present meta-analysis, inmates' adjustment is operationalized as institutional infractions (i.e., disciplinary incidents) and health care utilization (i.e., visits to clinical services, including preventive and chronic care) during incarceration. To compare the effect of predictors across more specific outcomes, both variables were subdivided. First, institutional infractions were divided into (a) severe infractions (severe threats to institutions' security or the physical integrity of others, like assault, escape, riot) and (b) minor infractions (those of less severity, like contraband, thefts, substance use). Second, health care utilization was divided in (a) visits for mental treatment (e.g., psychological assessment, consultation, interventions) and (b) visits for physical treatment (e.g., medical consultation, nursing, therapy).

Predictors include personal and contextual variables, that is, predictors related to the inmate (e.g., age, criminal history, substance abuse) and predictors related to the prison situation (e.g., crowding, population size, staff–inmate ratio). Personal predictors also include standardized instruments assessing institutional risk and clinical constructs (e.g., aggressiveness, physical or mental symptoms). For the purpose of the present analysis, different instruments/scales measuring similar constructs were aggregated.

2.3.4. Coding procedure

The following characteristics were coded for each of the 90 studies: (a) study descriptors (e.g., publication year, country), (b) sample descriptors (e.g., age, prison type), (c) methodology (e.g., design, follow-up length), (d) available personal predictors, (e) available contextual predictors, (f) available outcomes, and (g) outcome data sufficient to compute effect sizes (the entire list of descriptors can be consulted in the coding manual, presented in Appendix 2). Based on prior research and considerations for practice, we focus on nine potential moderators: (a) geographic location: *U.S.* versus *non-U.S.* (samples collected in the United States or elsewhere in the world); (b) sample selection: *non-representative* (convenience or random selection) versus *representative* (stratified sampling); (c) prison sample size: *small* (only 1 prison), *medium* (2 - 10 prisons), versus *large* (> 10 prisons);[13] (d) design: *prospective* versus *retrospective*; (e) outcome type: *continuous* versus *dichotomous*; (f) source of information: *self-report* (inmates' reports of their infractions and health care utilization) versus *prison record* (official prison files); (g) follow-up length: *short* (< 1 years), *medium* (1 - 2 years), versus *long* (> 2 years); (h) type of analysis: *bivariate* versus *multivariate*; and (i) facility type: *prisons* versus *jails* (including local prisons and remand centers). Missing data were coded as "not available."

The first author coded all studies included in the meta-analysis. A doctoral student was trained to code a random 10% sample. The inter-rater reliability proved to be very good (κ = .89, 95% confidence interval [CI] = [.85, .93]; see Altman, 1991), and any disagreement between the raters was solved by discussion.

---

[13] Samples are criticized for low representativeness when they include only one prison (Trulson, 2007). In addition, it has been suggested that having more than 10 units at Level 2 – in our case prisons – is enough to make inferences about the population mean (Rabe-Hesketh & Skrondal, 2008).

2.3.5. Statistical methods

In a first step, statistical information had to be extracted from the 90 studies to code comparable effect sizes that could be used for the meta-analysis. Although in meta-analyses investigating the association between two variables the correlation coefficient is generally used as the effect size (Borenstein, Hedges, Higgins, & Rothstein, 2009; Pigott, 2012), most studies use multiple regression models, which produce partial effect sizes.[14] To avoid losing data, a method for combining both bivariate and multivariate analyses was needed. Following Stanley and Jarrell's (1989) suggestion, we used the *t* statistic (coefficient divided by its standard error) to summarize regression coefficients,[15] and then converted the *t*-values into an $r_{equivalent}$ (Rosenthal & Rubin, 2003).[16] Other statistics (i.e., *F*, area under the curve [AUC], Wald, odds ratio [OR], and *p*) were transformed to *t*-values using appropriate procedures (e.g., Card, 2012) and subsequently converted into correlations. Standardized regression coefficients (β) reported without standard errors were converted using Peterson and Brown's (2005) approximation formula.[17] When we had to rely on probability levels and the exact *p* value was not stated, only the lower bound of significant effect sizes was assigned.

In a second step, Biostat's Comprehensive Meta-Analysis (Version 2) software was used to perform the actual meta-analysis. The coded effect sizes were converted into Fisher's Z_r scores for analysis because the distribution of this metric is normal, allowing for more precise statistical tests (the estimates were later converted back to correlations for presentation). To obtain more precise estimates, each effect size was weighted by the inverse of its variance. The weighted mean was then computed as the sum of the products (effect sizes multiplied by weights) divided by the sum of the weights (see Borenstein et al., 2009). Multiple effect sizes from individual samples (i.e., when analyzing several predictors and/or outcomes) were combined taking the mean of

---

[14] Although advanced methods to synthesize regression slopes have been suggested in the last years (see Becker & Wu, 2007; Card, 2012), the information needed to compute such indexes is frequently not available and some approaches are difficult to implement attending to the actual software.

[15] Stanley and Jarrell argue that *t* statistics are a standardized measure of the parameter of interest, and deal with heteroskedasticity of slopes and the use of different scales across studies.

[16] $r_{equivalent} = \sqrt{(t^2/(t^2 + (N-2)))}$. According to the authors, this indicator may be used when only probability or *t*-values are stated, no generally accepted effect sizes exist in the literature, or the computed effects are likely to be misleading.

[17] $r = .98 \times \beta + .05 \times \lambda$; where λ is equal to 1 when β is non-negative and 0 otherwise.

the different effect sizes.[18] All summary estimates were computed using random-effect models. This decision was defined a priori based on the belief that true effects vary between studies, in view of the variability in populations, methodological procedures, and results found in the literature.

To evaluate heterogeneity among effect sizes, Q tests were performed. Significant results indicate that the effects do vary and are not all estimates of a single population (Card, 2012). We also used the I^2 index,[19] which describes the percentage of the total variability across the effect sizes that is due to true heterogeneity (between studies) rather than sampling variance (Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006).

Two methods were used to explore the potential effect of publication bias. First, Egger, Smith, Schneider, and Minder's (1997) regression method tests whether the funnel plot of the estimates (effect sizes vs. standard error) is symmetrical. Statistically significant results suggest bias in the data. Second, Rosenthal's (1979) fail-safe N method evaluates the robustness of the results by indicating how many studies with an effect size of zero should be added to the analysis before the summary effect becomes non-significant. Sensitivity analyses were performed using forest and funnel plots to highlight anomalies in the data. Severe outliers (estimates far from funnel plot standard error) were excluded from calculations to provide more reliable estimates.

To compare the effect of predictors across subsets of outcomes (i.e., severe vs. minor infractions; mental vs. physical treatment), tests for differences in means (z_{diff}) were performed. Significant results indicate considerable variation across different outcomes.

Finally, other sources of variation in the effect sizes were investigated through sub-group analysis, utilizing mixed models with samples combined within sub-groups

---

[18] For example, when individual samples measured the total number of visits to clinical services in one single variable, not specifying visits for mental and physical health problems, we coded this similarly as "total health care utilization", and this total measure for health care use was included in the analyses presented in Table 2.3. When information was present within one sample on both health care use for mental health problems and health care use for physical health problems, such a sample was included only once in the analyses of "total health care utilization". The effect sizes of treatment for mental and physical health problems were then combined by taking the mean of both effect sizes. In the analyses comparing the effect sizes across treatment for mental and physical health problems, the separate outcomes (i.e., mental vs. physical treatment) were included.

[19] Contrary to Q tests, the I^2 index informs about the magnitude of (true) heterogeneity and is not directly affected by the sample size. Values of 25%, 50%, and 75% may be considered as low, moderate, and large, respectively (Higgins, Thompson, Deeks, & Altman, 2003).

assuming a common variance component (pooled τ^2). Differences between groups were explored through ANOVAs (Q_{bet}) examining one moderator at a time, and the proportion of true variance explained by each one (R^2).

2.4. Results

2.4.1. Descriptive information

The final data set (of 75 independent samples) produced 1,815 effect sizes, including 488 predictors and 34 outcomes. The sample sizes of the included inmates ranged from 31 to 177,767 (Mdn = 395.50, SD = 23,498.08), together providing a total of 444,016 participants (information missing in 9% of the independent samples). The sample size of the prisons ranged from 1 to 873 (Mdn = 4.50, SD = 158.70), giving a total of 4,223 penitentiary institutions (23% missing information). Most samples (83%) focused on institutional infractions, while 13% examined health care utilization, and only 4% examined both these outcomes. Regarding predictors of inmates' adjustment, 76% of the samples provided information about personal level predictors, 12% focused on contextual predictors, and 12% assessed both (a table with the major descriptive characteristics of the independent samples is presented in Appendix 3).

Information on the number of infractions and health care visits was mostly based on data from prison records (83%). Outcomes were measured as continuous variables in 41% of the samples, and dichotomously in 48%. Furthermore, most samples were taken from prison facilities (76% vs. 12% from jails), were gathered in the United States (75%), used retrospective designs (61%), and selected participants by non-representative procedures (57%). The statistical analysis was multivariate in 72% of the cases and bivariate in 20%. The follow-up period was more evenly distributed (24% ≤ 1 year, 28% 1 - 2 years, and 24% ≥ 2 years); however, 23% of the samples provided no information on the observation period. Finally, 28% of the samples were based on data from only one penitentiary institution, 17% were based on 2 to 10 institutions, and 36% were based on ≥ 10 institutions. In one fifth of the samples, no information was provided about the number of prisons included in the study.

The main findings are described below. First, we present results on the effects of personal and contextual predictors on institutional infractions, and results on heterogeneity and publication bias. The section on institutional infractions ends with a

comparison of the estimates for severe and minor infractions. Second, the same procedure is used to present results for the predictors of inmates' health care utilization. Finally, significant moderators of the estimates are presented.

2.4.2. Personal predictors of institutional infractions

The results for the personal predictors of institutional infractions are presented in Table 2.1. For power purposes, only predictors including at least four samples were considered.[20] Personal level variables were grouped into (a) socio-demographic, (b) clinical, and (c) criminological predictors. The effect sizes are the mean weighted correlations.[21] The socio-demographic characteristics show a significant effect for age, indicating that younger prisoners were more likely to misbehave ($\bar{r}_w = -.11$). Inmates who experience more social support in prison (e.g., more visits; $\bar{r}_w = -.06$), those with a higher educational level ($\bar{r}_w = -.03$), and inmates who are married ($\bar{r}_w = -.02$) were less likely to misbehave. Being Black was related to higher infraction rates but its effect was very low ($\bar{r}_w = .01$). In fact, only age had a considerable effect size. Being Caucasian or Latino, having children, and being a foreigner were not significant predictors of misconduct.

All clinical variables were significantly related to prison misconduct. The largest effect sizes were observed for aggressiveness ($\bar{r}_w = .20$), impulsivity ($\bar{r}_w = .19$), and antisocial personality ($\bar{r}_w = .17$). Prisoners scoring high on these constructs were more likely to misbehave. A history of substance abuse ($\bar{r}_w = .07$), victimization ($\bar{r}_w = .03$), and prior mental health treatment ($\bar{r}_w = .02$) were also significant predictors of prisoners' misconduct; however, these effects were relatively small.

Of the criminological predictors, prior infractions against prison rules was the strongest ($\bar{r}_w = .21$), providing evidence for the perpetuation of deviant behaviors. Prisoners classified as a high institutional risk based on classification tools were also more likely to misbehave ($\bar{r}_w = .13$). A more elaborate criminal history, a younger age

---

[20] Although it is useful to perform a meta-analysis with only two samples because it yields a more precise estimate than either sample alone, in random-effect models the between-studies variance may be substantially biased (Borenstein, Hedges, Higgins, & Rothstein, 2009; Pigott, 2012). To provide more reliable estimates we increased the number of samples to four. Even so, this number is small and the results of such analyses should be interpreted with caution.

[21] In interpreting the value of the effect sizes, the following guidelines may be useful. It is suggested that correlations of .10 and higher have practical consequences for research in correctional settings (see Gendreau, Goggin, & Law, 1997). In addition, confidence intervals of .10 or larger may indicate imprecise estimates (see Campbell, French, & Gendreau, 2009).

when first arrested, prior incarcerations, and involvement in property crimes had more modest effects on misconduct ($\bar{r}_w$ = .05 - .09). Finally, gang involvement, a history of violence, having served a longer time in prison, having a longer sentence, and being accused of drug-related crimes (the last two inversely) were significant but weak predictors ($\bar{r}_w$ < .05).

Q tests suggest significant levels of heterogeneity within most predictors, and I^2 statistics indicate that a large proportion of the observed variation is due to variability across samples. These results justify the use of random-effect models and indicate that sources of dispersion should be explored further (see below in the moderator analyses). Lower indices of heterogeneity were found among the clinical predictors.

The impact of publication bias appears to be modest. The test of Egger et al. (1997) shows significant results in only 3 of the 27 predictors. Aggressiveness was the estimation most affected (p = .002). However, all effects fall inside the funnel plot standard error. Bias is caused by one larger sample, which has an effect size slightly lower than most of the others. Excluding it would reduce the total sample but would not change the results considerably. The fail-safe N estimate suggests that if zero to two studies with an effect size of zero were added to the analyses, the effect of prior mental treatment and a history of victimization would become non-significant. Therefore, the reliability of these two predictors may be low, and caution is required in interpreting these results.

Next, we compared the effect sizes between severe and minor infractions. Due to the small number of studies examining minor infractions, only 10 predictors could be compared (age, being Black or Latino, aggressiveness, antisocial personality, criminal history, gang involvement, violent crime, prior incarcerations, and time served). Differences in the estimates were observed for two variables: prior incarcerations (z_{diff} = 1.91, p = .056) and time served (z_{diff} = 4.32, p < .001). Having experienced prior incarcerations was more strongly related with minor infractions than with severe ones ($\bar{r}_w$ = .08, 95% CI = [.03, .14] and .03, [.01, .05], respectively). Similarly, having served a longer time in prison was more strongly related with minor infractions than with severe ones ($\bar{r}_w$ = .09, 95% CI = [.06, .12] and .02, [.00, .03], respectively).

Table 2.1: Personal Characteristics as Predictors of Institutional Infractions

Predictor	k	N_i	$\bar{r}_w$	95% CI	Q	I^2	Egger test	Fail-safe
Socio-demographic								
Age [b]	26	266,020	−.11***	[−.13, −.09]	260.01***	90.39	1.90[†]	5,967
Education	15	252,353	−.03**	[−.05, −.01]	91.71***	84.73	0.66	278
Father	5	11,873	.02	[−.02, .05]	6.55	38.88	2.34	0
Foreigner	4	84,644	.02	[−.01, .05]	14.51**	79.32	1.03	8
Social support [a]	6	11,318	−.06*	[.00, −.11]	13.20*	62.13	2.57[†]	10
Married	10	113,438	−.02**	[−.04, −.01]	30.02***	70.02	0.99	49
Race: Black [a]	17	147,904	.01*	[.00, .02]	33.56**	52.33	1.36	34
Race: White	6	22,831	−.02	[−.04, .01]	13.00*	61.54	1.10	2
Race: Latino	13	129,456	−.00	[−.02, .01]	40.24***	70.18	0.91	0
Clinical								
Aggressiveness [c]	12	2,365	.20***	[.16, .23]	9.97	0.00	4.03**	274
Antisocial personality	14	3,865	.17***	[.13, .21]	16.70	22.17	0.79	281
Impulsivity [a, c]	6	867	.19***	[.12, .25]	4.20	0.00	1.96	45
Prior mental treatment [c]	5	11,413	.02*	[.00, .04]	1.22	0.00	0.94	0
Substance abuse [b]	11	24,144	.07***	[.04, .09]	20.32*	50.79	0.18	212
Victimization history [c]	4	12,958	.03**	[.01, .04]	1.18	0.00	0.56	2
Criminological								
Age at first arrest [c]	4	2,405	−.07**	[−.11, −.03]	1.65	0.00	0.65	6
Crime: drug	7	30,095	−.02[†]	[−.05, .00]	18.50***	67.50	0.37	12
Crime: property	5	23,532	.05**	[.01, .08]	17.27***	76.84	2.45[†]	36
Crime: violent	14	347,336	.01	[−.01, .03]	205.08***	93.66	0.63	10
Criminal history [b]	16	197,448	.08***	[.05, .10]	53.43***	71.93	1.91[†]	759
Gang involvement	13	149,932	.04***	[.02, .06]	91.82***	86.93	2.20*	222
Institutional risk	12	37,063	.13***	[.08, .18]	91.42***	87.97	1.47	491
Prior incarceration [b]	16	134,705	.05***	[.03, .07]	97.76***	84.66	2.38*	401
Prior infractions	6	28,751	.21***	[.15, .27]	32.74***	84.73	0.99	793
Sentence length [b]	13	170,996	−.02*	[−.03, −.00]	66.70***	82.09	1.43	42
Time served [b]	10	144,859	.04***	[.02, .05]	72.24***	87.54	2.13[†]	136
Violence history	7	183,133	.04***	[.02, .06]	13.82*	56.58	0.15	169

Note. k = number of samples included in the analysis; N_i = number of inmates included in the sample; $\bar{r}_w$ = mean weighted correlation coefficient; CI = confidence interval of $\bar{r}_w$; Q = test of homogeneity of effect sizes; I^2 = proportion of dispersion due to variability between studies; Egger test = Egger's regression test of publication bias (*t*-value); Fail-safe = number of studies with effect-size equal to zero needed to nullify the effect (Rosenthal's method).

a. One sample excluded from the analysis (outlier); b. Two samples excluded from the analysis (outliers); c. Fixed and random-effect models provide the same results (although random-effect models were used, in some analyses fixed and random-effect models provide the same results because there are not enough samples to estimate τ^2 or because there is really no variance between studies).

[†]$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed).

2.4.3. Contextual predictors of institutional infractions

The results on contextual predictors of infractions are presented in Table 2.2. Again, analyses were only performed for predictors examined in four or more samples.

Table 2.2: Contextual Characteristics as Predictors of Institutional Infractions

Predictor	k	N_p	$\bar{r}_w$	95% CI	Q	I^2	Egger test	Fail-safe
Crowding [a]	8	2,738	−.03	[−.08, .01]	9.14	23.43	4.35**	0
Gang activity [a]	7	639	.17*	[.02, .32]	15.24*	60.64	1.25	16
Maximum security	9	2,476	.16**	[.06, .25]	36.24***	77.92	0.85	93
Population size [a]	6	1,653	.21***	[.15, .26]	5.63	11.17	0.09	81
Work offer [b]	4	1,153	−.06*	[−.12, −.00]	2.05	0.00	1.00	2
Ratio staff-inmates	8	2,504	−.01	[−.10, .08]	22.30*	72.89	0.68	0
Years in operation [b]	4	1,216	.03	[−.02, .09]	2.55	0.00	0.29	0

Note. k = number of samples included in the analysis; N_p = number of prisons included in the sample; $\bar{r}_w$ = mean weighted correlation coefficient; CI = confidence interval of $\bar{r}_w$; Q = test of homogeneity of effect sizes; I^2 = proportion of dispersion due to variability between studies; Egger test = Egger's regression test of publication bias (*t*-value); Fail-safe = number of studies with effect-size equal to zero needed to nullify the effect (Rosenthal's method).

a. One sample excluded from the analysis (outlier); b. Fixed and random-effect models provide the same results.

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

The strongest contextual predictors of institutional infractions were a larger prison population size ($\bar{r}_w$ = .21), a higher level of gang activity ($\bar{r}_w$ = .17), and a larger proportion of maximum security inmates ($\bar{r}_w$ = .16). In contrast, infraction rates appear lower in prisons with higher proportions of inmates participating in prison employment, but the effect size was more modest ($\bar{r}_w$ = −.06). The other contextual variables (crowding, staff–inmate ratio, and years of operation) were not significantly related to misconduct.

The *Q* tests suggest that the effect sizes among contextual variables are more homogeneous than among personal predictors.[22] True heterogeneity (i.e., variability across samples) was high (I^2 > 75%) for only one variable: maximum security level.

Because the test of Egger et al. (1997) indicates that the effect of crowding on misconduct is affected by publication bias (*p* = .005), we examined the eight samples included in this analysis in more detail. The six larger samples show low and negative effects, whereas the two smaller ones produce strong and positive results. These two estimates fall into the bottom-right edge of the funnel plot, and therefore cause bias. When these two smaller samples were excluded, the summary effect size became significant, suggesting lower infraction rates in more crowded facilities. In addition, Rosenthal's (1979) fail-safe *N* indicates that when two studies with an effect size equal to zero would be added to the analysis, the effect of the proportion of inmates working in prison would become non-significant. Therefore, some caution is warranted in

---

[22] This finding can also be related to a lack of power due to reduced samples.

interpreting the findings for both crowding and the proportion of inmates working in prison.

Due to the small number of samples examining contextual predictors of prisoners' misconduct, we could compare the mean effect sizes across severe and minor infractions only for three predictors: gang activity, maximum security level, and staff–inmate ratio. No significant differences were found.

2.4.4. Personal predictors of health care utilization

Table 2.3 shows the summary effects of personal characteristics on prisoners' health care utilization.[23] Because even fewer studies examined this relationship, the minimum number of samples included in each analysis was reduced to 3.

The results indicate that older prisoners ($\bar{r}_w = .14$), those with prior mental treatment ($\bar{r}_w = .19$), and higher levels of physical symptoms (general medical problems; $\bar{r}_w = .12$) are more likely to use the health services in prison. More moderate effects were found for neurological problems (i.e., brain dysfunctions and injuries, thinking disorders, and confusion) and a history of substance abuse (both: $\bar{r}_w = .06$). Having served a longer time in prison was only marginally associated with clinical services ($\bar{r}_w = .09$, $p = .072$). Symptoms of depression and being White were not significant predictors for health care utilization.

Concerning infractions, the Q statistics indicate heterogeneity among the effects of most of the significant personal predictors of health care utilization, and the I^2 statistic shows that a large proportion of the variability is related to differences between studies. However, caution is required due to the few samples that actually examined predictors of inmates' health care utilization.

Next, we compared the effect sizes of predictors between mental and physical health care visits. Due to the low number of studies involved in each predictor, only age could be compared across these two outcomes. Significant mean differences were observed ($z_{diff} = 2.59$, $p = .010$). Being older was significantly associated with physical treatment but not with mental health care utilization ($\bar{r}_w = .22$, 95% CI = [.14, .30] vs. .04, [−.06, .15]).

---

[23] We could only analyze the effects of *personal* predictors on inmates' health care utilization because only one of the 90 studies presented results for contextual predictors on this outcome.

Table 2.3: Personal Characteristics as Predictors of Health Care Utilization

Predictor	k	N_i	$\bar{r}_w$	95% CI	Q	I^2	Egger test	Fail-safe
Age	9	9,969	.14***	[.07, .21]	75.35***	89.38	0.78	267
Race: White [a]	4	3,352	−.03	[−.07, .14]	3.40	11.66	0.21	0
Time served [a]	3	3,948	.09†	[−.01, .19]	5.78†	65.39	0.09	13
Depression [a]	3	3,166	.05	[−.05, .14]	5.58†	64.17	0.23	1
Neurological problems	3	6,312	.06***	[.04, .09]	2.22	9.91	0.05	14
Physical symptoms	6	5,205	.12***	[.06, .19]	19.58**	74.46	1.63	72
Prior mental treatment	4	3,531	.19**	[.05, .33]	32.15***	90.67	2.94†	55
Substance abuse	3	4,418	.06*	[.01, .12]	5.10†	60.81	1.50	8

Note. k = number of samples included in the analysis; N_i = number of inmates included in the sample; $\bar{r}_w$ = mean weighted correlation coefficient; CI = confidence interval of $\bar{r}_w$; Q = test of homogeneity of effect sizes; I^2 = proportion of dispersion due to variability between studies; Egger test = Egger's regression test of publication bias (*t*-value); Fail-safe = number of studies with effect-size equal to zero needed to nullify the effect (Rosenthal's method).

a. One sample excluded from the analysis (outlier).

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed).

2.4.5. Analysis of moderators

Finally, we explored which moderator variables could account for any variability in the results across samples. For this, moderator analyses were performed for significant predictors with a medium to high level of true heterogeneity ($I^2 > 50\%$). Due to the small number of studies examining contextual predictors and health care utilization, moderator analyses for these variables could only be performed for (a) the effects of maximum security and the staff–inmate ratio on infractions and (b) the effects of age on health care utilization. None were found to be significant. Therefore, only the results of the moderator analyses for personal predictors of institutional infractions that were significant ($p < .05$) and contained at least four samples in each sub-group are presented in Table 2.4.[24]

There was substantial heterogeneity across studies examining the relationship between age and institutional infractions, some of which was accounted for by differences between larger and smaller prison samples ($R^2 = .15$), and between studies based on representative and non-representative sample selection procedures ($R^2 = .14$). Correlations were lower in studies including a large number of penitentiary institutions and in studies selecting participants with more representative methods. However, the effects remained significant across sub-groups.

---

[24] In two analyses, the true variance explained by the moderators fell outside the R^2 range (< 0) due to sampling error; therefore, these results were excluded.

Table 2.4: Moderator Analysis Investigating Sources of Heterogeneity in Personal Characteristics Predicting Institutional Infractions

Predictor	Moderator	Sub-group	k	N_i	$\bar{r}_w$	95% CI	Q_{bet}	R^2
Age [b]	Prison sample size	Large	11	232,750	−.10***	[−.13, −.08]	12.54***	.15
		Small	7	1,292	−.23***	[−.29, −.16]		
Age	Sample selection	Non-representative	16	10,204	−.14***	[−.17, −.11]	7.88**	.14
		Representative	10	255,816	−.09***	[−.11, −.06]		
Education [a]	Follow-up length	Long	6	43,232	−.05***	[−.06, −.03]	5.21*	.78
		Medium	5	193,143	−.02	[−.03, .00]		
Institutional risk	Location	Non-U.S.	6	2,395	.21***	[.15, .27]	14.70***	.50
		U.S.	6	34,668	.06*	[.01, .11]		
Institutional risk	Analysis	Bivariate	5	770	.23***	[.14, .32]	7.06**	.15
		Multivariate	7	36,293	.09**	[.04, .14]		
Time served	Sample selection	Non-representative	4	5,074	.08***	[.04, .11]	8.05**	.33
		Representative	6	139,785	.02*	[.00, .04]		

Note. k = number of samples included in the analysis; N_i = number of inmates included in the sample; $\bar{r}_w$ = mean weighted correlation coefficient; CI = confidence interval of $\bar{r}_w$; Q_{bet} = test of between-groups heterogeneity; R^2 = proportion of true variance accounted (between studies); U.S. = United States. For the predictors exposed in Table 4, the following moderators were examined: Age: geographic location, sample selection, prison sample size, design, outcome type, source of information, follow-up length; Education: sample selection, design, outcome type, source of information, follow-up length; Institutional risk: geographic location, sample selection, design, outcome type, type of analysis; Time served: sample selection, outcome type.

a. Four samples excluded from the analysis due to missing data on the moderator or fewer than four samples per sub-group; b. Eight samples excluded from the analysis due to missing data on the moderator or fewer than four samples per sub-group.

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

    The effect that length of time served had on infractions was also moderated by sample selection (R^2 = .33). Again, the effect size was smaller in representative samples but remained significant in both representative and non-representative sub-groups.

    Furthermore, the relation between educational level and infractions was moderated by the length of follow-up, which accounted for a large proportion of the true

variance ($R^2 = .78$). The effect of inmates' educational level was significant only in studies with an observation period ≥ 2 years.

Finally, the relation between inmates' classified institutional risk and infractions was moderated by the geographic location and the type of analysis ($R^2 = .50$ and $.15$, respectively). Although coefficients were smaller in samples collected in the United States and in samples using multivariate analysis, the effects remained significant across groups.

In the current meta-analysis, neither source of information (self-report vs. prison records), nor outcome type (continuous vs. dichotomous), nor design (retrospective vs. prospective) were significant moderators. However, analyses were sometimes prevented by the reduced number of samples included in each group (see note in Table 2.4).

2.5. Discussion

Accurate knowledge on predictors of inmates' adjustment to prison life is important for correctional practice. At present, systematic reviews of such predictors are scarce, and contextual predictors as well as predictors of adjustment outcomes other than misconduct have largely been overlooked. To improve current knowledge, the aims of this meta-analysis were to (a) quantify the effect of personal and contextual characteristics, both on inmates' institutional infractions and on inmates' health care utilization and (b) explore moderators of the estimates. The search strategies resulted in the inclusion of 90 studies, representing 75 independent samples coming from 13 different countries. Several predictor domains were based on large samples of inmates (10,000 to ≥ 200,000 inmates) and/or large samples of prisons (> 10 prisons). It appeared that both individual and contextual factors were significantly related to prisoners' adjustment, supporting both the importation and deprivation theories.

The strongest personal predictors ($\bar{r}_w ≥ .10$) of institutional infractions were prior infractions, aggressiveness, impulsivity, antisocial personality, institutional risk, and age. More moderate effects ($\bar{r}_w = .05 - .09$) were observed for criminal history, property crimes, age at first arrest, substance abuse, social support, and prior incarcerations. The following were not significant predictors: having children, having a foreign nationality, being White or Latino, and being convicted for violent offenses.

Prior infractions in prison were the strongest predictor for current misconduct, demonstrating that past behavior is one of the best predictors of future responses. This

finding is in line with prior reviews on prison misconduct (Gendreau et al., 1997; Schenk & Fremouw, 2012) that found a positive relationship between misconduct during previous incarcerations and current prison infractions. However, in the present meta-analysis the estimate was not precise (CI > .10) and more research is needed to establish its magnitude. Nevertheless, other indicators of prior deviant behavior (such as criminal history, age at first arrest, and prior incarcerations) were also significantly related to inmates' misconduct. This seems to further confirm that offenders with an early and more elaborate criminal career tend to maintain a deviant lifestyle while incarcerated and may be more difficult to manage (see also DeLisi et al., 2004; Drury & DeLisi, 2010).

Also in line with prior reviews, institutional risk, aggressiveness, anti-social personality, and age were robust personal predictors of prisoners' misconduct ($\bar{r}_w \geq .10$ and CI $\leq$ .10).[25] Impulsivity (low self-control) has a considerable effect but more studies are needed to provide a more precise estimate. The fact that institutional risk assessments are a robust predictor of prisoners' misconduct is of particular value for prison administrators who use such instruments, because these risk instruments seem to achieve their aim in identifying inmates at risk. However, institutional risk measures, which are generally composed of more dynamic variables, less strongly predicted institutional infractions than clinical assessments of aggressiveness and antisocial personality, which are more stable constructs. Similar findings were observed in the meta-analysis of Campbell et al. (2009) on predictors of violence among adult offenders. These authors showed that risk instruments composed of more dynamic risk factors might be more useful in predicting violent recidivism than in predicting violence in prison, whereas more static risk factors were stronger predictors of institutional violence. Besides institutional risk tools, screening and assessment of prisoners' personality traits might help prison administrators to improve the classification and treatment of inmates.

Younger age has consistently been associated with prison misconduct (see Gendreau et al., 1997; Schenk & Fremouw, 2012). Its influence may be related to low self-control, reduced coping strategies, and reduced ties to the conventional society (DeLisi et al., 2008; Steiner & Wooldredge, 2009; Zamble & Porporino, 1988). This

---

[25] Although robust predictors, clinical variables are more frequently based on zero-order effect sizes, which may inflate the results.

implies that if the proportion of young inmates in correctional facilities increases, this can generate more disciplinary problems in these facilities (Kuanliang et al., 2008; Lahm, 2008). In addition, the structure, available programs and services, and management philosophies of adult prisons may be less appropriate for younger inmates and may be less effective for their rehabilitation (Tasca et al., 2010).

Several other personal predictors of institutional infractions explored in this study may be relevant for correctional practice (e.g., substance abuse, social support); however, their effects were low ($\bar{r}_w \leq .10$) and therefore are not emphasized here. Nevertheless, two predictors warrant discussion, even though they had small effects. Contrary to expectations, having a sentence of longer length was related to fewer prison infractions, and being sentenced for a violent crime was not a significant predictor of prisoners' misconduct. Although these two factors are frequently used for classification purposes, the tentative findings of the current meta-analysis do not substantiate the assignment of custody levels based on these two variables. This finding is in accordance with the review of Schenk and Fremouw (2012).

The strongest contextual predictors ($\bar{r}_w \geq .10$) of institutional infractions were a larger prison population size, more gang activity, and a higher security level of the institution or a higher proportion of high-security inmates. Prisons in which a higher proportion of inmates have a job seem to experience fewer infractions, although this effect was more moderate and not robust. Contrary to common belief, neither the level of crowding, nor the staff–inmate ratio, nor the number of years the prison has been in operation were significant predictors. However, some caution is needed in drawing conclusions about these variables. As the analyses of the contextual predictors of infractions were based on relatively few samples, this resulted in rather imprecise estimates with large confidence intervals. Therefore, more research on the contextual predictors of inmates' misconduct is needed to substantiate these results.[26]

The findings on contextual predictors of infractions are, however, consistent with other reviews (Gadon et al., 2006; Gendreau et al., 1997). In addition, Morris et al. (2012) also concluded that misconduct was more likely in units housing more inmates, in units with a higher proportion of gang members, and in units with more high-security

---

[26] Also, our analyses include only U.S. samples. The results could be different in other prison systems. Results could also be different for younger prisoners (Franklin, Franklin, & Pratt, 2006). In addition, those variables can operate through other variables as moderators or mediators of the effects (Steiner & Wooldredge, 2008, 2009; Wooldredge, Griffin, & Pratt, 2001).

prisoners. The results suggest that policies directed at reducing the prison population size, limiting the assignment of inmates to higher security units, and developing strategies to reduce the influence of prison gangs may help to reduce institutional infractions (Fernandez & Neiman, 1998; Griffin & Hepburn, 2006; Lahm, 2008). Also, increasing the availability of (productive) jobs for inmates may be a valuable tool to promote a better adjustment to prison and better post-release employment outcomes (Gover et al., 2008; Solomon, Johnson, Travis, & McBride, 2004).

The strongest predictors of health care utilization were older age, general physical symptoms, and prior mental health treatment. More moderate effects were found for neurological problems, substance abuse, and having served a longer time in prison. Inmates with such characteristics may require additional care, and those with more severe symptoms could benefit from placement in special units offering treatment for medical and mental health problems, chronic conditions, and preventive services (Falter, 1999; Lindquist & Lindquist, 1999). However, some caution is required before drawing firm conclusions regarding predictors of inmates' health care utilization. Because research on this topic is limited, the estimates in the current meta-analysis are based on a small number of samples, and therefore may lack precision and accuracy. Although at present no prior reviews on predictors of inmates' health care utilization exist, the results of the present meta-analysis seem consistent with reviews on predictors of health care utilization in the general population, which also identified aging, health status, and prior health care utilization as risk factors (Crow, Smith, McNamee, & Piland, 1994; Soeken, Prescott, Herron, & Creasia, 1991).

In the present study, a first step was taken to explore predictors of severe versus minor misconduct and predictors of mental versus physical health care use. The results suggest that having experienced prior incarcerations and having served a longer time in prison were more strongly associated with minor infractions than with severe ones. Also, being older was significantly related with physical health care treatment but not with health care use for mental health problems. In general, no firm conclusions can be drawn regarding predictors of specific adjustment outcomes because (too) few samples provided sufficient information on predictors of such specific outcomes. However, the results of the present study confirm that it may be informative to examine predictors of inmates' infractions and health care use divided according to (a) the seriousness of the infraction, and (b) the type of health care treatment, because predictors of severe and

47

minor infractions as well as predictors of treatment for mental and physical problems may differ (Cao, Zhao, & Van Dine, 1997; Cunningham & Sorensen, 2007; Garrity et al., 2002).

In line with earlier meta-analyses (Guy et al., 2005; Leistico et al., 2008; Singh et al., 2011), our moderator analyses suggest that variation in findings between studies can be related to methodological differences, such as the prison sample size, method of sample selection, type of analysis, length of follow-up, and whether the study was based on American samples. Studies based on less representative samples and bivariate analyses tend to produce more inflated results. Therefore, large-scale studies using more representative sampling methods and more advanced analysis techniques are required to provide more accurate estimates. Also, longer observation periods (> 2 years) may be needed to identify certain relationships, especially considering the low base rates of misconduct outcomes.

Unfortunately, the small number of samples and the lack of information on characteristics of the studies sometimes prevented us from analyzing moderator variables. For instance, we were unable to examine the effect of type of facility for any of the predictors presented in Table 2.4, and therefore we are unable to make conclusions about its influence on the results. More research is necessary to adequately measure the influence of the moderators explored in the present study.

2.5.1. Limitations and future directions

This meta-analysis has several limitations that should be taken into account. First, guided by the inclusion and exclusion criteria, only a relatively small number of studies were selected from the total number of studies initially identified by the search strategy. Although this is a common issue in systematic reviews and meta-analyses (Gadon et al., 2006), this means that the current meta-analysis is rather specific in its focus.

Second, in our meta-analysis, American samples were over-represented, which may limit the generalizability of the results to other countries and prison settings. Further research on predictors of adjustment to prison in other countries is therefore encouraged, particularly as the moderator analyses suggested some differences between U.S. and non-U.S. samples. For instance, correlations between prisoners' classified institutional risk and their misconduct were smaller in samples collected in the United States.

Third, several effect sizes rely on relatively few samples (especially for contextual predictors and predictors of inmates' health care utilization). Moreover, the limited number of primary samples also prevented a thorough examination of predictors of the more specific outcomes (severe vs. minor infractions, mental vs. physical health care) and of moderators that may account for variability in the results. Calculating estimates based on too few samples generally results in imprecise estimates with large confidence intervals, which indicates the need for further research. Therefore, the results are still tentative. As knowledge on these factors is important for correctional practice, future research on predictors of inmates' adjustment to prison should focus on contextual predictors and explore outcomes other than institutional misconduct.

Fourth, using t statistics to synthesize regression coefficients and using the $r_{equivalent}$ as the effect size in meta-analyses are not optimal procedures (see Becker & Wu, 2007; Rosenthal & Rubin, 2003), and no correction was made in the effect sizes of individual studies. In addition, as inherent to meta-analyses, data from studies using different methodologies were combined. This may have limited the accuracy of the estimates and may have contributed to the relatively high levels of heterogeneity in the results. However, to deal with this limitation, we used random-effect models and explored sources of variation in the effect sizes through moderator analyses.

Fifth, gray literature was not included in the meta-analysis. Therefore, the results may have been affected by publication bias. However, sensitivity analyses were done and tests on the potential effect of publication bias showed that its influence was limited.

Also, some methodological issues of the primary studies in the database and of research on prison adjustment in general should be discussed. As was also observed in prior meta-analyses (Campbell et al., 2009; Gendreau et al., 1997), basic information on inmate and prison samples, methodology, and effect sizes was often missing. Due to a lack of information, it was sometimes impossible to code variables and effect sizes, or to explore characteristics of the studies in the moderator analyses. To improve knowledge on predictors of inmates' adjustment to prison and to advance further meta-analyses (and their analytical methods), researchers are encouraged to report more detailed descriptive information.

In addition, the majority of the studies (61%) used a retrospective design. Combined with the fact that inmates are not randomly assigned to a prison and therefore

selection bias may be an issue, it should be noted that research in this area is predominantly correlational and not experimental or causal.

Furthermore, the number of infractions/health care visits is a function of the length of time the inmates stay in the correctional facility. However, many studies examine inmates who have spent varying amounts of time in prison without controlling for this difference in exposure (Cao et al., 1997). In addition, different studies do not examine inmates at the same moment during their sentence, even though it is known that adjustment problems tend to peak during the initial phase of detention (Cochran, 2012; Morris et al., 2012; Toch & Adams, 2002; Zamble, 1992; Zamble & Porporino, 1988). This may have biased the results of the individual studies as well as those of the meta-analysis.

Finally, the impact of disciplinary sanctions on subsequent behavior needs to be considered. In the meta-analysis, prior infractions were the strongest predictors of future misconduct, and this indicator is used in many prison systems to assign inmates to custody levels during their sentence (see Shermer et al., 2013; Worrall & Morris, 2011). Those who misbehave are more often sent to higher security units. However, as was also observed, higher security units are associated with more prison infractions. Thus, it is possible that inmates misbehave because of the institution or unit they are sent to, rather than having a greater propensity to break the rules (Shermer et al., 2013; Worrall & Morris, 2011). This may be a potential confounder in the studies that were analyzed and may have biased our estimates.

Concluding, the present study provides an update and extension of prior reviews of predictors of inmates' adjustment to prison life. Although a step toward more knowledge on what influences this process, more research is required. The current meta-analysis shows the need for more studies on contextual predictors and on inmates' health care utilization as an adjustment outcome. In addition, to obtain more precise and generalizable findings, future quantitative reviews should combine a larger number of studies with more solid research designs, include non-published literature, and include samples from a larger variety of countries and prison settings. Until then, we conclude, as did Gendreau et al. in 1997, with the hope that our risk inventory may assist prison authorities in managing their prison system more effectively and efficiently.

CHAPTER III

Prison Adjustment among Young Offenders:

A Longitudinal Study[27]

3.1. Abstract

Despite being a group of special risk and needs, knowledge on prison adjustment among young offenders is still incipient. Using a sample of 75 young males newly admitted to a Portuguese prison, this study explores changes in their institutional infractions and health care utilization. Additionally, predictors of inmates' adjustment patterns were examined. Inmates were assessed 1, 3, 6, and 12 months after arrival in custody. The pattern of severe infractions was irregular. Minor infractions increased until the sixth month and decreased thereafter. While health care utilization for mental health problems remained stable, treatment for physical problems was highest during the first month and then declined. Infractions were associated with fewer visits, being single and non-White, having higher hostility levels and being a property offender. Health care utilization was associated with time in prison, mental problems, Portuguese nationality, older age at 1st imprisonment, criminal history, and severe infractions.

Keywords: prison adjustment, young offenders, infractions, health care, longitudinal study

3.2. Introduction

The present study focuses on young prisoners' adjustment during their first year of detention in a prison hosting exclusively young males. Literature reviews have consistently identified young age as one of the strongest predictors of prison infractions (Gendreau, Goggin, & Law, 1997; Gonçalves, Gonçalves, Martins, & Dirkzwager, 2014; Schenk & Fremouw, 2012), and showed that juvenile prisoners present higher rates of disorders (e.g., behavioral, psycho-emotional, personality, substance abuse) than incarcerated adults (Fazel & Baillargeon, 2011; Sirdifield, Gojkovic, Brooker, & Ferriter, 2009). Both misconduct and mental health problems in prison have been associated with a higher chance of recidivism upon release (Baillargeon, Binswanger,

51

Penn, Williams, & Murray, 2009; Cochran, Mears, Bales, & Stewart, 2012; Trulson, DeLisi, & Marquart, 2011), making young prisoners a group with increased risk and needs. Despite this evidence, predictors of young offenders' adjustment to prison life have been largely understudied compared to those in adult offenders (Tasca, Griffin, & Rodriguez, 2010), and even less is known about changes in their adjustment during incarceration.

The present study tries to fill this gap in knowledge by examining (1) changes in young inmates' infractions and health care utilization during time in prison, and (2) to what extent social support, mental problems, institutional risk, and other covariates are associated with changes in their infractions and health care use.

3.2.1. Prison adjustment and young offenders

Adjustment to prison have been defined in several ways but in general most studies measure this construct by either some form of psychological (e.g., stress, anxiety or depression) or institutional adaptation (e.g., misconduct). Inmates' disciplinary infractions – as an indicator of institutional adjustment – have received most attention (Trulson, 2007; Wright, 1985). This is understandable given the fact that prison misconduct has a huge impact on the order, safety and management of correctional facilities (Trulson, 2007). Although less studied, health care utilization can be another important indicator of adjustment difficulties (Wright, 1985). Imprisonment can be a stressful experience and subsequently can result in a range of clinical problems (e.g., distress, somatization, use of medication), for which inmates need or seek health care.

Penologists developed a range of theoretical explanations for inmates' adjustment to prison. The early theory explained inmates' adjustment as a response to the features of the prison situation (deprivation theory; Sykes, 1958) like prison population size, security level, gang activity, availability of programs, and type of supervision (Gadon, Johnstone, & Cooke, 2006; Gendreau et al., 1997; Gonçalves et al., 2014). In response to the deprivation model, the importation model was developed (Irwin & Cressey, 1962) and proposes that inmates' adjustment to prison life is related to pre-existing or imported personal characteristics like their age, educational level, racial identification, criminal history, substance abuse, and mental problems (Gendreau et al., 1997; Gonçalves et al., 2014; Schenk & Fremouw, 2012).

Later, psychological perspectives emphasized the interaction between the inmate

and its environment (Toch, 1977). For instance, research confirmed that young inmates are more likely to misbehave in more crowded and less harsh prison environments (interactionist theories; Steiner & Wooldredge, 2008; Wooldredge, Griffin, & Pratt, 2001). Moreover, the well-known study of Zamble and Porporino (1988) showed that young inmates may have more reduced coping resources to deal with prison life, which can result in more institutional infractions and medical problems (coping theories; Zamble & Porporino, 1988).

Empirical research has confirmed other criminological theories as well, showing that inmates – including young inmates – with lower level of self-control (general theory of crime), fewer bonds to conventional society (social-control theory), and a deviant family background and early delinquent career (lifestyle-course theories) are more likely to misbehave, characteristics that are generally prevalent among incarcerated youths (DeLisi et al., 2010b; Steiner & Wooldredge, 2009; DeLisi, Trulson, Marquart, Drury, Kosloski, 2011).

Although rarely employed in the correctional context, social support theories may also be a relevant framework to explain inmates' adjustment to prison life. Social support may be related to inmates' institutional infractions and health care utilization in different ways. For instance, it has been suggested that people who benefit from more social support – especially conventional others – are less likely to be involved in criminal behavior (Cullen, 1994, see also Cochran, 2012; Colvin, Cullen, & Van der Ven, 2002; Orrick et al., 2011). Applied to the prison context, this implies that inmates who receive more social support during their time in prison, for instance in the form of visits from their family and friends, may be less likely to engage in misconduct (Cochran, 2012). Moreover, social support is considered to be an important factor in influencing reactions to stress; it is generally found that having enough and satisfactorily social support is associated with less psychological distress (Sarason, Sarason, & Potter, 1985). Research has confirmed that young inmates with more social support experienced fewer mental health problems (Monahan, Goldweber, & Cauffman, 2011). This may subsequently be translated into less use of clinical services.

3.2.2. Patterns of prison adjustment

In general, the early period of incarceration seems most stressful, which is reflected in higher levels of disruptive behaviors (e.g. violence, self-injuries and suicide)

and mental health problems (e.g., depression, anxiety) that tend to dissipate along incarceration (Adams, 1992; Brown & Ireland, 2006; Harvey, 2007; Hassan et al., 2011; Liebling, 1999; Monahan et al., 2011).The increased stress related to the initial phase in custody and the concomitant risk for adjustment problems may be even more pronounced in young prisoners due to the high prevalence of mental and behavioral problems among this group prior to arrival in prison. The initial phase of incarceration is a crucial period to study young prisoners' adjustment as it may have impact on the course of one's functioning throughout the prison sentence (Cesaroni & Peterson-Badali, 2010; Monahan et al., 2011).

Unfortunately, few studies have actually examined adjustment patterns of prisoners over time, particularly among young prisoners. Among adults, Zamble and Porporino (1988) observed that both disciplinary infractions and the use of medical services are higher in the beginning of the prison term and decline in the following months and years (see also Zamble, 1992). Toch and Adams (2002) – who retrospectively analyzed a cohort of 9,103 released inmates for six years during their imprisonment – showed that infractions were highest between the 6th to 9th months and decrease thereafter. Mental health care utilization was higher in the beginning of the sentence and then dropped sharply. More recently, using a group-based trajectory analysis, Cochran (2012) observed that infraction rates were higher between the 6th and 7th month, except for a large group of inmates (69%) that did not infract over the first year in prison.

Even less is known about the longitudinal course of adjustment to prison life among young prisoners. The scant research among this population is mainly focused on prison infractions and used either long (i.e., years) or short (i.e., weeks) follow-ups that fail to cover inmates' behavior during the first year in prison, when major changes are expected to happen (Boessen & Cauffman, 2013; Kuanliang, Sorensen, & Cunningham, 2008; McShane & Williams, 1989). Kuanliang et al. (2008) followed retrospectively young prisoners during a mean of three years and evidenced that their peak for violent misconduct was typically a year after entrance into the institution. In a similar fashion, McShane and Williams (1989) exposed that the number of major disciplinary infractions of juvenile prisoners was higher during the second year of incarceration. In addition, Boessen and Cauffman (2013) observed that whereas violent offending remains relatively stable during the first eight weeks in prison, non-violent offenses

continually increase during the first six weeks. To the best of our knowledge, no prior studies examined the longitudinal course of young inmates' health care use. Besides scarce, some of the previous studies are retrospective and all were conducted with north-American samples. As so, they may not be generalizable to other correctional contexts.

3.2.3. Social support, mental problems, and institutional risk

We are not aware of any study exploring the relationship between social support and misconduct among young prisoners so far. However, among adults, the results are inconclusive. Several authors reported that social support mechanisms reduced prison misconduct (Cochran, 2012; Graeve, DeLisi, & Hochstetler, 2007; Jiang & Winfree, 2006), but others found no significant effects (Clark, 2001; Coid et al., 2003; Lahm, 2008). Also, to our knowledge, no study exists that related social support to health care use in prison, either in young or adult prisoners. Yet, it was shown that inmates' psychological well-being is influenced by the frequency of visits (Wooldredge, 1999), and that youths with more visits from their parents showed more rapid declines in depressive symptoms (Monahan et al., 2011). If visits reduce infractions and/or health care use, policies directed to improve inmates' social support should be considered (Cochran, 2012; Monahan et al., 2011).

Mental health may be another factor associated with inmates' infractions and health care use. In general, the literature seems to demonstrate that prisoners with mental problems – both young as adult – are more likely to misbehave (DeLisi et al., 2010a; Felson, Silver, & Remster, 2012; Lovell & Jemelka, 1996; Toch & Adams, 2002; Trulson, 2007). Such evidence is however uncertain among the youngster. Some authors reported that young prisoners with more mental problems were related to fewer infractions (McReynolds & Wasserman, 2008) or found no association between those variables (Van der Laan & Eichelsheim, 2013). Besides infractions, findings among adult prisoners indicate that mental health problems may also result in more health care use (Diamond, Magaletta, Harzke, & Baxter, 2008; Garrity, Hiller, Staton, Webster, & Leukefeld, 2002; Steadman, Edward, Holohean, & Dvoskin, 1991). Yet, we are not aware of any study relating mental health and health care use among young prisoners. Because mentally ill inmates can pose administrative and therapeutic challenges to prison staff, screening tools have been incorporated by research and practice (Adams & Ferrandino, 2008). Yet, to our knowledge, no study as used the Brief Symptom

Inventory (BSI – Derogatis, 1993) to predict prison adjustment. The BSI is a self-reported inventory of mental problems for persons aged 13 and older that take about 10 minutes to complete and may support clinical decision-making at intake (Derogatis, 1993).

Finally, an inmate's institutional risk may (and should) be related to his/her prison infractions (Gonçalves et al., 2014; Harer & Steffensmeier, 1996; Lee & Edens, 2005; Shermer, Bierie, & Stock, 2013; Trulson, 2007) and perhaps health care use, though no study seems to have explored this last relationship. Institutional risk tools generally assist prison managers in classifying the inmates into different security levels, in determining their criminogenic needs, and in allocating institutional resources appropriately (Fernandez & Neiman, 1998). The Level of Service Inventory Revised (LSI-R – Andrews & Bonta, 1995) is among the most widely used in corrections. The LSI-R is a risk and needs survey for offenders aged 16 and older that includes a structured interview and is professional-completed, taking between 30 to 45 minutes to administer (Andrews & Bonta, 1995). Meta-analyses proved that the LSI-R predicts prison misconduct in adults (Campbell, French, & Gendreau, 2009; Gendreau et al., 1997), and similar results have been found in empirical studies using adapted versions for adolescents (i.e., 12 to 17; Holsinger, Lowenkamp, & Latessa, 2006; Shields & Simourd, 1991). However, studies examining the (actual) LSI-R among young adults (i.e., those aged 16 until early adulthood) are lacking. Thus, it is still unknown how well this tool performs among prisoners in the lower age range.

3.2.4. Other covariates

A number of other covariates have been associated to prison adjustment. At the personal level, predictors can be grouped into socio-demographic, criminological, and clinical variables. To our knowledge, no study exist that examined predictors of health care use among young prisoners. There are, however, some studies that examined predictors of young prisoners' infractions. Nevertheless, predictors found among adult inmates may apply to the juveniles as well.

Among socio-demographic characteristics, younger age, lower education level, and racial identification have been linked to young prisoners' infractions, though the evidence regarding this last one is mixed (DeLisi et al., 2010a; DeLisi et al., 2011; McReynolds & Wasserman, 2008; Trulson, 2007; Trulson, DeLisi, Caudill, Belshaw, &

Marquart, 2010). Additional risk factors found among adult prisoners include being a foreigner and being single (Jiang & Fisher-Giorlando, 2002; Shermer et al., 2013).

Clinical variables have been less explored. Still, substance abuse and prior mental treatment were related to prison misconduct, either in young or adult prisoners (DeLisi et al., 2011; Steiner & Woolleredge, 2009; Trulson et al., 2010). Those two variables were also found to predict health care use among incarcerated adults (Gonçalves et al., 2014).

Regarding criminological variables, younger age when first imprisoned, longer time served in prison, and the type of crime appear to predict misconduct in young prisoners, though the results regarding the type of crime are mixed (Boessen & Cauffman, 2013; Taylor, Kemper, & Kistner, 2007; Trulson, 2007; Van der Laan & Eichelsheim, 2013). Additional risks factors for misconduct among adults include being sentenced and prior prison infractions (Coid et al., 2003; Drury & Delisi, 2010; Lee & Edens, 2005).

3.2.5. The present study

In sum, juveniles' adjustment to prison life is a relatively new issue (Kuanliang et al., 2008) with several important questions to be answered. The present study will contribute to current knowledge in several ways. First, the present study uses a longitudinal design, which will result in knowledge on the temporal patterns of young prisoners' adjustment. Second, we analyze prisoners' misconduct as well as their health care use, providing a multidimensional construct of institutional adjustment. Third, this study will enhance theory building on predictors of young prisoners' adjustment patterns. For instance, the social-support theory will be tested by examining the effect of visits on both infractions and health care use. Fourth, we were able to test the validity of the LSI-R and BSI in predicting young inmates' adjustment. As they are easy and quick to administer, those tools may be valuable for correctional practice. Finally, the present study will provide a transcultural perspective on prisoners' adjustment, examining inmates of an unexplored cultural context (Portugal).

More knowledge on the development of and risk factors for prison infractions and health care utilization over the prison term is important for prison management because it may help to optimize the classification and treatment of young prisoners. Before describing the methods and findings of the present study, we describe some aspects of

the Portuguese prison system and the research site to frame our study.

3.2.6. Imprisonment in Portugal

In Portugal, criminal responsibility starts at the age of 16.[28] Based on a rehabilitative philosophy, the law comprises protective measures for youth offenders aged 16 to 21 both in the criminal code (e.g., reduced prison sentences) as in the execution of criminal sanctions (e.g., mandatory rehabilitation plan) but conditions of imprisonment are basically the same as for adults. Separation between young and adult prisoners is also required but contact frequently occurs because most prisons hold both adult and young inmates, although on separate wings when possible. There is only one prison in Portugal that only holds young prisoners. This is the research site of the present study.

This correctional facility is located in a costal middle country city, and includes five operational units that house remand and sentenced offenders (separated). The correctional facility also has a drug free unit and a well-equipped health care unit. Its architectural design is a campus design (see Morris & Worrall, 2010) and its actual capacity is 214 places. The mean occupancy rate during the year 2011 was 210 inmates (98%).The prison is classified as high security[29] and most inmates come from urban regions. In 2011, none of the inmates committed suicide, was murdered, nor died from illness (DGRSP, n.d.).

Unlike most other prisons in the country, the majority of the inmates in this correctional facility are held in individual cells. Newcomers are assessed by educational and clinical staff within 72 hours and sent to the "Observation" block for an initial evaluation that guides the development of their rehabilitation plan. During this period, which lasts around 60 days, few prisoners are engaged in activities and most spend around 20 hours a day inside their cell. Progressively, they are enrolled in work, school and other activities, and moved to other units. Those in more advanced stages of the sentence and with good institutional behavior may get the open regime and be moved to a block allowing more freedom and autonomy, as a preparation for release in liberty.

---

[28] Criminal offenses committed by juveniles aged 12 to 16 are classified as "educational guardianship proceedings" and subjected to a different law. The most severe sanction is detention in "educational centers", which can be open, semi-open or closed.

[29] Classification of prison security levels in Portugal are the following: medium, high, and special. Special is the highest security level and there is only one such facility in the country plus two prisons with maximum security wings.

Prisoners in the common regime can have visits two times per week in sessions of one hour with a maximum of three visitors. Visits are prevented or limited when the inmates are under isolation sanctions (Decree-Law No. 51/2011). In 2011, there were a total of 353 disciplinary infractions, of which 121 were considered severe (e.g., fighting) and 232 minor (e.g., not respecting orders or schedules).[30] The most applied sanctions were written reprimands (18%), prohibition of using objects (e.g., video-games; 50%), isolation in the own cell (18%), and isolation in disciplinary cell (DGRSP, n.d.).[31]

3.3. Method

3.3.1. Participants

The sample of this study is composed by 75 males aged 17 to 22 years ($M = 19.15$, $SD = 1.40$) at the time of admission to the institution. Their racial identification was mixed, being 44% Whites, 45% Blacks, and 11% Gypsies. Most participants were Portuguese citizens (59%) though a considerable portion comes from ex Portuguese colonies (29%)[32] or other countries (12%, mostly Brazil). Their educational level varies a lot, ranging from 1 to 12 years of schooling, and the mean was under the nine years of mandatory school ($M = 6.85$, $SD = 2.35$). The majority of the inmates were single (84%) and had a drug use history (80%) but their consumption patterns include almost exclusively Hashish and Cannabis. None were assigned to drug treatment programs in prison. Also, 37% had a mental treatment history prior to their arrest. Only 40% ($n = 30$) were already sentenced at the time of admission (75% one year after). The crimes they were accused of were disproportionately property crimes (71%), whereas violent (16%) and drug related ones (13%) represented the remaining offenses.[33] Inmates' age at first imprisonment ranged from 16 to 21 years ($M = 18.43$, $SD = 1.48$).

---

[30] This classification is rather subjective in the Portuguese correctional law, depending not only on the nature of the incident but also the gravity of inmate conduct and its consequences, culpability of the inmate, his personal will to repair damages caused, prior infraction record, and needs to prevent further incidents (Law No. 115/2009). That is, most infractions can be considered either severe or minor.

[31] The maximum sanction for prison infractions is 21 days in disciplinary cell, extendable to 30 in cumulated sanctions. The maximum length of isolation in the own cell is 30 days, extendable to 60.

[32] Angola, Cape Verde, Guinea-Bissau, Mozambique, and São Tomé and Príncipe.

[33] The most serious crime was considered when the penal process consisted of several different accusations.

3.3.2. Measures

3.3.2.1. Dependent variables

Two major outcomes are explored in this study: (1) institutional infractions, and (2) health care utilization. Infractions were operationalized as the number of rule violations for which the inmates were found guilty. The total number of disciplinary infractions was organized in: (a) severe infractions, and (b) minor infractions, both the focus of this study. Severe infractions where considered those infractions that resulted in segregation, either by placement in a disciplinary cell or inside the inmates' own cell. Minor infractions are all others resulting in less severe sanctions.

Health care utilization represents the number of visits to clinical services, including preventive care. Services that cannot be provided inside the facility are made in other prison or hospitals of the National Health System, free of charge for the inmates. For the purpose of this study, the total number of health care visits was divided into: (a) visits for mental treatment (i.e., psychology and psychiatry), and (b) visits for physical treatment (all others, e.g., general medicine, dentist, nursing).[34]

3.3.2.2. Independent variables

The first independent variable of this study is time in prison. To evaluate the main effect of time on inmates' adjustment and differences across waves, we created a variable which corresponds to the number of months since the inmate entered the current facility. Time was centered at the 1st month, thus the intercept of the estimates represent the mean of the outcome at the 1st month in prison. The other independent variables of this study can be classified into socio-demographic (including visits), clinical (including the BSI), and criminological predictors (including the LSI-R).

Socio-demographic variables include age (continuous in years, mean centered), education (continuous in years, mean centered), marital status (0 = having a lasting relationship, i.e., through marriage or living together before prison; 1 = being single), nationality (0 = foreigner; 1 = Portuguese), racial identification (0 = non-White, i.e., Blacks and Gypsies; 1 = White). As a measure for social support, the number of visits

---

[34] Because when they enter to prison all inmates are evaluated by a doctor, a nurse, and a psychologist as a routine procedure, one and two services were subtracted to the mental treatment and physical treatment scales (respectively) at the 1st month. Otherwise, because these services are mandatory, the results at the 1st month would be biased upward.

that an inmate received during each observation period was used.[35]

Clinical variables include drug abuse history (0 = no; 1 = yes) and mental treatment history (0 = no; 1 = yes). Additional variables were measured through the BSI.

The BSI consists of 53 psychological symptoms related to nine subscales: Somatization (7), Obsessive/Compulsive (6), Interpersonal Sensitivity (4), Depression (6), Anxiety (6), Hostility (5), Phobic Anxiety (5), Paranoid Ideation (5), and Psychoticism (5). The instrument also provides information on the overall level of psychological distress (i.e. the Global Severity Index - GSI). The BSI has been validated and showed good psychometric qualities (Derogatis, 1993). In our study, the Cronbach's alpha was high (α = .94) and all nine subscales proved to be reliable, with alphas ranging from .60 (for Paranoid Ideation) to .88 (for Somatization). The BSI is translated and validated for the general Portuguese population (Canavarro, 1999).[36]

Criminological predictors include age at 1st imprisonment (continuous in years, mean centered), type of crime (dummy coded: drug, property, violent), penal status (0 = remand; 1 = sentenced), time previously served in correctional facilities (i.e., counting prior imprisonments or/and time served for the actual sentence in other facilities;[37] continuous in months, mean centered) and prior prison infractions (the same as for prior time served; continuous, mean centered).

The LSI-R is composed by 54 items grouped into 10 subscales: Criminal History (10), Education/Employment (10), Financial (2), Family/Marital (4), Accommodation (3), Leisure/Recreation (2), Companions (5), Alcohol/Drug Problems (9), Emotional/Personal (5), and Attitudes/Orientation (4). The total score is used to classify individuals according to their institutional risk (i.e., high, medium or low). The LSI has been validated and showed good/adequate psychometric properties (Andrews & Bonta, 1995). However, in this study, the Cronbach's alpha was modest (α = .57) and the scales including fewer items showed poor reliability. Therefore, scales with alpha below .50 were excluded. As so, we only make use of the total score plus the criminal history (α =

---

[35] E.g., if an inmate was visited by the father and the mother in the same day we counted two visits, and so one, adding values for all days included in the respective observation period.

[36] The BSI is not designed for inmate populations and some items require slight adaptation to make sense in this context. To assure face validity, the instrument was applied to a random sample of 10 inmates before the study starts. Minor modifications were made in two items (28 and 43) according to their reports, but respecting the underlying symptom being explored.

[37] Only nine inmates (12%) had an incarceration history and therefore prior incarceration was not explored in the present study because it was likely to be biased.

.69), education/ employment (α = .68), alcohol/drug problems (α = .76), and emotional/personal (α = .69) scales. The LSI-R is translated to the Portuguese language but there are no adapted cut scores yet.

BSI and LSI-R variables were treated as continuous and mean centered for analyses. Data on the independent variables at the 1st month are presented in Table 3.1.

Table 3.1: Predictor Variables at the 1st Month

Variable	M / prop.	SD	range
Socio-demographic			
Age	19.15	1.40	17 – 22
Education	6.85	2.35	1 – 12
Marital status (single)	.84	.36	0 – 1
Nationality (Portuguese)	.59	.50	0 – 1
Racial identification (White)	.44	.50	0 – 1
Visits in prison	5.32	6.66	0 – 30
Clinical			
Drug abuse history	.80	.40	0 – 1
Mental treatment history	.37	.49	0 – 1
BSI GSI (≥ 1.0)	1.03	0.63	0.06 – 2.53
Somatization (≥ 0.6)	0.75	0.80	0.00 – 3.43
Obsessive/Compulsive (≥ 1.6)	1.21	0.71	0.00 – 2.83
Interpersonal sensitivity (≥ 1.1)	1.03	0.82	0.00 – 3.25
Depression (≥ 1.2)	1.27	0.77	0.00 – 3.50
Anxiety (≥ 1.3)	0.92	0.78	0.00 – 2.83
Hostility (≥ 1.1)	0.97	0.78	0.00 – 4 .00
Phobic anxiety (≥ 0.6)	0.66	0.67	0.00 – 2.60
Paranoid Ideation (≥ 1.3)	1.22	0.68	0.00 – 3.00
Psychoticism (≥ 0.9)	1.10	0.78	0.00 – 2.80
Criminological			
Age at 1st prison	18.43	1.48	16 – 21
Crime			
Drug related	.13	.34	0 – 1
Property	.71	.46	0 – 1
Violent	.16	.37	0 – 1
Penal status (sentenced)	.40	.49	0 – 1
Prior prison infractions	1.24	2.51	0 – 13
Prior time served (months)	7.45	9.31	0 – 42
LSI-R total score	26.59	5.73	12 – 40
Criminal history	2.72	1.89	0 – 8
Education/Employment	7.73	1.57	1 –10
Alcohol/Drug problems	3.84	2.15	0 – 7
Emotional/Personal	1.89	1.56	0 – 5

Note. M = mean, *prop.* = proportion, *SD* = standard deviation. Only visits, age, and penal status vary over time in prison. Age and penal status can just vary one time (and one unit) across waves. Values in parenthesis after the BSI scales indicate their cut-score for the general population.

3.3.3. Procedure

Data were collected by the first author who made a monthly visit of one week to the research site, between March 2011 and December 2012. All inmates who entered the institution between March 2011 and December 2011 were eligible to participate in the study. Only those not understanding the Portuguese language were excluded. At each month, the researcher met with the selected newcomers in small groups (2 to 5), generally in the cafeteria of their unit. The inmates were informed about the objectives of the study, the confidentiality of the data, and that participation was voluntary. All inmates accepted to participate.

After signing an informed consent form, the inmates filled out the BSI and participated in the LSI-R interview. For those who had reading problems and who were not able to fill out the BSI (e.g., foreigners or illiterates), the researcher read the questions and recorded their chosen answers. Although in small groups, the LSI-R interview was carried out individually in a more distanced part of the room and only the inmates and the researcher were present during the assessment protocol. The writing pen was given to the inmates as a reward.

Data were collected at four moments during the first year of inmates' incarceration: at the 1st month ($n = 75$), 3rd month ($n = 67$), 6th month ($n = 60$) and 12th month ($n = 55$). This time frame was chosen because it is known that adjustment problems are more frequent in the beginning of the sentence and dissipates along time. Twenty inmates dropped-out during the study because they were released or transferred to another facility. The potential effect of selection bias was explored but attrition appears to be random.[38] The outcome data represent the number of events observed during each observation period, i.e., one month for wave 1, two months for wave 2, three months for wave 3, and six months for wave 4. For the purpose of this study, data on the LSI-R and BSI were treated as invariant (i.e., the scores from wave 1 were used over the remaining periods).

Information on socio-demographic and clinical characteristics was based on

---

[38] Specifically, we developed a probit selection model predicting attrition through the independent variables of this study (except the instruments). This model was not statistically significant neither was any predictor. Even so, we created an inverse Mills ratio (Heckman, 1979) based on the estimates of this model. This selection hazard was then included as an additional predictor in the multivariate analyses but was never statistically significant and the results did not change considerably. Therefore, the results are presented without this additional variable.

inmates' self-reports during the interviews. Criminological variables and outcome data were gathered from institutional files. This information was retrieved from the Prison Information System in the correctional facility, an electronic database containing general information on the inmates, including their infraction record and number of visitations. The information on health care use was collected through prisoners' clinical record in the health unit.

3.3.4. Analysis

Multilevel count regression analyses in Stata (Version 13) were performed to explore predictors of inmates' adjustment to prison life and changes over time. Because the outcomes are count variables with a non-normal distribution, we used Negative Binomial (NB) regressions which are best suited to account for overdispersion in the data (Hilbe, 2011; Long & Freese, 2005).[39] As the same individuals were measured repeatedly across moments of time, multilevel random-effect (RE) analyses were made to accommodate this within-cluster dependence (observations nested within inmates) and to capture variation over time between individuals (Cameron & Trivedi, 2009; Rabe-Hesketh & Skrondal, 2008).[40] Also, as our waves are not equally spaced (and the opportunity of incurring in the outcomes is higher in longer periods), we included in the fixed part of our models an exposure variable reflecting the amount of time over which the outcomes were observed, with coefficient constrained to 1, which controls for different waves' length.[41]

More specifically, to answer our first research question (differences in adjustment

---

[39] Several fit indexes were analyzed to compare Poisson and NB models (i.e., log-likelihood, BIC, Pearson dispersion, goodness of fit, differences between observed and predicted values; see Hilbe, 2011, for a review). Overall, the NB model proved to be the more adequate to our data. Although our outcomes are subjected to the excess zeroes problem common in count data (especially for infractions), zero-inflated models were not considered because there was no theoretical justification for the inflation variable(s) to differentiate between the *always-0* and *not always-0* latent groups (see Freese & Long, 2005). Also, because our models include a random intercept, in addition to overdispersion, it produces a larger marginal probability of zeroes than pooled models, therefore addressing the excess zeroes problem to some extent (see Rabe-Hesketh & Skrondal, 2008).

[40] RE models were employed because it is supposed that adjustment to prison life vary across inmates and we wanted to explore changes between individuals rather than just within themselves, as in a fixed-effect approach (FE). Contrary to FE models, RE analyses include both within and between persons variation, allow inferences outside the sample, and can be extended to more complex random slope models. Also, in FE models, predictors that are constant along time, individuals with zero counts on the outcomes across all waves, and those assessed only one time are dropped off the equation (Cameron & Trivedi, 2009; Hilbe, 2011). This would be problematic in this study due to our reduced sample, the time constant variables we wanted to explore, and the inmates with no infractions across the four waves.

[41] Specifically, the variable was coded as 1, 2, 3, and 6 corresponding to the number of months endorsed in each wave, which just vary within inmates.

to prison along time), the multilevel analyses were performed with time in prison (categorically coded with the 1st month as the reference category) as the only predictor of each adjustment outcome. Outcomes' means at different waves were then calculated based on predictions of the model (predicted means). When the omnibus Wald test revealed significant mean differences, and after looking to the distribution of the data, user-defined orthogonal contrasts with Bonferroni's correction were made to test mean differences between specific waves.

To answer our second research question (predictors of inmates' adjustment over time), the effect of different predictors on each outcome was initially explored through bivariate analyses (RE NB regressions). Because the inmates are assessed by clinical staff while serving segregation sanctions, severe infractions were included as a predictor for health care use. Significant predictors were then added to time in prison in multivariate models. Trends in the data were explored through polynomials of time (quadratic term only). LSI-R and BSI scales were included in a second step to test their incremental validity. We also explored the random effect of time and, when significant, cross-level interactions between time and other predictors. Besides the linear effect of time, and due to our small sample size, only significant predictors were kept in the final models, in a maximum of five.

Before analyses, missing data on BSI items (4%) were manually imputed based on predicted probabilities of regression models (there were no information missing at random in other variables).[42] While modeling the data, the multivariate models were controlled for specification error, multicollinearity, and influential observations.[43] Robust standard errors were calculated to deal with other minor statistical concerns, including overdispersion (Hilbe, 2011; Rabe-Hesketh & Skrondal, 2008).

---

[42] We developed an ordered logit regression model for each missing item, using it as an outcome and other items of the BSI as predictor variables (those more correlated with the missing item). After estimating the best model to the data, marginal effects were calculated, predicting inmate's score on the missing item through its score on the items found to be significant predictors. The response category (ranging from 0 to 4) with higher predicted probability was then assigned to fill the missing value.

[43] We explored models' specification through Tukey–Pregibon link test (see Hilbe, 2011). In all models the *hat-squared* value was not significant, indicating that the models are well specified. Also, all models have variance inflation factors < 10, tolerance > .10, and condition number < 15, indicating no multicollinearity. Influential observations were analyzed via Pearson and deviance residuals. In few cases there were observations that fall outside the +/– 2 range and rarely exceed +/– 3 (outliers). The few outliers generally had high values on the outcomes being at the upper end of the count range. Removing them would not substantially change the results but reduce the power of the analyses, so they were kept in the models.

3.4. Results

3.4.1. Institutional Infractions

3.4.1.1. Changes over time

Figure 1 illustrates changes over time for institutional infractions. The longitudinal course of severe infractions was rather irregular, with increases and decreases across the waves. The Wald tests of equality of means revealed that there were marginally significant differences across waves (χ^2 (3) = 6.23, p = .10). Severe infractions, measured at the 3rd month, was much higher than in other months, as confirmed by orthogonal contrasts (p = .016). Minor infractions increased until the 6th month and decreased thereafter. Yet, no significant mean differences across waves were observed. The prevalence of minor infractions was lower than the prevalence of severe infractions at the 3rd month only, and their mean values were rather similar at the 12th month. These results are exposed in Appendix 4.

Figure1: Predicted infractions by severity level over time in prison
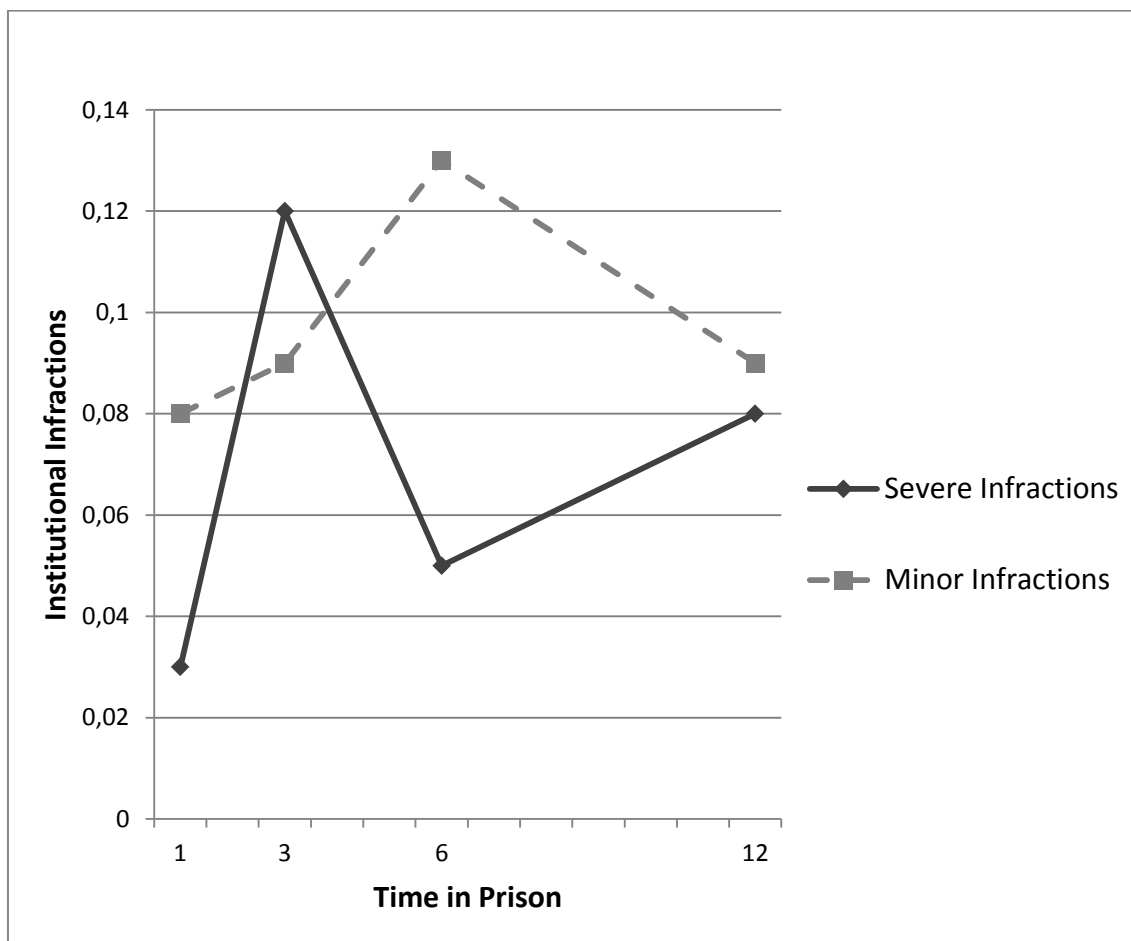
Note. Expected counts are based on the fixed part of the model only.

3.4.1.2. Predictors

The bivariate analyses regressing infractions on the independent variables are presented in Appendix 5. Being single, non-White, earlier onset imprisonment, an arrest history before the age of 16, being sentenced, accused of property crimes, having more prior prison infractions, a longer time served in prison, and having a lower number of visits all were (marginally) associated with higher rates of some form of misconduct. Regarding the BSI, the GSI scale was negatively associated with minor prison infractions. Also were interpersonal sensitivity, depression, anxiety, and psychoticism, which indicate that inmates with more mental problems were less likely to infract. However, those with higher hostility levels were related to more severe misconduct. The LSI-R total score was not significantly associated with inmates' infractions. Inmates with a more developed criminal history and educational problems were the only ones associated with more misconduct. Significant predictors of different infractions were then combined into multivariate analyses (see Table 3.2). Remember that only (marginally) significant predictors were kept in the final models, in a maximum of five.

Table 3.2: Multivariate Models Predicting Disciplinary Infractions over Time in Prison

Predictor	Severe IRR (SE)	Minor IRR (SE)
Intercept	0.04 (0.02)***	0.02 (0.01)***
Time	1.03 (0.03)	0.97 (0.03)
Single	–	4.53 (3.07)*
Visits	0.95 (0.02)*	–
White	0.44 (0.16)*	–
BSI Hostility	1.73 (0.31)**	–
Prior prison infractions	–	1.06 (0.04)†
Property crime	2.83 (1.17)*	–
Sentenced	–	1.72 (0.51)†
RE intercept variance [a]	0.29	0.03
Wald χ^2	31.74***	12.43*

Note. IRR = incidence rate ratio (exp(*b*)), *SE* = robust standard error around *IRR*. RE = random-effect parameters; – not included in the model. BSI Hostility was mean centered for analysis. Observations = 257, *n* = 75.

[a] Significance levels based on likelihood-ratio tests comparing panel and pooled NB regression models.

† *p* < .10, * *p* < .05, ** *p* < .01, *** *p* < .001 (two-tailed).

Time did not predict infractions during inmates' first year in prison. Regarding socio-demographics, more visits were associated with fewer severe infractions, showing the protective effect of social support. For each additional visit, an inmate's severe infraction rate was expected to decrease by 5%, given a constant value for model's

covariates. In addition, White inmates were associated with less severe infractions than those of other ethnicity, and inmates who were single were related with more minor infractions than those having a lasting relationship (*IRR* = 0.44, 4.53, respectively).

Among clinical variables, when added in a second step into the multivariate model, hostility was the strongest predictor of SI (*IRR* = 1.73). Attending to criminological variables, property offenders were expected to commit 2.8 times more severe infractions than inmates accused of other crimes. Having more prior prison infractions and being sentenced were also risk factors for minor infractions (*IRR* = 1.06, 1.72 respectively), but these effects were only marginally significant. When taking the covariates into account, institutional infractions patterns did not considerably vary between inmates during their first year in prison.

3.4.2. Health care utilization

3.4.2.1. Changes over time

Figure 2: Predicted health care utilization by type of treatment over time in prison
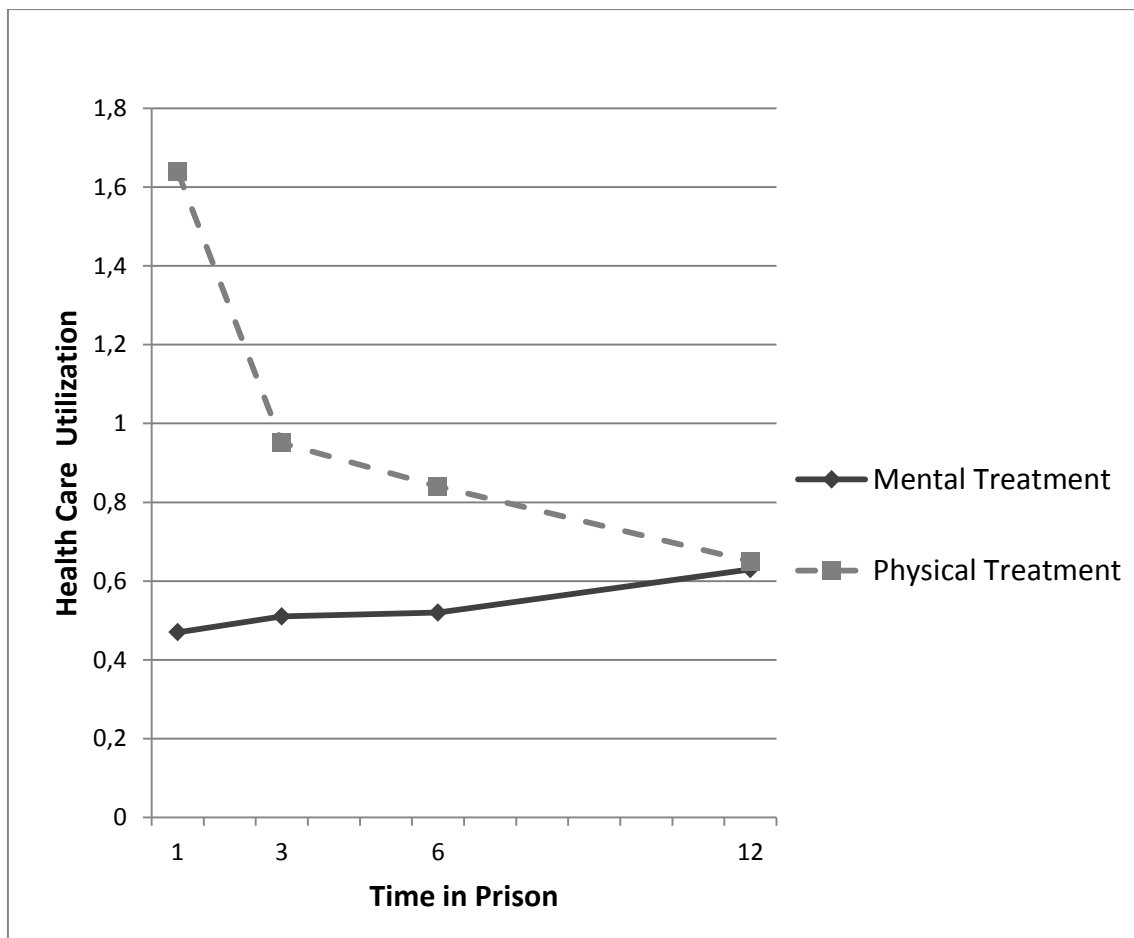
Note. Expected counts are based on the fixed part of the model only.

68

Health care use over time in prison is illustrated in Figure 2 (see also Appendix 4). Young inmates' health care use for mental health problems remained stable during their time in prison. The number of visits for mental health problems across waves did not significantly differ. Inmates' health care use for physical health problems was highest at the 1st month and sharply fell in the 3rd, then more moderately declined in the 6th and 12th months. The Wald test confirmed that there were significant mean differences across waves ($\chi^2(3) = 51.92$, $p < .001$). It turned out that physical treatment was significantly higher at the 1st month when compared to all further measurements ($p < .001$). In addition, physical treatment at the third month was significantly higher than at the 12th month ($p = .032$).

3.4.2.2. Predictors

The bivariate analyses regressing health care utilization outcomes are presented in Appendix 5. A shorter time served in prison, older age, lower education, Portuguese nationality, White race, a drug abuse and mental treatment history, older age at 1st imprisonment, having an arrest history before the age 16, and more severe infractions were positively related with some form(s) of health care use. The number of visits inmates received in prison was not significantly related to their health care utilization. Inmates with higher scores on the BSI total scale were related with higher levels of health care use. This relationship was also observed for BSI subscales, specifically somatization, interpersonal sensitivity, depression, anxiety, and phobic anxiety symptoms, though most of these effects were only marginally significant. Similarly, the LSI-R total score was related with more health care treatment for mental health problems, as was criminal history and emotional/personal problems. The multivariate models are presented in Table 3.3.

The fixed effect of time was significantly associated with a reduction in health care use for physical problems ($IRR = 0.84$)[44] but this effect was not linear. The significant time squared slope shows a quadratic trend in the data ($IRR = 1.01$), which means that the effect of time in prison in reducing physical treatment was stronger in the beginning of the prison term and subsequently flattens during incarceration.

Furthermore, in both health care use models, the random intercept and the random

---

[44] Because both models include a random slope for time, the time estimate represents the average change across inmates (grand mean slope).

slope for time were significant. This illustrates that the levels of health care use considerably vary between inmates during the first year in prison. As well, the average effect of time on health care use varies across different individuals, especially for mental treatment. For mental treatment, the RE intercept-slope covariance was significant. The negative estimate ($r = -.71$) points out that inmates with above-average mental treatment at the 1st month (i.e., high intercept) tend to have lower increases in mental treatment during their time in prison (i.e., low slope). Conversely, inmates with below-average mental treatment at the 1st month (i.e., low intercept) tend to have higher increases in mental treatment (i.e., high slope).

Table 3.3: Multivariate Models Predicting Health care Utilization over Time in Prison

Predictor	Mental IRR (SE)	Physical IRR (SE)
Intercept	0.12 (0.04)***	1.43 (0.14)***
Time	1.03 (0.02)	0.84 (0.04)***
Time squared	–	1.01 (0.004)†
Portugal	2.90 (0.91)**	–
BSI GSI	0.78 (0.23)	–
BSI GSI X Time	1.06 (0.03)*	–
Age 1st imprisonment	–	1.14 (0.05)**
LSI Criminal history	–	1.11 (0.04)**
Severe infractions (SI)	1.33 (0.09)***	–
RE intercept variance [a]	1.51***	0.08*
RE slope variance [b]	0.01***	0.004*
RE intercept-slope covariance	-0.07*	-0.01
Wald χ^2	42.17***	53.10***

Note. IRR = incidence rate ratio (exp(*b*)); *SE* = robust standard error around *IRR*. RE = random-effect parameters (random slope is time in prison); – not included in the model. LSI Criminal history and BSI GSI were mean centered. Observations = 257, *n* = 75.

[a] Significance levels based on likelihood-ratio tests comparing panel and pooled NB regression models, [b] significance levels based on likelihood-ratio tests comparing random-effect and mixed-effect models.

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Of the socio-demographic variables, only nationality was a significant predictor, but its effect was strong. Portuguese inmates were expected to use 2.9 times more mental treatment than foreigners.

Regarding clinical variables, the main effect of the GSI on mental treatment was not significant but its interaction with time was. Inmates with a higher level of mental problems at entry tend to receive less treatment for mental problems in the beginning of the prison term than inmates with less mental problems upon entry (see Figure 3). This tendency reverses at the 6th month, when the inmates with more mental problems upon

entry start to receive more mental treatment. At the 12th month, differences in mental health care use between inmates with more and less mental problems were considerable. The inmates with below-average mental treatment at the 1st month and marked increases in mental treatment over time appear to be those with more mental problems.

Figure 3: Effect of mental problems level at entry (BSI GSI) on mental health treatment over time in prison
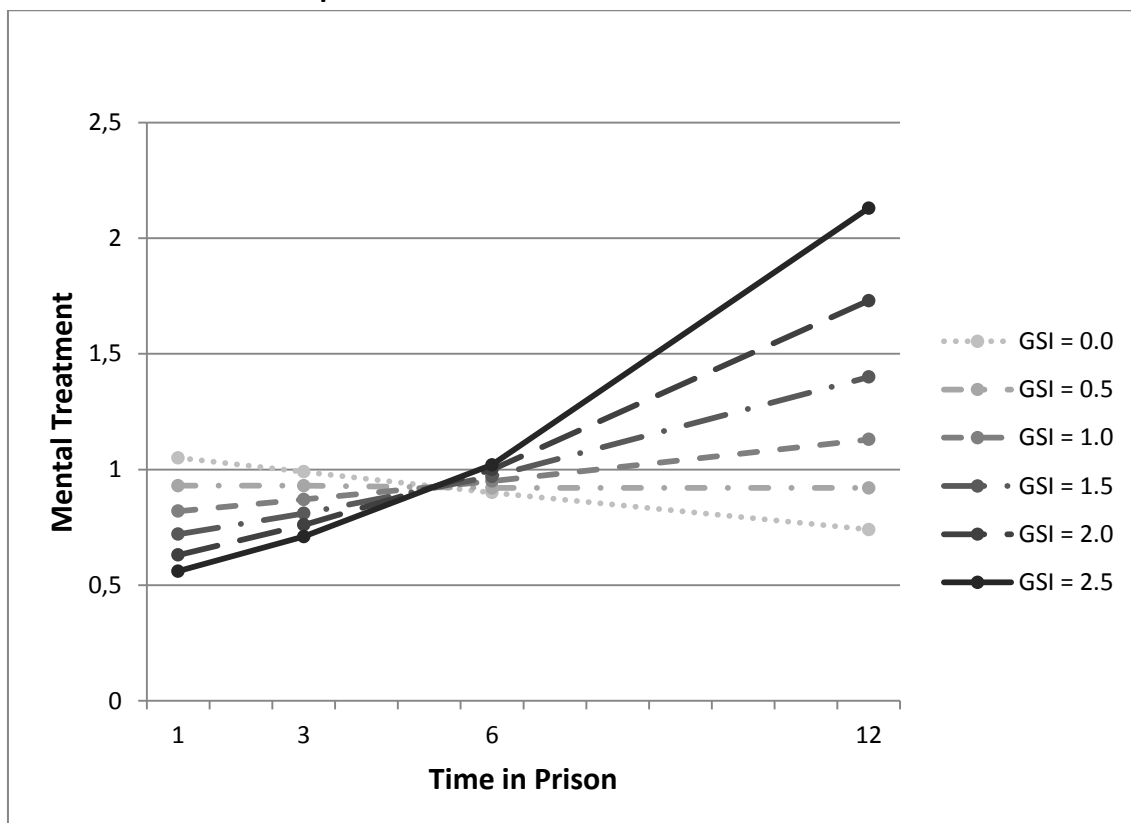
Note. Expected counts are based on the fixed part of the model only. The results are controlled for model's covariates.

With respect to criminological variables, inmates who were older at their first imprisonment and who had higher scores on the LSI criminal history scale had higher rates of treatment for physical problems (*IRR* = 1.14, 1.11 respectively).[45] Finally, the number of severe infractions was the strongest predictor of mental treatment (*IRR* = 1.33), showing that more disruptive inmates also tend to be those absorbing more mental health services.

---

[45] Though emotional/personal problems were strongly related with mental treatment, this estimate is inflated because one item of the scale address if the inmate is actually receiving mental treatment. Furthermore, emotional problems were highly correlated with the BSI GSI (r_s = .75), partially because the GSI cut-score was used to code one item of the emotional/personal scale. As so, the LSI-R emotional/personal problems scale was excluded from the mental treatment model.

3.5. Discussion

Prison adjustment among young offenders is an understudied topic that deserves further attention from research and practice. The present study is an attempt to increase current knowledge on young inmates' adjustment to life in prison. Of particular relevance in the present study was the analysis of both young inmates' infractions and health care utilization over time in prison. Besides the fact that infractions and health care use are indicators of institutional adjustment (and recidivism) and are important factors for inmate classification, both outcomes are a source of large expenses for prison services (see Lovell & Jemelka, 1996; State Health Care Spending Project, 2013). In addition to the longitudinal design, the present study also extends knowledge on juvenile incarceration because it tested social support theory, examined the utility of standardized assessment tools, and explored the influence of predictors of inmates' adjustment patterns.

3.5.1. Institutional infractions

Regarding changes in institutional infractions over time in prison, and in line with prior research (Cochran, 2012; Toch & Adams, 2002), the present study showed that the level of minor infractions of the inmates increased during the first six months of imprisonment, and subsequently started to decline. Contrary, the pattern of severe infractions was irregular and was highest when inmates were in prison for three months. There are no sound theoretical reasons for this pattern. Perhaps the peak at the 3rd month is related to the initial observation period. For instance, the more restrictive conditions of the observation period prevent more severe incidents but may negatively impact inmates' wellbeing and their further behavior, resulting in a higher level of severe disorders right after this period. Other authors exposed that being in custody for over a month was related to self-report victimizing behaviors among young prisoners, which they argue it could be used as a coping strategy to establish status after the inmates feel adjusted to the institutional regime (Palmer & Farmer, 2002).

Regarding predictors of institutional infractions, attending to the role of the major variables explored in this study (i.e., social support, mental problems and institutional risk), visits were a protective factor for the most severe form of misconduct. This emphasizes the importance of having social support in prison and extends the social-support theory to young prisoners. Cochran (2012) suggested several explanations for

the protective effect of visits on infractions. First, visits may help inmates to cope with the strains of imprisonment, like social isolation, reducing stress. Second, visits may help maintaining social bonds with family and friends, and consequently the informal social control provided by those networks. Third, visits may improve prisoners' perceptions and attitudes toward the prison system (see Cochran, 2012). Another explanation is that inmates with more visits get more material support (e.g., money, food, tobacco) than those with less visits, who may feel pushed to break the rules in order to get such goods (Colvin, 2007).

Prisoners with more mental problems were less likely to incur in misconduct, especially in minor infractions. Though contrary to the literature in general, this result is in line with prior research that either did not find a significant relationship or observed negative associations between mental problems and misconduct among young prisoners (McReynolds & Wasserman, 2008; Van der Laan & Eichelsheim, 2013). However, because no inmate in our sample was diagnosed with a severe mental disorder, our data do not exclude the possibility that more severe clinical cases would indeed be associated with more misconduct. Furthurmore, none of the scales achieved incremental validity in the multivariate model. On the contrary, in line with prior studies (Butler, Loney & Kistner, 2007; DeLisi et al., 2010a; 2010c), the results for hostility indicate that thoughts, emotions, and behaviors typical of angry states (Canavarro, 1999) predict disruptive behaviors among young prisoners. This scale achieved incremental validity in the multivariate model for severe infractions, being the strongest predictor. However, this model had few predictors to include, limiting conclusions about its added value. Yet, those results seem to indicate that different mental problems may have a different influence on inmate behavior. Thus, it may be informative to look to the individual scales of screening tools rather than just their total score for inmate classification.

Focusing on institutional risk, the LSI-R total score had modest reliability and did not predict institutional infractions among young prisoners. Although designed for offenders aged 16 and older, the LSI-R emphasizes adult concerns and may not be so reliable for young prisoners (Shields & Simourd, 1991). Criminal history and education/employment problems appear to be more relevant predictors but did not achieve incremental validity. Differently, the results for emotional/personal problems, which represent mental problems, seem to corroborate that such symptoms tend to be related with less infractions among the youth.

Regarding other covariates, this study confirms the applicability of some predictors found among adults. Specifically, although most were single, young prisoners with a lasting relationship seems to be more compliant with prison rules. It also appears that prior misbehavior tends to perpetuate over time in prison and that misconduct is exacerbated after young inmates get sentenced. However, both variables were only marginally significant predictors of minor infractions and, therefore, these results need further validation. The results regarding type of crime and racial identification have been inconsistent. Yet, as we found here, recent literature reviews evidenced that property offenders tend to be more associated with more prison misconduct than those convicted for violent crimes, as tend to be non-White inmates when compared to Caucasians (Gonçalves et al., 2014; Schenk & Fremouw, 2012).

3.5.2. Health care utilization

Regarding changes in health care use, in accordance with Zamble and Porporino's (1988) findings, treatment for physical problems declined over time in prison. Inmates' health care use for physical problems was higher in the first month after arrival in prison than in the following months. This finding may be associated with either the poor health status with which the inmates generally enter the facility (Lindquist & Lindquist, 1999), or/and with additional services provided during the initial assessment period (e.g., clinical analyses). Moreover, factors like access to treatment, a daily structure with regular meals and exercise, and limited opportunities to use drugs may result in health improvements, which may explain the less pronounced decrease in health care use for physical problems between the 3rd and 12th month of imprisonment. On the contrary, the level of health care use for mental problems remained stable across waves. This finding is opposite to the literature and is discussed below in predictors of mental treatment.

Regarding predictors of health care use, as mentioned above, time has a strong effect in reducing physical treatment, especially in the beginning of the prison term, flattening thereafter. This may be good news as it suggests that the prison system is able to help improving the physical health of the inmates, and provides more services when those are more needed. The good clinical conditions of the institution and optimization of health resources made by the prison staff/mangers may help in this process.

The same cannot be said about mental treatment services. Mental problems were related with the use of health care for mental problems but only after the 6th month in

prison. Believing that inmates with higher scores on the GSI are those with more mental problems, the interaction between the GSI and time shows that mental treatment is not correctly applied to the inmates with more mental problems at entry until the 6th month in prison, when major adjustment difficulties are expected to happen. Clearly, the lack of timely treatment can further aggravate psychological stress, which may explain why the inmates with below-average mental treatment at the 1st month have marked increases in mental treatment over time, and why the rates of mental treatment do not decline, as it would be expected to happen (see Toch & Adams, 2002).

Regarding institutional risk, the LSI-R criminal history scale achieved incremental validity in predicting physical treatment. Maybe inmates with a more developed criminal career have a poorer health-status due to their more deviant lifestyle resulting in more health care use. It is also possible that inmates with a more elaborated criminal history more often go to physical treatment for latent benefits like arranging meetings or receiving medications (see Lindquist & Lindquist, 1999). However, due to the exploratory nature of the analyses, such hypotheses are merely speculative. Moreover, there were few predictors to include in the multivariate model, and, therefore, more research is needed before concluding about the utility of this scale.

In contrast to our expectations, the number of visits was associated neither with mental treatment nor physical treatment in prison. Yet, to our best knowledge, this relationship was explored for the first time in the present study. Thus, more research on this topic is necessary before ruling out the potential benefit of visits in preventing health care problems.

Regarding other covariates, older age at 1st prison was related with more physical treatment. Older the inmates enter to prison poorer may be their health-status due to the prolonged time without healthy habits and regular treatment in the outside. Also, research indicates that older age, which was related to older age at 1st prison, predict more physical treatment in prison (Gonçalves et al., 2014). However, the variability on this scale was reduced (16 – 21) limiting interpretations. In addition, foreigners were strongly associated with less mental treatment. Generally, foreigners are less likely to use mental health care services in the free world (Koopmans, Uiters, Devillé, & Foets, 2013) and may continue to do so while in prison. As well, because Portuguese nationality and White race were related, maybe cultural factors have influence in this process (see also Steadman et al., 1991). Again, more research is necessary to confirm

these results.

3.5.3. Implications for practice and research

Because visits have the potential to reduce severe misbehavior in prison, prison systems could reduce inmates' misconduct by taking measures to improve possibilities for visits. For instance, inmates under isolation sanctions could be allowed to receive some visits because they may be those who need it most. Also, the prison system may take simple cost-effective measures to improve inmates' social support, such as more flexible visitations hours; developing policies to make visitation a more pleasant experience for visitors and inmates; and creating ways to develop inmates' social networks throughout the sentence (see Cochran, 2012; Monahan et al., 2011).[46] Furthermore, visits in prison have been related with reductions and delay in recidivism after release (Bales & Mears, 2008; Cochran, 2013), accentuating the beneficial influence of social support in the long run.

In addition, the results of the present study suggest that mental health screening and treatment is not always effective. In Portugal, all inmates are assessed by a psychologist at entry for screening mental problems. However, the decision to enroll the inmates in further treatment is based on the clinical judgment of the staff, not standardized tools, making an accurate decision difficult. From our results, it looks like the GSI scale of the BSI could be used as a screening tool for mental problems at intake in order to improve the accuracy of diagnostics about inmates' mental treatment needs.[47]

The BSI hostility scale may also be useful for risk classification. Specifically, inmates with higher levels of hostility could be identified by prison staff and enrolled in a specific cognitive-behavioral program (e.g., anger management) for juvenile offenders with a more disruptive behavior. This could help improving prison safety and making regular mental treatment services more available for the inmates who have more mental problems, and not those with more severe infractions as they may need specialized intervention (not counseling).

---

[46] In Table 1 we observe that, during the 1st month, the inmates received a mean of 5.32 visits. However, this value progressively decreased until an average of 1.71 visits per month during the last observation period, evidencing a reduction in social support over time.

[47] Although other (more adapted) instruments could be tested for this purpose, few mental screening tools are actually validated for the (forensic) Portuguese population and generally require more time, additional information, and professional skills to administer.

The findings suggest that the LSI-R should not be used to classify young prisoners into levels of risk for misconduct, at least in its actual format. The Portuguese General Directorate of Reintegration and Prisons is now using the Level of Service Case Management Inventory (LS/CMI – Andrews, Bonta, & Wormith, 2004), a new generation of the LSI-R, to classify offenders serving sentences in the community. As the LSI-R, if applied to predict misconduct among young prisoners, the LS/CMI is likely to have poor validity. More adapted instruments are necessary for classification purposes among this population.

Methodologically, this study emphasizes the strengths of longitudinal designs because they provide information about the development of inmate behavior (and correctional procedures) and allow more reliable conclusions. For example, if the youths were sampled only at the 1st, 3rd or 6th months, the association between mental problems and mental treatment would pass unnoticed, as well as the interaction between mental problems and time. Our data also indicate the importance of separating the results by specific outcomes as the vast majority of the predictors for severe vs. minor infractions and mental vs. physical treatment were distinct. Thus, aggregated measures could be misleading.

3.5.4. Limitations and future directions

A major limitation of this study is its small sample size, which impacts on statistical power and precision of the analyses. As a consequence, we may have failed to identify significant predictors of inmates' adjustment and the significant results may not reflect true effects. Nevertheless, power is increased by the repeated measures design (e.g., Snijders, 2005) and simulation studies exposed that multilevel models with a sample size higher than 50 at level-two may produce unbiased and accurate estimates (see Maas & Hox, 2005).

It is however difficult to interpret how the results can be generalized to other young prisoners in Portugal and prisoners in other countries and prison systems as well. Because they are generally allocated among adults, the environment may exercise a different influence on those inmates (Tasca et al., 2010). Also, the ethnic composition of our sample is mixed, contrary to other regions of the country (especially the North), where most inmates are Caucasian. In addition, though this study constitutes 36% of the youths, most (but not all) foreigners coming from Romania were excluded due to

language barriers, being therefore underrepresented. In 2011, Romanians constituted 6% of the prison population. Thus, studies replicating our research among young prisoners allocated in either prisons for adults as prisons for young offenders are necessary to generalize our findings.

Furthermore, it should be noted that the LSI-R and BSI were treated as fixed but both variables vary over time in prison. Also, missing data on the BSI were subjected to imputations. Furthermore, the relationship between visits and severe infractions may be inflated because of administrative procedures (Cochran, 2012). Because sanctions for severe infractions prevent visits for a certain amount of time, this may cause lower levels of visitations. These limitations may introduce some bias into the results.

This study also leaves several questions to answer. First, more research on predictors of inmates' health care use and the effect of clinical variables (e.g., mental problems) on infractions are required to further explain our results. Such studies would be helpful to generalize knowledge and optimize correctional practices for young prisoners.

Second, more studies are necessary to deeper explore the social support theory among young prisoners. For instance, visits are just a proxy for social support; other variables are important to assess this construct (e.g., support from staff). In addition, visitation patterns may vary across sub-groups of inmates (Cochran, 2012) or exercise a moderator or mediator effect (Hochstetler, DeLisi, & Pratt, 2010). Similarly, more studies using psychometric instruments and institutional risk tools must be done in the prison context to test their potential utility for classification procedures.

Finally, the irregular pattern of severe infractions over time should be further explored. To test if the peak at the 3rd month is somehow related to the initial observation period, an investigation would longitudinally assess and compare the infraction rates of inmates randomly assigned to the observation block with others assigned to other unit(s) with less restrictive conditions. If the observation period is causing this peak in severe infractions, newcomers should not be subjected to more restrictive living conditions.

Despite limitations, this study expands theoretical and empirical knowledge on the longitudinal adjustment to prison life among youngsters, and has implications for correctional practice. Our findings suggest that: (1) the number of visits (a form of social support) may reduce disruptive behaviors in prison and should therefore be

promoted; (2) screening for mental health problems at intake, using the BSI, may improve mental health services efficiency; and (3) the use of the LSI-R to classify young prisoners into institutional risk levels should be cautioned. Although many results found among adults seem to apply to juvenile inmates, others appear more specific of this population, warranting specialized methods of classification and treatment. More longitudinal research on predictors of infractions and health care use needs to be made to deepen knowledge on prison adjustment among the young offenders.

CHAPTER IV

Prisoners' Coping Strategies in Portugal:

An Exploratory Study[48]

4.1. Abstract

The present study explores how first-timer males adjust to prison life in Portugal. Based on the narratives of 25 respondents, that were analysed through an inductive method, we describe the strategies they use to cope with imprisonment and what they gain from these strategies. The results indicate that prisoners try to gain a sense of control over their lives by (1) staying out of troubles, (2) managing stress and emotions, (3) keeping safe, (4) passing time, and (5) getting support. Coping strategies serve different purposes and interact with each other in order to reach a balance, changing across persons, situations, and moment of the sentence. Most strategies were identified in prior studies but we found no evidence for particular behaviours reported in other countries, suggesting both similarities and differences in prisoners' coping across cultures. The need for policies and intervention programs to enhance prisoners' coping skills is evidenced.

Keywords: prisoners, adjustment, coping strategies, qualitative study

4.2. Introduction

Incarceration is one of the most stressful life experiences, rating high as the death of a close family member (Holmes & Rahe, 1967). The pains of imprisonment (Sykes, 1958) include several conditions against human nature that require modification of basic life patterns and induce a highly challenging lifestyle. Inmates have to manage stress and still adapt to a new environment that they have little control over. Institutional regimes enforce a total control of time, space, activities, and relationships (Goffman, 1961). Prisoners who do not follow the expected behaviours risk punishment from the prison authorities and loosing privileges, like the possibility of parole. Besides the routine,

---

[48] Chapter included in C. Reeves (ed.), *Experiencing imprisonment: Research on the experience of living and working in carceral institutions* (book accepted for publication). Taylor and Francis publishers. The authors thank the General Directorate of Reintegration and Prisons for their permission to carry out this study, the prison staff of the two research sites for their availability, and all prisoners who shared their experiences with the research team.

stigma and discipline imposed by the institution, prisoners are subjected to the norms and values of the inmate subculture, that regulate social roles through ways of mockery, rejection, and force (Jewkes, 2005). Not surprisingly, imprisonment often results into adjustment disorders like violence, self-harm, and attempted suicide, especially for first-timer and more vulnerable prisoners (Adams, 1992; Harvey, 2007; Liebling, 1999; Mitchell & Shaw, 2011).

Coping strategies are seen as a mediator in the stress-illness relationship (Ireland, Boustead, & Ireland, 2005; Mohino, Kirchner, & Forns, 2004). Coping refers to cognitive and behavioural efforts to manage external and/or internal demands that are appraised as taxing the resources of the person (Lazarus & Folkman, 1984). Despite the atypical nature of the context, knowledge on coping in prison is still limited compared with other areas. The literature however suggests that coping influence adjustment to prison as well as recidivism in crime upon release (Adams, 1992; Zamble & Porporino, 1988). Given the implications for prisoners' well-being, the criminal justice system, and the society in general, it is important to identify how prisoners cope with their environment in order to facilitate a successful adjustment and alternative ways of responding (Reed, Alenazi, & Potterton, 2009).

In accordance with the stress-coping theory (Lazarus & Folkman, 1984), prisoners' adjustment is the interaction between features of the environment, individual's perception of the situation, and coping strategies acquired over-time (Adams, 1992). The way individuals appraise and respond to the situations is more important than the frequency or severity of the problems themselves (Zamble & Porporino, 1988). Importantly, coping behaviours can be modified during incarceration. In that sense, prisoners who are disadvantaged in terms of their ability to cope should be stimulated to participate in programs for developing new skills, necessary do adapt both in prison as in the outside world (Johnson, 1996; Zamble & Porporino, 1988). Self-esteem is believed to mediate coping in any context and should be enhanced to promote more productive strategies (Johnson, 1996).

Previous research provided some insights about what prisoners do to cope with life behind bars, giving voice to their experiences as experts in this unique process. In their longitudinal study in Canada, Zamble and Porporino's (1988; 1990) reported that prisoners initially get involved in institutional programs to do time and to rehabilitate themselves. Later, they tended to give up from programs, opting to work and live from

the prison routine. They also focus on activities inside the cell and restricted socializations to a few friends to avoid troubles and to do time in their own way. Behaviours and activities were planned around long-term objectives like the parole. The study exposed that a few prisoners use active thinking, planning, and analysis, and that the prison environment tends to maintain their coping difficulties unchanged.

In the U.S., Schmid and Jones (1993) ethnographic study revealed that earliest coping strategies of first-time, short-term prisoners are defensive in nature, serving as information seeking and protective measures. Gradually, they acquire an insider perspective of prison life and modify their behaviour in accordance, commonly suppressing thoughts about the outside world and creating survival niches that allow them more activity, safety, emotional feedback and freedom within the larger environment. The concluding stages of the sentence were marked by dissipation of prison adjustment strategies and formulation of outside plans. DeRosia (1998) evidenced that coping among advantaged offenders (i.e., higher level of education, income and occupations) includes denial of criminality, conformity with prison rules, and a sense of superiority over other prisoners. Social support was associated with the choice of coping strategies and resulted into a better adjustment to prison.

Among European research, Jewkes (2005) emphasized manliness as a major coping strategy among men in British prisons. The hierarchies of power were organized according with the ability to maintain a masculine front and a personal code of behaviour based on confrontation and force. The author also evidenced the development of relationships and solidarity among prisoners, as well as efforts to maintain self-identity and self-esteem. Harvey (2007) explained that young prisoners in the U.K. adapt to prison practically (e.g., gaining knowledge on prison rules and schedules), socially (e.g., interacting with staff and inmates) and psychologically (e.g., dealing with stress and emotions) that evolves through several stages toward reaching a cognitive, emotional, and behavioural balance.

There are also reports from places where the conditions of imprisonment are described as more deprived and inmate subcultures prevail. Einat and Einat (2000) exposed that, in Israeli prisons, coping strategies include adhesion to the inmate code and loyalty to fellow prisoners, opposition to the figures of authority, the use of drugs, violence, and mastering the prison argot. In South Africa, Lindegaard and Gear (2013) evidenced that prisoners join prison gangs and commit violent acts in order to keep safe

and to gain influence over their lives, even being victims of violence and sexual abuses by internal gang hierarchies, which they prefer over more random forms of victimization. In Jamaica, Morris (2008) exposed that prisoners adapt by reassessing life, reinterpreting experiences, maintaining self-control, interpersonal distrust and distancing, and not developing close relationships. Prisoners were found to adjust better in safer environments because they foster better relationships.

In sum, previous studies substantially enlarged the state of art by exposing a variety of coping strategies, across different prisoners and settings. Unfortunately, the current knowledge on prisoners' coping is still fragmented. Among existing studies, many do not focus on coping strategies directly (rather on prisoners' experiences), or explore narrow aspects of prisoners' behaviours (e.g., inmate relationships), therefore failing to identify different types of coping strategies and to provide a wider description of different coping dimensions, as well as explanations for their function in the process of adaptation. Methodologically, some studies use structured interview schedules, defining coping beforehand without being open towards the inmates' own interpretation on this topic. Finally, most research comes from Anglo-Saxon countries and, therefore, little is known about how prisoners cope in different cultural settings.

Trying to fill these gaps in knowledge, the aim of this study is to explore how male prisoners adjust to prison life in Portugal, according to their emic perspective. Based on the reports of first-timers detained in two different institutions, we describe the strategies they use to cope with imprisonment and what they gain from these strategies. Besides providing a perspective from an unexplored cultural context, our study adds to discussion about prison experiences in general and coping in particular. It emphasizes the importance of focusing on emic perspectives of prisoners while applying an inductive analytical approach in order to identify coping strategies before aiming at quantifying their prevalence.

4.3. Methodology

4.3.1. Participants and research contexts

The sample of this study includes 25 males representing a diverse group of prisoners. Respondents' age ranged from 23 to 67 years and their education varies between one and 12 years of schooling. Their sentence length vary from 8 months to 20 years and their offenses include crimes against persons ($n = 11$), property ($n = 5$), society ($n = 2$),

and drug related ($n = 7$). To overcome language barriers, all were Portuguese citizens. The characteristics of the sample are presented with more detail in Table 4.1.

Table 4.1: Descriptive Characteristics of the Sample

Characteristic	$N = 25$	
	n	*%*
Age		
18 – 25 years old	2	8
26 – 35	8	32
36 – 45	10	40
46 – 55	4	16
≥ 56	1	4
Marital status		
Single	9	36
Married	7	28
Divorced	9	36
Education		
< Primary	2	8
Primary (4 years)	10	40
2nd grade (6 years)	4	16
3rd grade (9 years)	5	20
Secondary (12 years)	4	16
Substance abuse history (alcohol/drugs)		
Yes	16	64
No	9	36
Type of crime		
Persons	11	44
Property	5	20
Drug related	7	28
Society	2	8
Sentence length		
< 1 year	2	8
1 – 5	9	36
5 – 10	8	32
10 – 15	3	12
15 – 25	3	12
Institutional occupation (work & school)		
Yes	13	52
No	12	48
Temporary leaves		
Yes	10	40
No	15	60
Disciplinary infractions		
Yes	12	48
No	13	52

Because coping may vary across different prisoners and settings, data were collected from one regional prison (RP) and one central prison (CP). Prisoners with

more serious crimes and longer sentences tend to be confined in CPs. The RP of this study was housing an average of 82 inmates per day, even though its maximum capacity was for 42. Inmates were confined in small dormitories for six or seven persons and were open about 10 hours per day. There were no occupational areas or gym in this facility, only two small courtyards. On the other hand, the CP had capacity for 548 inmates and was housing an average of 576. Prisoners were allocated in cells for two persons and were open near eight hours per day. There were several workshops in this facility, an outside agricultural area, a large courtyard with football field, and gym. Institutional rules and schedules are similar across facilities, and, overall, the Portuguese correctional system is comparable with other European countries.

4.3.2. Procedure

Data collection took place between July 2010 and January 2011 after approval was obtained through the General Directorate of Reintegration and Prisons. Based on purposive sampling, only convicted prisoners (to prevent the influence of an undefined penal situation), who were imprisoned for the first time (to focus on prisoners with no already acquired strategies), and had been in detention for more than six months (to assure they passed the initial adjustment phase and had time to develop a meaningful experience) were selected. After the initial selection, a random set of prisoners were approached to explain the aims of the study and ask for their collaboration. Participation was voluntary and about 80% accepted. Non-respondents said they had other things to do or were not interested in participating. All respondents signed an informed consent assuring the confidentiality of the data.

In-depth interviews were carried out one-on-one by a single interviewer in private rooms within the prison services area. Interviews lasted, on average, 45 minutes. In one prison, interviews were audio recorded and subsequently transcribed verbatim. In the other one we were not allowed to bring in an audio-recorder and so extensive notes were taken in this case. The interview schedule was developed specifically for the purpose of this study and revised after two pilot interviews. It includes two major topics: prisoners' perception on influences of their adjustment to prison and the coping strategies they use. The present study focuses on coping strategies. Specifically, we questioned prisoners about what they did to deal with imprisonment, what strategies worked best and worst, and changes in the way they deal with prison along the sentence. More elaboration on

answers and clarification of concepts was always encouraged but questions were always kept open.

4.3.3. Analysis

The transcribed interviews were coded utilizing QSR NVivo (version 8) software. To analyse which coping strategies inmates use to adjust to prison and why, we used a Grounded Theory approach (Strauss & Corbin, 1990). This is an inductive research method in which the themes emerge from the data in a bottom-up process. Specifically, the data were broken into small units of meaning, and labelled with words close to those of the respondents. These coded units were then gradually integrated into similar concepts, representing different coping strategies. Only behaviours used specifically to cope with prison life were coded. In a second step, these strategies were grouped into another level of codes (generic categories) according to their major function in the prison context (i.e., why the inmates use the reported coping strategies). For instance, being cautious (1st coding level/coping strategy) serves to keep safe (2nd level coding/generic coping category).

To ensure the validity of our interpretations used for the coding, the first level strategies were discussed with the respondents who were still detained in one of the research sites. To do so, a presentation was given in a group-session. Prisoners were asked whether they recognized the classification and encouraged to better explain the purposes of each strategy. There was consensus among respondents and their feedback was used to develop the final classification that was resolved through discussion between authors.

4.4. Results

Based on the previous methodology, the prison coping strategies that emerged in this study were grouped into five generic categories: (1) staying out of troubles, which involves adhering (a) the prison system, and (b) the inmate population; (2) managing stress and emotions; (3) keeping safe; (4) passing time; and (5) getting support. Those categories are presented below, describing the main properties and strategies included in each one, along with illustrative quotes from the respondents (see also Table 4.2).

Table 4.2: Prisoners' Coping Strategies

Sub-category	Generic category
Adhering the prison system: Complying with prison rules Getting along with guards Not protesting against staff Moving away from drugs Asking for occupations *Adhering the inmate population:* Getting along well with inmates Communicating assertively Keeping to their own life Avoiding debts Being clean	Staying out of troubles
Accepting the sentence Reappraising life Living day-by-day Controlling thoughts Expecting the worst Ignoring provocations Keeping calm Changing of character Protesting against prison staff Phoning Consuming drugs Fighting	Managing stress and emotions
Getting familiar environment Being cautious Selecting fellows Reserving to oneself Being confined in the cell Asking for unit transfer Ensuring respect	Keeping safe
Working/studying Performing other activities (individual/collective) Spending time with friends Walking around Phoning	Passing time
Creating a group of friends Asking support from prison staff Applying for prison transfer	Getting support

4.4.1. Staying out of troubles

Staying out of troubles was the major concern for most prisoners. Their objective was serving the sentence in the best possible way while achieving prison benefits and the early release. To this end, they needed to adhere: (a) the prison system, and (b) the inmate population, each one with its own customs and values. Being able to manage both the formal and informal control at the same time was necessary to stay out of troubles but sometimes difficult due to the conflict between these two social dimensions and different roles they required. Participant 20 (P20) exposed this ambivalence well:

> "If you're very compliant with the prison system, you're immediately labelled as a snitch by other prisoners. If you're too much associated with the inmates, you also get nothing from the prison administration. So, you must keep a certain balance, you know? And this balance is hard to find among all the things that happen here".

4.4.1.1. Adhering the prison system

Adhering to the prison system involves compliance with the institutional regime. Those strategies serve to avoid disciplinary reports and progress throughout the sentence achieving prison benefits like work, temporary leaves, and the open regime, which ameliorates life in prison and the hope for the early parole.

Naturally, the most referred strategy in this regard was **to comply with prison rules**. Besides the offenses included in the penal code (e.g., fighting and smuggling drugs), this involves specific rules and schedules of the institution not punished in the outside world (e.g., presence in meals and closing doors) that requires following the prison routine with discipline and assiduity. Despite the various challenges caused by prison life, several prisoners mentioned their efforts to behave the best they could for getting released as soon as possible:

> "My sentence is 20 years, so I fight for my things. Otherwise, I've to spend a lot more time in here. If we have a good behaviour we can get the parole at the middle of the sentence. Otherwise we must wait until the 2/3 or 5/6, and that's hard" (P17).

Although extensive interactions with prison staff could be seen with suspicion, respecting and maintaining good relationships with staff was important. For instance,

getting along well with guards provides advantages on prison life issues, like favourable opinions for attribution of benefits, as well as more freedom and autonomy in the daily routine. However, oftentimes, relationships with staff were superficial and served mostly to avoid troubles. In this regard, several respondents mentioned **not protesting against staff**, even when they have reasons to. They consider it useless because "staffs have the power on their side" and they recognized that their life in prison could become more difficult because of such conflicts:

> "I'm aware of my rights … Some guards should be punished for the things they do here … But I can't report against them. I would be shooting my own feet" (P18).

In addition, two respondents mentioned **moving away from drugs** to get prison benefits because drug tests are a requirement, and one said that, **asking for occupations**, even when those are not available, is a way to show adherence to the prison values.

4.4.1.2. Adhering the inmate population

Adhering to the inmate population involves compliance with the values of the inmate population. This includes efforts to achieve acceptance from and maintain good relationships with other prisoners. Besides avoiding troubles and disciplinary reports, this allows managing a friendlier environment that somewhat alleviates the pressure of living in prison.

The most referred strategy was **getting along well with other prisoners**, like talking to everybody, respecting mutually, and joking with each other. A few respondents exposed their efforts **to communicate assertively** for avoiding conflicts (e.g., apologizing when they do something wrong, talking empathically, establishing guidelines for living together) but recognized the lack of such social skills as a source of disputes, oftentimes for trivial issues. P3 emphasized these two strategies:

> "To live among *machos* is difficult. I don't like everything they do, and they don't like everything I do too, but we try to forgive each other. It's essential that we get along well with other persons, especially those of our dormitory; because we spend a lot of time closed together ... We are already angry for being here and even more we get when we are with people that we don't like. But we can't just walk away as in the outside".

90

"As the older of my dormitory, I explain to newcomers – Mate, here we solve problems between us, as a family. If you have problems, open yourself and talk with us ... If you're not happy here, just write to the Chief saying that you want to be moved, but never criticizing your fellows – and thanks God it has been working until today".

Of vital importance to avoid conflicts was **keeping to his life**, maintaining a low profile, not interfering in the problems or interests of others, and never snitching on fellows. This was the most salient evidence of an inmate code:

"Here nobody is a friend but also nobody is an enemy. When someone asks me information about other prisoners, I just say that I'm not the right person to answer for this matter. Each one must keep to his life" (P15).

In fact, beside the type of crime (e.g., being a sexual offender or a murderer), the "snitch" label was the major form to differentiate status among prisoners and generate typical forms of informal control, like rejection and victimization.

Avoiding debts was also mandatory. Debts were mostly related with drug use and caused serious problems between prisoners that extend to their families in the outside. This was emphasized in the CP where drugs were far more abundant and create an unsafe environment, including violence, robberies, and intimidation. Yet, debts also include loans of other goods like money, phone cards or tobacco. That is, lending could be an act of camaraderie, but not paying on time was a source of conflicts:

"The main thing here is not getting into debts. If I ask for something I owe. If I pay, I don't owe anything. But if I ask and I don't pay, problems arise" (P15).

In addition, two respondents referred the need **to be clean** when sharing a cell to respect the space of the other prisoners.

4.4.2. Managing stress and emotions

Managing stress and emotion includes a variety of cognitive and behavioural strategies necessary to deal with the different pains of imprisonment. Such strategies serve to minimize the impact of prison life, improve personal control and functioning, and get some stress/emotional relief.

The first step of prisoners' cognitive adaptation was to accept the sentence, assuming the responsibility for their crimes, conforming to the sentence, and facing the new conditions of living. Prisoners reappraise the prison situation as temporary rather than definitive and internalize that they must continue their lives while behind bars:

"If you worry time doesn't pass. We know we're here to serve our sentence. No worth to cry, we have to conform. And we just get used to it, as we have to be here" (P1).

Frequently, they re-interpret their experiences into a functional way that gives a sense of meaning and allows the development of future goals. A common strategy was reappraising life, thinking about the motivations of crime and the consequences of their lifestyle in order to reform themselves. They emphasize the positive aspects of incarceration and try to develop something positive from it for the future (e.g., living drugs, studying, developing skills):

"I pretend I'm in a monastery. The time I'm here is not lost time; it's a time to think. I'm trying to use this time in prison to restructure my life" (P18).

To face the monotony of the prison routine and not getting troubled by unpleasant feelings, many respondents explained that they live day-by-day, doing things rather than thinking. Others mentioned an effort to control thoughts (e.g., about the outside world and their families) and strive to think in a positive manner:

"I can't think about my family, I would make nonsenses ... I pretend I have no children, no women, nothing … I try to think always in the positive. I don't let negative things enter my mind" (P23).

In addition, a few explained that they prefer to expect the worst about institutional decisions (e.g., requests for jobs, temporary leaves, the parole) in order to not get frustrated with the frequency of negative outcomes, as well as to control feelings of anger against the justice systems.

Dealing with the social environment of prison life was challenging and required high self-control. As they happen frequently, prisoners learn to ignore provocations, like pejorative jokes, critics, and insults as much as possible. In association, they emphasized the need of keeping calm to solve prison life issues and to reduce stress-related problems:

"I try to stay calm. This is essential for everything here. We must solve things without getting angry otherwise it is worst, we get nervous all day" (P17).

For some, this requires changing of character, becoming more tolerant, humble, and peaceful:

"I strive to be different. I became more humble. If I kept my personality and my character I would have much more problems than those I already have" (P8).

Prisoners also channel their frustrations through several ways. They may protest against prison staff (e.g., arguing, writing complaints) to express irritation in situations they feel their treatment was unfair. Although they recognized those as negative strategies and made efforts to change, some prisoners may fight to discharge negative emotions or/and consume drugs to alienate from critical moments of the sentence:

"When I was transferred to this prison, I started taking punishment upon punishment. And so, to forget, I was consuming again. But then I stopped to think and realized that it wasn't the right way to go" (P9).

Only P9 reported phoning the family to manage his feelings:

"I'm always tied to the phone, calling my parents. I need to talk to them every day otherwise I don't feel well".

4.4.3. Keeping safe

Prisons were perceived as dangerous environments for first-timers and keeping safe was a major concern, especially at the beginning of the prison term, though it requires constant measures of precaution. This category includes collection of information on the prison context and enforcement of personal-safety, by either avoidant or approach strategies.

Initially, prisoners get familiar with the environment, observing how the prison system works, in order to engage in the prison routine and relationships. Sometimes, they regulate their behaviour by observation and imitation, aiming to pass unnoticed among the larger population. A vital strategy to keep safe was to be cautious, being vigilante, distrusting others, and not carrying valuable goods. Yet, the most mentioned strategy was to select fellows. This involves the analysis of people to avoid or trust, keeping apart from troublemakers:

"When I arrived here I began to study people … I started to reach a conclusion of those with whom I could talk. I move away from troublemakers. That helped me a lot to adapt here" (P3).

This strategy was also related to the creation of friendships.

Another way to keep safe was avoiding exposure. As relationships are marked by distrust and uncertainty, several prisoners reserve to themselves, staying on their own, not developing deep intimacies, and concealing their vulnerabilities. Some prefer to remain confined inside the cell during open hours because they consider collective areas propitious for problems:

"I usually do not leave my cell; I spend my days inside it. This way I'm quiet. I began to see right from the beginning that it was better for me. I avoid problems this way" (P10).

Although distancing could be beneficial in some measure, a few respondents explained that isolation can lead to mental problems and victimization because such inmates have no friends to distract or to protect them:

"The worst thing is to be isolated… If you don't distract you're always thinking about what you did. You'll be tormenting yourself. This can lead to madness, this can lead to suicide. It happens frequently here" (P17).

Asking for unit transfer was also an attempt to get apart from troublesome places, especially where groups of bullies congregates. Such groups were mentioned by few respondents and especially in the CP. Although reduced, they were considered a destabilizing force among the inmate population, causing most conflicts and criminal activities.

Despite constant efforts to prevent troubles, confrontations were sometimes inevitable in order to keep safe and to establish status among the inmate population. Prisoners explained that they must ensure respect by responding with hostility or violence for self-protection and to prevent future victimization. P22 said:

"When they try to abuse us, it's necessary to mark our position at all cost, especially in front of others, so they don't try to do the same … We need to ensure a position of respect, it's a question of safety".

4.4.4. Passing time

Coping with prison was frequently associated with the ability "to do time" in order to overcome the monotony of the prison routine and long periods of confinement. This involves doing activities that are formal or informal, and individual or collective, depending on the institutional offer and preference of each prisoner, as well as the period of the day. Besides passing time, activities serve many secondary purposes. Depending on the strategy, they may allow more freedom and autonomy, distraction from personal concerns, and ways for channelling stress. They also serve to be away from the larger inmate population, to develop friendships, and to contact with outside persons. Likewise, they are an opportunity to develop new skills, to earn some money, and to maintain a good institutional record.

Prisoners emphasized spending time in productive activities, especially to gain more freedom and autonomy. The most aimed was to work or study:

"The work here is very important because it takes our time … Instead of being surrounded by other prisoners, we're more restricted, there are less conflicts ... We have more freedom and contact with outside people, and we get able to manage this" (P25).

Performing other activities, like ludic and recreational ones (e.g., reading, playing dominos, religiosity), was also frequently mentioned, especially in the RP, where the availability of work and school is limited, but also the space and equipment for non-formal actions (e.g., sports), making time a great source of discomfort:

"To pass time, the only activities I do is playing dominos. I also go to the lectures [awareness-raising actions] when there is, and prey for me and my relatives ... There should be more activities for us to pass time. We suffer a lot in here, a day looks like three" (P3).

Spending time with friends occupied a great part of the days in prison, especially during confinement hours, which highlights the importance of good relationships between cellmates. This helps passing time while enjoying some moments of happiness, despite the living constraints:

"We're stocked in here but we also have moments of happiness, and they happen with my mates. We spend a good time together. We play games, we joke with

each other, and time passes faster. When we realize, the guard is already opening the door" (P3).

In addition, a few prisoners stated walking around the prison space and phoning their families as ways of filling time:

"Phoning to the outside is an easy way to pass time. I talk to my family, my nephews, my girlfriend, and it helps me passing the days" (P22).

The desire to spend more time talking with the relatives (than the allowed five minutes per day) was associated to the illegal use of mobile phones, a severe infraction in prison.

4.4.5. Getting support

Getting support was considered essential to deal with the deprivations of prison life and to keep linked to the outside world. Support comes both from inside and outside and helps prisoners in dealing with a variety of personal issues.

Behind the walls, support resulted mostly from inmate socialization and the creation of a group of friends. A small number of trusted fellows that act as family composed this group of friends. Besides passing time, friends frequently guide initial experiences in the facility, teaching how to adjust to prison life and how the prison system works. They also help in dealing with personal problems, and provide personal safety and resources without concealed intentions:

"I managed to get a group of friends. That's the greatest strength we have in here. They're two or three that we know we can rely on. They give me good advices. I give them advices too, when I see they have problems. We have no family here but we are still humans, we all need someone to help us, and someone for us to help" (P3).

Although less mentioned, prisoners also ask support from prison staff (e.g., guards, educators, and medics), mostly for instrumental purposes such as help on administrative and legal questions, clinical treatment, and safety issues. Yet, they complained that frequently they must wait a long time before having an appointment and sometimes they just give-up from it because meanwhile their problems have been solved.

For many prisoners, the greatest support was the family and friends in the outside. Above the provision of basic needs, such as material goods, being apart from the loved ones was considered among the most difficult experiences of imprisonment. Though difficult to achieve, prisoners sometimes apply for prison transfer to an institution closer to their home, in order to facilitate visits from relatives and maintain social bonds, which were considered their major source of emotional support:

"I asked for transfer to this prison because here I'm only 8 km far from home. During the 14 months I was in the South I had only one visit and it's difficult, especially with two small children" (P10).

Having social support also helps in getting prison benefits like temporary leaves and parole.

4.5. Discussion

The objective of this study was to explore how first-timer males adjust to prison life in Portugal, describing what coping strategies they use and why they use them. By approaching coping from an inmate perspective and with an inductive method, we showed that adjustment to prison is a complex process that requires constant efforts, a mixture of different coping strategies, and a great flexibility. Despite the deprivations of the environment and stress caused by being in prison, prisoners try to gain a sense of control over their lives by staying out of troubles, managing stress and emotions, keeping safe, passing time, and getting support. These coping strategies serve different purposes and interact with each other in order to reach a balance, though it was neither uniform nor stable. If most prisoners felt able to cope with prison life over time, some of them were not so successful along this process.

Our findings support previous studies showing that staying out of trouble is a major concern for most prisoners (DeRosia, 1998; Flanagan, 1981; Johnson & Dobrzanska, 2005; Morris, 2008; Zamble & Porporino, 1988). This requires continuous efforts to meet the values and customs of the prison system and the inmate population at the same time, which is difficult because prisoners have different roles in these social scenarios that may collide with each other. But despite this ambivalence and the flexibility it requires, both systems of control have the ultimate goal of keeping social order and peace, and prisoners constantly involved in conflicts and infractions were seen

as troublemakers by both parts. In fact, our results confirm those of DeRosia (1998) who pointed out the ability to deal with and to understand a wide variety of persons as a central skill in avoiding troubles. Besides complying with prison rules and the inmate code of conduct, social skills like getting along well and communicating assertively with others appears to facilitate interpersonal relationships, therefore preventing recurrent conflicts.

The variety of ways to manage stress and emotions has been well covered by the literature. Prior studies evidenced the cognitive restructuring process as part of the adaptation of prison inmates, indicating strategies like accepting the sentence and reappraising life (DeRosia, 1998; Morris, 2008; Yang, Kadouri, Révah-Lévy, Mulvey, & Falissard, 2009). Prior studies also evidenced that prisoners may concentrate in the present and suppress thoughts about the outside world as defence mechanisms to avoid negative feelings, and strategies such as keeping calm and ignoring provocations serve to control manifestations of distress (DeRosia, 1998; Flanagan, 1981; Leahy, 1997; Morris, 2008; Schmid & Jones, 1993; Yang et al., 2009). Complaints against staff, the use of drugs and violence as outlets for stress and emotions have also been exposed (Einat & Einat, 2000; DeRosia, 1998; Zamble & Porporino, 1988). In our sample, emotions were generally kept to oneself, thus avoiding to show signs of vulnerabilities or to worry families and friends.

As noted by Schmid and Jones (1993), early strategies of first-timers served protective and information-seeking purposes, which includes getting familiar with the environment, selecting fellows, and being cautious. Several studies also exposed that prisoners may reserve to themselves and stay inside the cell to keep safe (Morris, 2008; Yang et al., 2009; Zamble & Porporino, 1988). Though adaptive in some measure, some respondents confirmed that avoidant strategies may also be risk factors (Brown & Ireland, 2006; Ireland et al., 2005), including for victimization and suicide. In fact, Liebling (1999) exposed that suicide attempters tend to isolate and spend time inside their cell doing nothing, just feeling bored and ruminating on their problems. The use of aggressiveness to ensure respect and achieve safety in prison is also well-known (Einat & Einat, 2000; Jewkes, 2005; Lindegaard & Gear, 2013). Yet, though conflicts happen and prisoners recognized the importance of being prepared to face physical disputes, no one mentioned the need to transpire a "*macho*" front or joining gangs to keep safe,

suggesting that highly coercive settings may be necessary for the emergence of a normative order based on violence (Poole & Regoli, 1983).

Our findings confirm the importance of work, school, intervention programs, and other activities for prisoners to pass time as documented in previous studies (DeRosia, 1998; Leahy, 1997; Schmid & Jones, 1993, Yang, 2009, Zamble & Porporino, 1988). Besides passing time, activities were related with staying out of troubles, managing stress and emotions, keeping safe and getting support. Productive activities like working and studying were considered the best strategies and are necessary to reform prisoners. However, productive occupations were also the most limited by institutional constraints. Among other activities, some prisoners preferred to perform collective actions, like playing soccer or dominos, while others preferred to perform individual ones, such as reading or just watching TV. In either case, socialization was a constant in prison life. Spending quality time with friends helped to overpass the sentence and supplied a variety of basic social needs (Zamble & Porporino, 1990).

Previous studies exposed that families and friends play a central role on prisoners' construction of reality and their coping strategies (Leahy, 1997; DeRosia, 1998) and this was confirmed in our sample. But, curiously, respondents claimed to avoid asking support from them directly. They only reported asking support from the prison staff, which was used mostly for instrumental purposes. Regarding their main sources of support, the most common strategy was to establish social networks: creating a group of friends in prison and asking for prison transfer to be closer to the family. It has been argued that perceived social support may regulate affects, thoughts, and actions via ordinary conversations and shared activities, rather than through specific discussions about how to cope with stress (Lakey & Orehek, 2011). In that sense, prisoners may not ask for support directly to deal with their personal problems but seems to benefits from support though simple interactions with family and friends. In our sample, the family appears to be the major source of material and emotional support (especially to deal with feelings of separation), while fellow prisoners were more important for guidance and companionship, also providing a sense of safety and belonging.

Our results seem to suggest that imprisonment comprises universal deprivations (Sykes, 1958) that may induce similar ways of feeling and responding across persons and societies. However, we found no evidence for particular adjustment strategies reported abroad (e.g., joining gangs to keep safe), which also evidence differences in

coping across countries that may be worth to explore. Additional questions were raised that deserve further inquiry, like the influence of the inmate code and social skills in the adjustment process, and how prisoners benefit from social support.

4.5.1. Implications for practice

Prisoners differ in their ability to cope and some strategies are more fruitful than others. For instance, some prisoners rely more frequently on strategies like consuming drugs, fighting or staying isolated. Such strategies generally provide only temporary relief and may exacerbate a variety of problems, both for prisoners as the prison system. From our results, social skills training appear of special importance for prisoners to stay out of trouble. This would be valuable for them to better adapt in the free world as well, as deficits in social skills may be related to their early imprisonment. Also, interventions for stress/anger management could promote more adaptive ways to deal with stress and emotions, cognitive restructuring may help prisoners in reinterpreting their experiences in more functional ways, and programs for newly arrived prisoners could provide support and orientation, when adjusting to prison is more difficult.

Beside more intensive and also expansive interventions, that can reach only a few prisoners, basic skills to deal with imprisonment could be taught to all at entry, which could be transmitted through a simple booklet format. Among other things, this could include information on prison rules and procedures, informal rules of the inmate population, and general personal and social skills to face the prison situation. It could also be relevant to explain to the inmates why such strategies are important and add information on services provided by the institution (e.g., psychology, medicine, secretary) in order to indicate how they can deal with and get support in their prison life issues. This could improve prisoners' self-esteem and sense of control over their lives with minimal costs for the institution.

4.5.2. Limitations and future research

The present study has limitations that should be taken into account. The sample is small and includes only first-timer male prisoners. With a larger and more diverse sample (e.g., remands, recidivists, females, juveniles), other strategies might have emerged. Future research should focus on identifying a larger variety of coping strategies, including different phases of imprisonment and institutional settings. In order

to evaluate the generalizability of these strategies, we recommend setting up a quantitative study covering a large sample. As well, more studies emphasizing the active role of prisoners in their adjustment to prison and process of rehabilitation should be made across countries to develop knowledge.

Concluding, policies and intervention programs to make prisoners more assertive and pro-social members of our society are needed. Imprisonment should be an opportunity to enhance coping skills instead of maintaining the behavioural patterns that generate the revolving door of the justice system (Zamble & Porporino, 1990).

CHAPTER V

General Discussion

"*How do we maximize benefits or best match program elements to the individual needs of offenders?... If we knew more about how prisons affect individuals, we might have a better idea of what programs are necessary and which would be most effective*" (Zamble & Porporino, 1990, pp. 53-54).

5.1. Introduction

Prison populations are growing while correctional budgets are on decline, generating challenging conditions for the handling of inmates and the management of prison facilities. Developing knowledge on inmate adjustment to prison and correctional practices may be a viable way to improve prisons' efficiency. In this research we focused on prisoners' disciplinary infractions, health care utilization and coping strategies as indicators of prison adjustment. There is a lack of research on these topics in Portugal and several gaps in knowledge in general that needed to be examined.

Using varied indicators, research methods and populations, we aimed at providing an integrated view on prisoners' adjustment designed to take into account actual needs for correctional practice and limitations of prior research. Answering complementary questions through advanced research methods, the results from the empirical chapters (Cf. Chapters 2-4) may contribute to optimize inmate management and rehabilitation, which is especially important when correctional systems need to reach more with less. The results point to the need for an accurate classification of the inmates as well as programs and policies to enhance their coping skills.

Despite limitations, this investigation warranties implications for theory, research and practice on inmate adjustment to life in prison, being a step further in developing knowledge on this area. The summary, discussion, and potential implications of major findings are presented below.

5.2. Summary and Discussion of Main Results

5.2.1. Chapter II

In Chapter II, meta-analyzing results from prior research among adult prisoners, we (1) quantified the effects of both personal and contextual variables on their

institutional infractions and health care utilization; (2) compared the predictive utility of those variables for severe vs. minor infractions and mental vs. physical health care use; and (3) explored moderators accounting for heterogeneity in the results.

Regarding predictors of institutional infractions, at the personal level, prior prison infractions were the best predictors of future misconduct. An early and more elaborate criminal career was also related with prison infractions. In addition, the results indicate that institutional risk assessments achieve their aim in identifying challenging inmates, but do not substantiate usual indicators like violent offenses and longer sentences. Aggressiveness, impulsivity, antisocial personality and drug use were the major predictors among clinical variables. Attending to socio-demographics, younger age was the strongest risk factor for prison misconduct. On the contrary, though with modest effects, social support, education and being married seems protective influences.

At the contextual level, misconduct was more likely in prisons/units with more environmental strains, like those housing a larger inmate population, higher proportion of gang members, and more high-security prisoners. On the contrary, infractions rates were lower in prisons where more prisoners keep busy in work activities.

Regarding predictors of health care use, the results show that both mental/neurological and physical problems tend to result in the use of more services in prison. Besides mental and physical symptoms, inmates with a more advanced age and those with addiction problems appeared as groups of special needs.

In addition, the results suggest that having experienced prior incarcerations and having served a longer time in prison were more strongly associated with minor infractions than with severe ones. Being older was significantly related with physical health care treatment but not with treatment for mental problems.

Finally, analyses of moderators evidenced that variation in findings between studies can be related to methodological differences, such as the prison sample size, method of sample selection, type of analysis, length of follow-up, and whether or not the study was based on American samples.

In sum, though a large number of predictors of inmate adjustment have been identified, results had been inconsistent and systematic reviews are scarce. As well, contextual predictors of infractions and predictors of health care use have been largely overlooked, though both are important for classification purposes. This study provides an inventory of different risk factors and their effect that may help in judging the

validity of different variables, including factors seldom explored. It also gives insight about the differential effect of predictors across more specific outcomes and methodological considerations that have impact on the results of empirical research.

5.2.2. Chapter III

In Chapter III, following a sample of young Portuguese prisoners longitudinally, we examined (1) changes on their infractions and health care use over their first year in the institution; and (2) the role of social support, mental problems, institutional risk, and other covariates on this process.

Severe infractions were irregular and considerably higher at the 3rd month than at any other moment. Minor infractions increased until the 6th month and decreased thereafter, though there were no significant mean differences between assessments. Physical treatment declined during time in prison, being significantly higher at the 1st month than the following measurements and also higher at the 3rd month than the 12th. On the contrary, and although there were no significant mean differences, mental treatment continually increased during the first year in prison.

Regarding predictors of institutional infractions, receiving more visits was related with fewer severe infractions. Inmates with more mental problems in general, were less likely to misbehave, but those with higher levels of hostility were associated with more severe infractions. Institutional risk, as measured by the LSI-R, did not proved to be valid in predicting misconduct among the youth. Other major covariates of infractions included being single, non-White, and a property offender. Prior prison infractions and being sentenced were only marginally significant. Time was not associated with infractions during the first year in prison, and, accounting for covariates, infraction patterns did not considerably varied between inmates along this period.

Regarding predictors of health care use, visits were not a significant factor. Inmates with more mental problems were related with more mental treatment but just after the 6th month in prison. Regarding institutional risk, a more elaborated criminal history seems to predict more physical treatment. Other risk factors include Portuguese nationality, older age at onset confinement, and a larger record of severe infractions. In addition, time was associated with a strong reduction on physical treatment, especially in the beginning of the prison term, flattening thereafter. Both mental and physical treatment patterns considerably varied across inmates, also varying the effect of time on

these two outcomes across individuals. Inmates with below-average mental treatment at the 1st month had higher increases in mental treatment over time in prison.

In sum, though it is known that young prisoners represent a risk for prison safety and have special needs for rehabilitation, few studies have focused on this population. Also, few studies explored patterns of prison adjustment though this process is assumed to change during the course of the sentence. Using a longitudinal design, this study provides information on collective and individual adjustment patterns among young prisoners. It also examines predictors of young prisoners' infractions and health care use, as well as the moderator effect of time over their first year in a specialized prison.

5.2.3. Chapter IV

In Chapter IV, with a sample of first-timers in two different Portuguese prisons, we described the strategies they use to cope with imprisonment. Using a bottom-up method, the prison coping strategies that emerged in this study were grouped into five generic categories: staying out of trouble, managing stress and emotions, keeping safe, passing time, and getting support. Coping strategies serve different purposes and interact with each other in order to reach a balance, changing across persons, situations, and moments of the sentence.

Staying out of trouble was the major concern for most prisoners, aiming to serve their sentence in the best possible way, so to achieve prison benefits and early release. This requires continuous efforts to meet the values and norms of the prison system and the inmate population at the same time, which is difficult because prisoners have different roles to play in these social dimensions.

As a very stressful experience, prison life requires a variety of strategies to deal with stress and emotion, caused either by internal or external sources. This includes strategies to avoid negative thoughts and feelings, to maintain self-control, and to release tension. Emotions were generally kept to oneself as a way of self-reliance.

Because prisons were perceived as dangerous environments for first-timers, keeping safe was a major concern, especially in the beginning of the prison term. This includes gathering of information on the prison context and efforts for self-protection, either by confronting or preventing threatening situations.

Time experiences were painful behind bars. Prisoners manage a variety of ways to overcome the monotony and restrictions of life in prison, including formal and informal

activities, as well as individual and collective actions. Working was considered the best strategy but the most limited by contextual constraints. Activities served several secondary purposes, being related to all other coping categories.

Finally, support seemed to play an important role in how prisoners appraise and respond to imprisonment, helping to manage a variety of prison life issues. The major sources of support were the family and fellow inmates, support that was achieved mostly by establishing social networks rather than asking support to them directly.

In sum, coping in prison is an unexplored topic though imprisonment is one of the most stressful life experiences. Most studies use standardized tools, structured interviews, or other methods that fail to identify different types of coping strategies and their function in the prison context. Focusing on emic perspectives of prisoners while applying an inductive analytical method, this study exposes prisoners' main concerns regarding their adaptation to life in prison and how they attempt to resolve it.

5.2.4. Integration of results

Comparing the results from the longitudinal study with the results of the meta-analysis, we observe that most predictors found among the youths are similar to those found among adults. Specifically, regarding predictors of institutional infractions, a lower number of visits, being single, non-white, higher hostility/aggressiveness, being a property offender, and more prior prison infractions were also risk factors in the meta-analysis. Some results are, however, dissimilar. For instance, institutional risk was not significant in the longitudinal study, which might be due to the lack of validity of the LSI-R for predicting infractions among young prisoners. Also, drug abuse did not reach significance in predicting infractions in the longitudinal study, which is probably due to the low variation on this scale and small sample size.

The results found in Chapter II and III also give support to prior research made in Portugal and suggests that predictors of inmate adjustment to prison may be similar across countries. Specifically, personal characteristics such as younger age, being single, having a low education, traits of aggressiveness and psychopathy, drug abuse, property crimes, prior incarceration and sentenced status have been previously identified as predictors of institutional infractions (Gonçalves, 1999; 2002; 2010; Gonçalves & Gonçalves, 2012). The present meta-analysis and longitudinal study attest to that as

well. Unfortunately, nothing is known about the influence of contextual variables on inmate adjustment to prison in Portugal so far, making comparisons impossible.

Regarding predictors of health care use identified in the longitudinal study, only the results for mental problems compare to those of the meta-analysis. On the contrary, White race and shorter time served in prison were related to more health care use in the longitudinal study, but not in the meta-analysis. Regarding the opposite effect of time served in the meta-analysis, it may be related to the limitations of empirical research explained in Chapter II (i.e., not controlling for exposure or moment of the sentence) and also the confounding of causes and effects in cross-sectional designs. Regarding race, the results may suggest differences in the influence of cultural/ethnic factors across countries. However, White race was associated with mental treatment but not physical treatment in the longitudinal study, though both were combined in the meta-analysis. Other covariates found in the longitudinal study were not embraced by the meta-analysis (e.g., nationality, age at 1st prison, institutional risk).

Among national studies, Gonçalves and Gonçalves (2012) observed that higher levels of hostility and shorter sentences were related with more health care use. The effect of sentence length in predicting health care use was not covered neither by the meta-analysis or the longitudinal study. Though hostility did not reach significance in the longitudinal study, hostility was measured by a different scale and in a different population than Gonçalves and Gonçalves's (2012) study.

Finally, regarding prisoners' perspectives on their strategies to cope with prison life, nothing was known in Portugal so far, which prevents comparisons. Nevertheless, most strategies that emerged in Chapter IV were mentioned in previous studies abroad which may suggest that imprisonment lead to similar ways of adapting across people and societies. Yet, we found no evidence for particular strategies like joining prison gangs or maintaining a constant "*macho*" front to stay safe, which is probably explained by the reduced influence of prison gangs and violence in Portuguese prisons.

Summing up, comparing the findings of our different studies with each other and with previous studies in the national context, it seems that: (1) the results found among adults are similar to those found among young prisoners; and (2), although scarce, the results found in Portugal are in line with those of other countries. Yet, some differences were also evidenced and deserve further investigation before making generalizations.

More research is necessary to substantiate our findings as in the present thesis many questions were exploratory by nature.

5.3. Implications for Theory

Testing a particular theory was not a main goal in the present research. Yet, the empirical chapters contribute to theoretical knowledge on inmate adjustment to prison life by embracing a variety of perspectives, including some seldom explored. The results support several theoretical frameworks and emphasize that adjustment to prison is influenced by a variety of factors.

For instance, this investigation contributes to the large body of research crediting the importation theory. The quantitative studies show that inmate adjustment to prison, as indicated by behavioral and medical indexes, is influenced by diverse personal characteristics including socio-demographic (e.g., age, racial identification, marital status), clinical (e.g., personality traits, substance abuse, mental and physical problems), and criminological ones (e.g., institutional risk, criminal history, type of crime). The qualitative study also seems to evidence the influence of individual factors (e.g., temperament, social skills) in the way how prisoners' cope with imprisonment.

The results of this research also give support to deprivation and strain theories which have been less explored. The meta-analysis confirms that inmate adjustment is associated with contextual factors, being more difficult in prisons/units with more environmental strains (i.e., larger population size, higher security level, more gang activity, and fewer activities). The coping study also evidences the influence of the environment. For instance, the prevalence of drugs and gangs or the availability of activities appeared to condition the strategies prisoners' use to adapt to prison life.

Furthermore, taking into consideration the qualitative study results, it looks like adjustment to prison follows the coping stages. First, prisoners gain knowledge on and reappraise the prison situation into more functional terms, then they manage a variety of cognitive and behavioral strategies to deal with internal and external demands, and, finally, evaluate their effectiveness in reducing stress over time, readjusting thoughts and responses in accordance.

Social control and support theories are emphasized in the present research. Commitment to conventional goals (i.e., being married, having a higher education level) and social support (e.g., visits) were associated with fewer infractions, either in the

meta-analysis and/or the longitudinal study. Likewise, the coping study exposed the influence of social support in the process of adaptation, stressing the resources provided by prisoners' families, their fellow inmates and also the prison staff.

Life-course theories are also evidenced. Prior prison infractions were the strongest predictor of future misconduct in the meta-analysis, and also (marginally) significant in the longitudinal study. Further crediting life-course perspectives, prior incarcerations, younger age at first prison, and criminal history were associated with institutional infractions and/or health care use in one and/or another quantitative study.

Finally, this research gives support the general theory of crime. The meta-analysis shows that low self-control (i.e., impulsivity) has a considerable effect on how the inmates behave. Also in the coping study the influence of self-control was evident. For instance, while some respond to the pressure of the environment by staying calm and ignoring provocations, others cope with violence and drug use.

Summarizing, several theories seems to influence inmate adjustment to prison which emphasizes the need for a multifaceted theoretical framework to study this process. More research is necessary to attest the validity of theories that have been less explored and perhaps adapt those and/or other perspectives to provide more integrated frameworks. Trying to emphasize the supremacy of one theory over other(s) might not be very meaningful as many of them are related and none appears to account for the complexity of the adjustment process independently.

5.4. Implications for Research

This investigation used sophisticated methods of research and data analysis that represent an improvement over more traditional penal research, especially in Portuguese studies available so far. The aim was to respond our varied questions of investigation through reliable results while addressing methodological issues that may influence research findings at the same time.

In Chapter II, we used a meta-analytic method as the means to review and combine the empirical results described in the literature on predictors of inmate adjustment to prison. Meta-analysis is known to increase the power of the analyses and precision of the estimates. This was necessary to quantify the effects of the many predictors found in previous studies on outcomes directly related to inmate classification in the way it is regulated by law, which includes risk for security (i.e., prison infractions)

and health care needs (i.e., health care treatment). Due to the variability in the effects reported across empirical studies, a simple systematic review would likely lead to misinterpretation of the results (Pigott, 2012).

In this meta-analysis, random-effect models (RE) were used instead of traditional fixed-effect (FE). In those models, each effect size is weighted by the inverse of its variance, the latter including within and between studies variation (FE models just include variation within studies). Thus, weights are more balanced, decreasing the influence of large studies over smaller ones. Also, the summary effects and confidence intervals (and respective statistical significance) are more reliable in the presence of heterogeneity across studies, as it was the case. Moreover, the results allow generalizations beyond the set of studies included in the database (Borenstein, Hedges, Higgins, & Rothstein, 2009; Card, 2012; Pigott, 2012; Wilson, 2010).

In addition, we compared the effect of predictors across more specific outcomes within infractions and health care use. The results suggest that outcomes should be contrasted in terms of level of seriousness (i.e., severe vs. minor infractions) and type of treatment (i.e., mental vs. physical treatment) as the effects of predictors may differ across specific outcomes, having different implications for practice (Cunningham & Sorensen, 2007; Garrity, Hiller, Staton, Webster, & Leukefeld, 2002). For instance, predictors of severe infractions are more relevant for prison safety than predictors of minor infractions, and predictors of mental treatment are more related for psychological problems than predictors of physical treatment.

Furthermore, we explored moderator variables and saw that heterogeneity in the results across studies was associated with methodological differences. Studies based on less representative samples and on bivariate analyses seem to produce inflated results. Though more expansive and time consuming, large scale surveys with stratified sampling are necessary to provide more accurate estimates. Also, bivariate statistics do not inform about how different risk factors influence each other, nor their ability to predict future outcomes. Techniques such as multiple regressions are more indicated for this purpose. Furthermore, observation periods of two years or longer are desired to identify certain predictors. In longer observation periods, the probability to incur into the outcomes is higher, rising base rates and the association between variables.

Results may also vary according to the country where the study was carried out. This tend to suggest that classification tools and other variables for classification

purposes need to be empirically validated for specific cultures before being employed in correctional practice (Cooke, Michie, & Ryan, 2001).

In Chapter III, a longitudinal design was used to assess inmates' adjustment to prison over time and the data were analyzed through multilevel modeling (MLM). Longitudinal studies involve a great deal of time, efforts, and are more difficult to analyze, but offer several benefits over cross-sectional designs. For instance, besides providing information on collective patterns of changes, this method is able to measure changes in the outcomes at the individual level (e.g., does adjustment to prison vary across different inmates over time?). Moreover, it allows for testing for hypotheses separating temporal effects (changes over time within individuals) from cohort effects (differences between subjects at baseline), thus providing more reliable estimates (Cameron & Trivedi, 2009; Hilbe, 2011; Rabe-Hesketh & Skrondal, 2008).

Analyzing longitudinal data with MLM is also preferable to repeated measures-analysis of variance (RM-ANOVA) for several reasons. For instance, compared with RM-ANOVA, MLMs have less stringent statistical assumption (e.g., do not require constant variance and covariance), allow continuous predictors (not only categorical), time-varying covariates (not only time constant), and deal with unbalanced data structures and missing data by using all available complete observations (Cameron & Trivedi, 2009; Rabe-Hesketh & Skrondal, 2008; Snijders & Bosker, 2012).

Also, our study uses RE models, which, contrary to FE models, include changes between individuals and can be extended to more complex random slope models (RS). In this regard, when appropriate, the effect of time was allowed to randomly vary across inmates, i.e., is the variability in adjustment outcomes across inmates associated with time in prison? Other interesting question was examined through the (unstructured) covariance between the random intercept and (time) slope: is there any relation between inmates' adjustment in the beginning of the prison term and their patterns of change over time? Lastly, through cross-level interactions we questioned why this happens: does the effect of certain variables change along incarceration for different inmates? Without this design and methods such kind of questions could not be answered.

Finally, we used negative binomial (NB) regressions models. Although they are poorly understood by many researchers and less developed in terms of statistical software, NB models are the foremost method of analyzing count response models (Hilbe, 2011; Long & Freese, 2005), like the number of infractions and health care

services. Some authors continue to use regular Ordinary Least Square regressions for analyzing these outcomes despite the fact that they do not meet statistical assumptions for such analysis as they are not linear. Other times, they dichotomize the outcomes (infractions vs. no infractions) and use logistic regressions to surpass problems of non-linearity. However, such a method leads to loss of power and increased bias in the estimates (Naggara et al., 2011). Also, it gives little information for practice. For instance, it is more important to know how often an inmate is likely to infract than simply if he will infract or not.[49]

In chapter IV, in-depth interviews and a grounded theory method (GTM) were used to explore inmates' coping strategies. GTM allows a comprehensive analysis of complex aspects of persons' experiences. As the findings emerge in a bottom-up process and are interpreted through constant comparison method, GTM is an effective approach to understand new phenomenon, build theory, and generate future research (Strauss & Corbin, 1990). Though prior qualitative research pointed out many strategies to cope with prison, those were fragmented across studies and a general categorization of different strategies according to their explicit function in the prison context was lacking so far. In fact, such categorization was very difficult to establish. Besides different than those used in the outside world, strategies to cope with prison serve diverse functions and are related with each other, also varying across persons and situations.

Thus, the coping study deepens knowledge on coping in prison by describing in detail what prisoners do to adapt to prison life and why. Yet, due to the exploratory nature of this study, we did not attempt to come-up with a theoretical model, which is the ultimate goal of GTM. Rather, we hope that our results may contribute to make it possible in the future. In addition, the results of this study may contribute to develop coping questionnaires more adapted to the prison population. The generic coping categories may guide dimensions/factors to explore, and specific strategies may be included as individual items of the instruments.

In this research, the methods that we considered better to answer our research questions were used, also attending to the characteristics of our data, existing software, and available resources. More meta-analyses, longitudinal studies, and qualitative

---

[49] For instance, an inmate with one infractions during the first year in prison represent a far lower risk than another one with nine infractions during the same period, though both inmates are included in the same group (i.e., infractors) in logistic regressions, which can generate misleading results.

research are encouraged. Though this research, as any other, suffer from limitations (see Limitations and Future Research below), it is an improvement over more traditional methods. Besides providing more accurate and reliable results, more sophisticated methods answers different research questions. This is a necessary step to develop knowledge on inmate adjustment to prison, which will pay-off in the future if management and rehabilitation policies are implicated.

5.5. Implications for Practice

Besides a step further in developing theory and research on inmate adjustment to prison life, this thesis aimed at providing guidance for correctional practice in general, and in the Portuguese context in particular. Believing that we have identified relevant problems and answered the research questions in the best possible way, we will now discuss their potential implications, starting by the implications from quantitative studies (institutional infractions and health care use) and then those from the qualitative study (coping in prison).

5.5.1. Institutional infractions and health care use

The results of the quantitative studies highlight that adjustment to prison life is influenced by a combination of personal (socio-demographic, criminological, and clinical variables) and contextual characteristics. The considerations for inmate classification and management generated from the different predictors found in those studies are presented below.

Starting by socio-demographics, the meta-analysis confirmed that younger prisoners are a population of special risk for prison safety.[50] This suggests that younger inmates need special programing appropriate to the needs of their age. Also, perhaps sentences and programs in the community or juvenile detention centers could better promote the rehabilitation of younger offenders and prevent the development of criminal trajectories, as emphasized by law.[51] Older inmates are also a population of concern. The meta-analysis evidenced that older inmates require more health care treatment,

---

[50] This scale had low variability in the longitudinal study, which may explain the lack of statistical significance.

[51] Furthermore, it is known that crime decreases drastically around 18-20 years (e.g., Moffitt, 1993; Blokland & Palmen, 2012), and so, much criminal behavior in younger ages is transitory. Another point should be noted. In the longitudinal study, 60% of the prisoners were on remand at entry (25% one year after) and many were released from prison during the first year, showing than many juveniles are imprisoned without strong criminal cases. Thus, decisions about prison sanctions should be improved.

especially for physical problems. Considering that they represent a low risk for prison safety and the rates of illness in elderly prisoners are high (Fazel, Hope, O'Donnell, Piper, & Jacoby, 2001), perhaps more debilitated inmates would be better placed in specialized units or outside facilities where treatment conditions are more adequate for their needs (Baidawi et al., 2011).

Though the effects were small, the quantitative studies showed that inmates who are married and have higher education level were less likely to infract. As education and marital relationship seem to be protective factors, their development should be encouraged. On the other hand, non-White prisoners were generally associated with more disciplinary incidents. Ethnicity/race cannot be used for classification purposes (it is unconstitutional). However, the findings may suggest that heterogeneity in the composition of the inmate population should be taken into account by prison managers (i.e., the balance between Whites and non-Whites) (Steiner & Wooldredge, 2009; Worrall & Morris, 2011). Also, the longitudinal study showed that young prisoners who were Portuguese and White were strongly associated with more mental treatment, which may indicate an increased risk for mental problems in this population.

Both quantitative studies evidenced that social support is associated with inmates' disciplinary behavior. Because visits may reduce misconduct, isolation sanctions should not totally prevent the inmates of receiving visits (nor phoning), as CPT (2013a; 2013b) exposed in their reports. Social support should be seen as a vital necessity and not as a privilege. The prison system may also take simple cost-effective measures to improve inmates' social support (e.g., flexibility in visitations hours, better conditions for the realization of visits, improving social networks). Existing visiting programs like the European Visits in Prison project are welcome.

Regarding criminological variables, both quantitative studies evidenced that violent crime is not a significant predictor of prison infractions. Also, sentence length was negatively associated with this outcome in the meta-analysis. Although violent crime and longer sentences are frequently used for inmate classification, including in Portugal (as regulated by law), such practice seems unfounded. Property offenders were those associated with more infractions in both studies suggesting that they may represent higher concerns for prison safety. On the contrary, drug offenders seem related with fewer infractions which may indicate a lower risk among those prisoners.

Both quantitative studies indicate that prisoners with more prior prison infractions as well as those with an early and more elaborate criminal career are more likely to misbehave, evidencing the continuity in maladaptive patterns. These results suggest that habitual offenders may require additional security measures, and may have a negative influence on others prisoners, especially first-timers or occasional offenders. Criminal lifestyle change programs may be particularly beneficial to promote better outcomes among such population (see Walters, 1999).[52]

The results regarding institutional risk deserve attention. Institutional risk tools predicted misconduct in the meta-analysis, attesting their utility. Among such tools, the LSI-R was used in the longitudinal study but raised concerns regarding its reliability and validity in predicting misconduct among young prisoners. Therefore, it should not be used to classify young prisoners into levels of risk for misconduct. Furthermore, the meta-analysis evidenced that the accuracy of risks classification tools may vary across countries. Thus, such tools must be tested for validity in predicting context-specific outcomes and among age-specific populations before being implemented in correctional practice (Guy, Edens, Anthony, & Douglas, 2005). Moreover, the meta-analysis shows that institutional risk predicts inmates' infractions less strongly than other factors. Thus, though made purposely for risk classification, those instruments seems to do not cover important covariates of adjustment to prison life and may need to be supplemented by other variables and tools for a better classification of the inmates.[53]

Regarding clinical variables, the meta-analysis evidenced that prisoners with aggressive, impulsive, and anti-social personality traits are associated with more prisons misconduct. Also, young prisoners with higher levels of hostility were associated with more severe infractions in the longitudinal study. Because such personality traits may result in more prison misconduct, it may be beneficial to use a psychometric tool measuring such constructs for inmate classification. Higher risk prisoners could then be directed to appropriate programs aiming to reduce behavioral problems. This would also

---

[52] Age at onset confinement and criminal history were also associated with health care use in the longitudinal study, but, due to the exploratory nature of the results, more research is necessary before advancing implications based on these findings.

[53] Most institutional risk instruments were created based on predictors of recidivism (Endrass, Rossegger, Frischknecht, Noll, & Urbaniok, 2008), not predictors of prison misconduct (but see Cunningham, Sorensen, & Reidy, 2005 for an exception), which are likely to vary. In fact, prior meta-analysis indicated that institutional risk tools are better in predicting recidivism than prison misconduct (Campbell, French, & Gendreau, 2009). Besides that, they do not include a comprehensive scheme for screening prisoners' mental/physical health problems. Yet, institutional risk tools are essential to indicate criminogenic needs and guide the elaboration of inmates' rehabilitation plan.

prevent the misuse of regular mental treatment with those inmates (that need specific programs), better adjusting services to the needs of specific inmates.

Moreover, general physical symptoms, mental/neurological problems and prior mental health treatment were associated with more health care use, either in the meta-analysis and/or the longitudinal study. This seems to evidence that inmate classification should include a screening tool for both mental and physical health problems, also considering individuals' history of such problems. Inmates with more severe symptoms could then be enrolled in a deeper assessment and placed in special units (e.g., hospitals or psychiatric units) if necessary. The BSI looks a viable tool for screening inmates' mental problems at intake. Such procedure could improve the efficiency of mental treatment services, which, as shown in the longitudinal study, is not always effective.[54]

Substance abuse was associated with both institutional infractions and health care use in the meta-analysis. Although a *clicher*, policies directed at reducing drug availability and treating addictions appear essential to make prisons safer, but also reintegrate offenders into the community. Inmates with addiction problems also require special attention because the comorbidity between substance abuse, mental and physical diseases is high (Condon, Hek, & Harris, 2007; Watson, Stimpson, & Hostick, 2004) multiplying the risk for pathologies and use of clinical services. Besides rehabilitation programs, preventive actions to reduce risk behaviors and the spread of diseases due to the use of substances may also be important.

The meta-analysis exposed the influence of contextual variables on inmate infractions. From the results, there are four major implications. First, prison systems should focus on reducing prisons' population size. Though augmenting prisons' capacity (as it is happening in our country) may temporarily reduce crowding (which was not a significant predictor of infractions), this will likely result in more unsafe environments with associated costs of managing disruptive behaviors. Thus, money would be better applied in building (a few) new prisons for smaller populations. Second, assignments to high security units should be limited and properly founded as they can exacerbate disruptive behaviors, as CPT (2013a; 2013b) exposed in their reports. Third, strategies

---

[54] Besides the fact that the initial screening of the inmates is based on the clinical judgment of the staff, clinical staff hired by private companies generally does not have experience in the prison context, which may further limit their ability to produce accurate diagnostics. This is especially concerning considering that mental problems are higher in the beginning of the prison term and may be further aggravated if not timely treated.

to identify and reduce the influence of groups of bullies seem important to improve prison safety. Finally, increasing the availability of working jobs (and perhaps other activities) may be a valuable way to reduce prisons' infractions rate.

Remember that, in Portugal, the initial classification of the inmates is supposed to inform on (a) their risk for security, (b) medical needs, and (c) urgent issues (this thesis focuses the first two points), taking into account seriousness of crime, sentence length (our results indicate that those two variables are unfounded), incarceration history, family and social background, education, mental and physical health status, personal vulnerability, and risks for safety and escape.

Besides the arbitrary nature of some variables, it is unclear what the risk for safety (e.g., risk for prison infractions or recidivism?) and medical needs is as these constructs are not operationalized. If the law better defines these outcomes, research could better examine which correlates should be included in the classification process. Moreover, as predictors of risk for security and medical needs may be widely distinct, the same variables cannot be used to make judgments about both inmates' risk and needs. Defining what the indicators of each outcome are and how they should be measured could improve the efficiency of prison staff work and decisions.

In this research, inmate risk for safety was operationalized as the number of institutional infractions, and medical needs as the number of accesses to health care services. From this definition and the findings generated, in trying to achieve the best classification procedure, prison managers should pay attention to inmates' age, education, marital status, social support, prior infractions and incarceration, criminal history, institutional risk, age at first arrest, property crime, personality traits, and substance abuse history, as they may provide important information with regards to the risk for security. At the contextual level, prison population size, gang activity, security level, and offer of productive activities also have considerations. Age, nationality, physical and mental symptoms, neurological problems, prior mental health treatment and substance abuse history may be relevant predictors of medical needs.

Many of those variables are available in institutional files or electronic databases, and can therefore be easily assessed at inmate entry to the facility. Other ones (e.g., clinical and criminological) must be assessed via institutional risk and other psychometric tools. Because such tools vary significantly in terms of economical use and objectivity (Loza, Conley, & Warren, 2004), they should be selected carefully after

118

evaluating their psychometric properties and incremental validity over more easily collectable variables at intake (Walters & Mandell, 2007), also taking into account the administration time, clinical skills of staff, and reliance on outside sources they require. For risk classification, we recommend supplementing the use of an institutional risk tool with a psychometric instrument measuring (antisocial) personality traits. For the assessment of medical needs, it could be beneficial to use an instrument measuring mental problems (e.g., BSI) and another one to assess physical symptoms.

5.5.2. Coping in prison

The coping study also brings implications for practice, some touching the ones exposed above in the quantitative studies. The results indicate that coping in prison involves staying out of troubles, managing stress and emotions, keeping safe, passing time, and getting support. The implications of these coping categories and their strategies for inmate treatment and rehabilitation are exposed below.

To stay out of trouble, the major implication appears to be social skills training in order to improve inmate relationships, both with fellow prisoners and the prison staff, which may reduce recurrent conflicts in prison. Training social skills in prison guards may be important as well. The abuses of power from guards were reported by some prisoners, situations that they feel obliged to comply with to avoid further problems. Also, because most prisoners strive to avoid trouble for getting prison benefits, maybe such benefits should be more easily granted and the criteria for their attribution better explained. This could improve commitment to prison rules and diminish feelings of anger against the justice system. Also important is a proper selection of prisoners for sharing a cell. As they spend a lot of time together, this may result in maladaptive behaviors if the inmates do not get along well with each other.

Some prisoners had clear difficulties in dealing with stress and emotions, resorting to strategies like fighting or using drugs for this purpose. Stress and anger management could help prisoners to improve self-control and channel emotions in more assertive ways, improving prison safety as well. Also, the psychological adaptation process was a great challenge for some prisoners that had difficulty in accepting the sentence and reappraising life. Cognitive restructuring could help them to reinterpret experiences into more functional ways and overcome unpleasant thoughts and feelings.

Regarding keeping safe, the major implication regards prison safety. Where the environment is more unsafe, tackling drug misuse and anti-bullying policies could reduce distress, violence, and improve internal management of the facility (Crewe, 2008; Wheatley, 2008). Furthermore, prison staff should pay attention to the inmates that keep constantly isolated as this coping strategy may aggravate mental problems (Brown & Ireland, 2006; Ireland, Boustead, & Ireland, 2005) and appears to augment the risk for victimization and suicidal behavior. Those prisoners' should be properly monitored and involved in appropriate programing.

The importance of activities for prisoners to pass time must be emphasized. Besides passing time, activities served to stay out of trouble, manage stress and emotions, keep safe, and get support. As already exposed, increasing the availability of productive activities should be a priority. More programs, sportive equipment, and other kind of actions are also important to improve prisoners' well-being and rehabilitation (Buckaloo, Krug, & Nelson, 2009; Adams, 1992). Furthermore, inmates may use phone calls to pass time and some are tempted to acquire cell phones for more contact with their family. Perhaps improving the access to institutional phone calls and reducing their costs could help to promote inmate adjustment and attenuate this type of infractions.

The importance of social support was also evident in the coping study. The results suggest that prison policies should help prisoners in establishing social networks. This involves facilitating allocation in and transfers to prisons closer from prisoners' family for them to receive more visits.[55] Also, it could be beneficial to provide orientation program for newcomers, helping them to integrate the prison system and the inmate population, developing relationships when they are more vulnerable. Such a program exists in Portugal (e.g., in the prison for young prisoners) and should be expanded to more prisons. Finally, the support provided to the inmates must be questioned. It looks like they frequently do not receive timely responses for their requests which may aggravate potential problems, both for them as the prison system. The lack of prison staff and actual problems they face is likely to contribute for this situation.

Our results evidence the need for training in a variety of coping skills (e.g., social skills, cognitive restructuring, stress/anger management) that need to be complemented by policies to make prison environments more supportive. As coping in prison is more

---

[55] Though the importance of allocating the inmates close to their family and social environment is recognized by law, few are the inmates that get a transfer to another prison upon their request.

difficult in early stages of confinement, requiring additional strategies, programs should be implemented right in the beginning of the sentence (Zamble & Porporino, 1990). Besides intervention programs, prevention actions like basic skills to deal with imprisonment could be transmitted via a booklet to all prisoners at entry. This could improve their well-being and behavior with minimal costs for the institution.

5.6. Limitations and Future Research

5.6.1. Limitations

Thought we used the best possible methods to answer our research questions, this research has its limitations. The major ones were already exposed in the empirical chapters and are reviewed below with some additional comments.

Starting by the meta-analysis, American samples are over-represented, which may limit the generalizability of the results. Several effect sizes rely on relatively few samples which may results in imprecise estimates with large confidence intervals. Also, t statistics were used to synthesize regression coefficients and the $r_{equivalent}$ as the effect size in the meta-analysis, which are not optimal procedures. Furthermore, multiple effects sizes from individual studies were combined taking their mean, which introduces bias when they are correlated. Finally, grey literature (i.e., unpublished studies and studies published outside widely available journals) was not included in the meta-analysis and, thus, the results may have been affected by publication bias.

Regarding the longitudinal study, the major limitation is the reduced sample size, which impacts on statistical power and precision of the analyses. It is also difficult to generalize the results to other young prisoners in Portugal and worldwide because this facility is specialized for the young male population. Also, contrary to other Portuguese regions where most inmates are Caucasian, the ethnic composition of this sample is mixed, and most Romanians were excluded due to language barriers. Additional caveats include having treated the LSI-R and BSI as time invariant, the lack of inter-rater reliability in the codes of the LSI-R, imputations on missing data, potential reciprocity between visits and SI, low variability of some scales, and attrition in the sample.

Regarding the coping study, the sample is small and includes only first-timer male prisoners. Also, participants were selected from only two institutions. With a larger and more diverse sample other strategies might have emerged. Consequently, our results are not exhaustive and should not be generalized to other correctional contexts.

Additionally, and although we spent a considerable time in the research facilities and interacted with prison staff, this study is based on prisoners' narratives only, which may be susceptible to social desirability.

5.6.2. Future research

Future research on inmate adjustment to prison life should focus on examining more contextual predictors of institutional infractions and more predictors of health care use as knowledge on these factors is important for inmate classification, but fairly limited so far. The effect of moderator variables should also be better explored in quantitative reviews and empirical research to better inform how methodological characteristics of the studies impact the results and when or under what conditions the relationship between variables operates. In addition, more longitudinal research is necessary to better explore the effect of time on inmate adjustment and changes in individual and collective patterns. As well, more studies from places other than Anglo-Saxon countries are necessary to generalize results and develop knowledge.

Future research should also focus on specific group of prisoners (e.g., females, older inmates, inmates in psychiatric or maximum security units) to explore the particular needs they have. Among those, the youngster should be particularly targeted as they represent a higher risk for security and may be the next generation of criminals if the justice system is not able to promote changes in an early stage, for which specific assessment methods and programs are necessary. Future studies replicating our research among the youths allocated in other facilities are necessary to generalize our findings. Comparing young inmates' adjustment in specialized prisons with those in adult facilities could provide valuable insight about the potential benefits/costs of separating juveniles from adults. Also, replicating this study in a large sample of adult prisoners would allow comparing how predictors of adjustment to prison vary between young and adults, shedding light on differential treatment policies they require.

Though quantitative studies are essential to test hypotheses, more studies emphasizing prisoners' emic perspective without preconceived suppositions are necessary to better understand how they experience and respond to imprisonment and why. Future research on prisoners' coping could enhance knowledge by combining different data sources, like interviews, participant observation, and reports from prison staff. Exploring differences in coping strategies along time and across different contexts

would also be valuable. Importantly, future research could make efforts to develop coping questionnaires more suited for the prison population that could be used to generalize knowledge and the strategies found in our study.

Many other things should be done in the future. For instance, it is important to examine predictors of other indicators of prisoners' adjustment like the risk for suicide and victimization as they are important for inmate classification. Also, though we examined a variety of variables, others ones (both at the personal as the contextual level) are likely to influence the outcomes we explored in this study and therefore more predictors should be examined. Similarly, more psychometric tools must be employed in correctional research to test their validity in predicting adjustment to prison and improve classification procedures. Other methods should also be applied, like latent classes analyses to examine the influence of certain variables on different typologies of prisoners, or mediation analyses to explore indirect infects in the relationship between predictors and outcomes. Furthermore, research should develop and evaluate the efficiency of different intervention programs using inmate adjustment to prison and recidivism in crime as indicators of the utility.

5.6.3. Conclusion

In sum, there is much room to improve knowledge on inmate adjustment to life in prison for which more and better studies have to be done in the penal context. Despite limitations, this thesis is a step further in developing theory, research and practice on this topic by answering a variety of (unexplored) questions with appropriate methods of research and analysis, which involved immense challenges and personal efforts.

In broad, we updated the last meta-analysis on predictors of institutional infractions and added a synthesis of predictors of inmates' health care utilization, which was lacking so far. Compared with prior reviews, our meta-analysis includes more studies and examined a greater variety of both personal and contextual predictors. Additionally, it explores differences in mean effects across outcomes as well as moderators of the estimates, pointing out important methodological issues.

We also examined adjustment to prison among young offenders, population that has been overlooked and nothing was known in Portugal so far. We exposed the effect of time and patterns of changes on inmates' adjustment over time through a longitudinal design, rarely employed in correctional research. Besides examining both infractions

and health care use, we tested variables seldom explored (e.g., visits) including different psychometric tools that have important implications (i.e., LSI-R and BSI).

In addition, we provided a comprehensive perspective on coping in prison giving voice to prisoners' experiences and analyzing their narratives with an inductive method. This study improves knowledge on coping in prison presenting a detailed list of strategies organized according to their function in the prison context, which was lacking in the literature. Again, such a study had never been done in our country.

Penal legislators, workers and academics in Portugal have been fascinated with intervention programs during the last years. Though interventions programs are paramount for inmate rehabilitation, practitioners must first know who the inmates that need intervention are and what kind of programs they require. For that, an objective classification scheme is necessary. Furthermore, though a variety of programs actually exist, most are focused on certain type of offenders (e.g., drug related, sexual offenses, road crimes). General interventions on coping skills are lacking despite the fact that training prisoners in the use of alternative ways of responding to the pressure of living is essential for them to better adjust in prison and in any other context as well.

Concluding, though the state of art on inmate adjustment to prison is substantial, that is not the case in Portugal and prior research carries limitations. More knowledge on prisoners' adjustment is crucial to improve correctional laws and policies that are often taken without a scientific basis. If the goal is to optimize prisons' efficiency and offenders' rehabilitation, different areas of research, practice and legislation on the execution of the prison sentences should work in articulation. Until then, with the present research, we hope to contribute for the development of better procedures for classification and treatment of the inmates, associated with policies and programs to enhance their coping skills. This would be a sure step in optimizing the management of prisons facilities while reducing institutional and societal costs simultaneously.

REFERENCES

Studies preceded by an asterisk were included in the meta-analysis.

Adams, K. (1992). Adjusting to prison life. *Crime and Justice, 16*, 275-359.

Adams, K., & Ferrandino, J. (2008). Managing mentally ill inmates in prisons. *Criminal Justice and Behavior, 35*, 913-927.

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology, 5*, 373-387.

Altman, D. G. (1991). *Practical statistics for medical research*. London, England: Chapman & Hall.

Andrews, D. A., & Bonta, J. (1995). *The Level of Service Inventory – Revised*. Toronto, Canada: Multi-Health Systems.

Andrews, D. A., & Bonta, J. (2007). *Risk-Need-Responsivity Model for Offender Assessment and Rehabilitation (2007–06)*. Ottawa, Canada: Public Safety Canada.

Andrews, D. A., Bonta, J., & Wormith, S. J. (2004). *The Level of Service/Case Management Inventory* (LS/CMI). Toronto, Canada: Multi-Health Systems.

Baidawi, S., Turner, S., Trotter, C., Browning, C., Collier, P., O'Connor, D., & Sheehan, R. (2011). Older prisoners: A challenge for Australian corrections. *Trends and Issues in Crime and Criminal Justice, 426*.

Baillargeon, J., Binswanger, I., Penn, J., Williams, B., & Murray, O. (2009). Psychiatric disorders and repeat incarcerations: The revolving prison door. *American Journal of Psychiatry, 166*, 103-109.

Bales, W. D., & Mears, D. P. (2008). Inmate social ties and the transition to society: Does visitation reduce recidivism? *Journal of Research in Crime and Delinquency, 45*, 287-321.

Becker, B. J., & Wu, M. J. (2007). The synthesis of regression slopes in meta-analysis. *Statistical Science, 22*, 414-429.

Benda, B. B., Corwyn, R. F., & Toombs, N. J. (2001). Recidivism among adolescent serious offenders prediction of entry into the correctional system for adults. *Criminal Justice and Behavior, 28*, 588-613.

*Bierie, D. M. (2012). Is tougher better? The impact of physical prison conditions on inmate violence. *International Journal of Offender Therapy and Comparative Criminology, 56*, 338-355.

Blevins, K. R., Listwan, S. J., Cullen, F. T. & Jonson, C. L. (2010). A general strain theory of prison violence and misconduct: An integrated model of inmate behavior. *Journal of Contemporary Criminal Justice, 26*, 148-166.

Blokland, A. & Palmen, H. (2012). Criminal career patterns. In: R. Loeber, M. Hoeve, N.W. Slot & P. van der Laan (eds.), *Persisters and desisters in crime from adolescence into adulthood: Explanation, prevention and punishment*, 13-50. Farnham: Ashgate Publishing.

Boessen, A., & Cauffman, E. (2013). Moving from the neighborhood to the cellblock: The impact of youth's neighborhoods on prison misconduct. *Crime and Delinquency*. Advance online publication. doi: 10.1177/0011128713478131

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein H. R. (2009). *Introduction to meta-analysis*. Chichester, UK: John Wiley.

Brown, S. L., & Ireland, C. A. (2006). Coping style and distress in newly incarcerated male adolescents. *Journal of Adolescent Health, 38*, 656-661.

Buckaloo, B. J., Krug, K. S., & Nelson, K. B. (2009). Exercise and the low-security inmate: Changes in depression, stress, and anxiety. *The Prison Journal, 89*, 328-343.

Buss, A. H., & Perry, M. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology, 3*, 452-459.

Butler, M. A., Loney, B. R., & Kistner, J. (2007). The Massachusetts Youth Screening Instrument as a predictor of institutional maladjustment in severe male juvenile offenders. *Criminal Justice and Behavior, 34*, 476-492.

Cameron, A. C., & Trivedi, P. K. (2009). *Microeconometrics using Stata*. College Station, TX: Stata Press.

Campbell, M. A., French, S., & Gendreau, P. (2009). The prediction of violence in adult offenders: A meta-analytic comparison of instruments and methods of assessment. *Criminal Justice and Behavior, 36*, 567-590.

Canavarro, M. C. (1999). Brief Symptom Inventory: BSI (text in Portuguese). In M. R. Simões, M. Gonçalves, & L. S. Almeida (Eds.), *Testes e Provas Psicológicas em Portugal*, vol. II, 87-109. Braga, Portugal: SHO/APPORT.

Cao, L., Zhao, J., & Van Dine, S. (1997). Prison disciplinary tickets: A test of the deprivation and importation models. *Journal of Criminal Justice, 25*, 103-113.

Card, N. A. (2012). *Applied meta-analysis for social science research*. New York: Guilford Press.

Cardoso, B. F. (2013, February 22). The brutality in Portuguese prisons (text in Portuguese). *A Folha*. Retrieved from http://afolha.pt/noticias/brutalidade-prisoes-portuguesas

Cesaroni, C., & Peterson-Badali, M. (2010). Understanding the adjustment of incarcerated young offenders: A Canadian example. *Youth Justice, 10*, 107-125.

*Charton, T., Couture-Poulin, J. F., & Guay, J. P. (2011). The evaluation of the predictive validity of the LS/CMI in predicting disciplinary incidents in prison (text in French). *Criminologie, 44*, 279-303.

Clark, T. A. (2001). The relationship between inmate visitation and behavior: Implications for African American families. *Journal of African American Men, 6*, 43-58.

Clemmer, D. (1940). *The prison community*. New York: Holt, Rinehart & Winston.

Cochran, J. C. (2012). The ties that bind or the ties that break: Examining the relationship between visitation and prisoner misconduct. *Journal of Criminal Justice, 40*, 433-440.

Cochran, J. C. (2013). Breaches in the wall: Imprisonment, social support, and recidivism. *Journal of Research in Crime and Delinquency*. Advance online publication. doi: 10.1177/0022427813497963

Cochran, J. C., Mears, D. P., Bales, W. D., & Stewart, E. A. (2012). Does inmate behavior affect post-release offending? Investigating the misconduct-recidivism relationship among youth and adults. *Justice Quarterly*. Advance online publication. doi: 10.1080/07418825.2012.736526

Cohen, J. E. (1995). Human carrying capacity. *Science, 269*, 341-346.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357.

*Coid, J., Petruckevitch, A., Bebbington, P., Jenkins, R., Brugha, T., Lewis, … & Singleton, N. (2003). Psychiatric morbidity in prisoners and solitary cellular confinement, I: Disciplinary segregation. *Journal of Forensic Psychiatry and Psychology, 14*, 298-319.

Colman, A. M. (2001). Adaptation. *A Dictionary of Psychology*. New York: Oxford University Press.

Colvin, M. (2007). Applying differential coercion and social support theory to prison organizations: The case of the penitentiary of New Mexico. *The Prison Journal, 87*, 367-387.

Colvin, M., Cullen, F. T., & Ven, T. V. (2002). Coercion, social support, and crime: An emerging theoretical consensus. *Criminology, 40*, 19-42.

Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (2013a). *Report to the Portuguese Government on the visit to Portugal carried out by the European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) from 7 to 16 February 2012*. Strasbourg: Council of Europe Publishing.

Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (2013b). *Report to the Portuguese Government on the visit to Portugal carried out by the European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) from 13 to 17 May 2013*. Strasbourg: Council of Europe Publishing.

Comprehensive Meta-Analysis (Version 2) [Computer software]. Englewood, NJ: Biostat.

Condon, L., Hek, G., & Harris, F. (2007). A review of prison health and its implications for primary care nursing in England and Wales: The research evidence. *Journal of Clinical Nursing, 16*, 1201-1209.

*Cooke, D. J., Michie, C., & Ryan, J. (2001). *Evaluating risk for violence: A preliminary study of the HCR-20, PCL-R and VRAG in a Scottish prison sample* (Occasional Paper Series 5/2001). Edinburgh, UK: Scottish Prison Service.

Craddock, A. (1992). Formal social control in prisons: An exploratory examination of the custody classification process. *American Journal of Criminal Justice, 17*, 63-87.

Crewe, B. (2008). Subcultures. In Y. Jewkes & J. Bennett (Eds.), *Dictionary of Prisons and Punishment*, 282-283. Cullompton: Willan.

Crow, M. R., Smith, H. L., McNamee, A. H., & Piland, N. F. (1994). Considerations in predicting mental health care use: Implications for managed care plans. *The Journal of Mental Health Administration, 21*, 5-23.

Cullen, F. T. (1994). Social support as an organizing concept for criminology: Presidential address to the Academy of Criminal Justice Sciences. *Justice Quarterly, 11*, 527-559.

Cullen, F. T., Jonson, C. L., & Nagin, D. S. (2011). Prisons do not reduce recidivism: The high cost of ignoring science. *The Prison Journal, 9*1, 48S-65S.

*Cunningham, M. D., & Sorensen, J. R. (2007). Capital offenders in Texas prisons: Rates, correlates, and an actuarial analysis of violent misconduct. *Law and Human Behavior, 31*, 553-571.

Cunningham, M., Sorensen, J., & Reidy, T. (2005). An actuarial model for assessment of prison violence risk among maximum security inmates. *Assessment, 12*, 40-49.

Dear, G. E., Thomson, D. M., Hall, G. J., & Howells, K. (1998). Self-inflicted injury and coping behaviors in prison. In R. J. Kosky et al. (Eds.), *Suicide Prevention*, 189-199. New York: Plenum Press.

Decree-Law No. 125/2007 (April 27, 2007). Organic Law of the Prison System, Ministry of Justice. *Portuguese Official Gazette, No. 82, series I, 2625-2631.* Lisbon, Portugal. Retrieved from http://dre.pt/pdf1sdip/2007/04/08200/26252631.pdf

Decree-Law No. 215/2012 (September, 28, 2012). General Directorate of Reintegration and Prisons, Ministry of Justice. *Portuguese Official Gazette, No. 189, series I, 5470-5480.* Lisbon, Portugal. Retrieved from http://www.dre.pt/pdf1s/2012/09/18900/0547005480.pdf

Decree-Law No. 26:643 (May 28, 1936). Reorganization of the Prison Services, Ministry of Justice. *Portuguese Official Gazette, No. 124, series I, 581-625.* Lisbon, Portugal. Retrieved from http://dre.pt/pdf1sdip/1936/05/12400/05810625.pdf

Decree-Law No. 265/79 (August 1, 1979). Code on Execution of Criminal Sanctions, Ministry of Justice. *Portuguese Official Gazette, No. 176, series I, 1770(5)-1770(36).* Lisbon, Portugal. Retrieved from http://dre.pt/pdf1s%5C1979%5C08%5C17601%5C00050036.pdf

Decree-Law No. 400/82 (September 23, 1982). Criminal Code, Ministry of Justice. *Portuguese Official Gazette, No. 221, series I, 3006(2)-3006(64).* Lisbon, Portugal. Retrieved from http://www.dre.pt/pdf1s%5C1982%5C09%5C22101%5C00020064.pdf

Decree-Law No. 48/95 (March 15, 1995). Criminal Code, Ministry of Justice. Portuguese Official Gazette, No. 63, series I-A, 1350-1416. Lisbon, Portugal. Retrieved from http://www.dre.pt/pdf1s%5C1995%5C03%5C063A00%5C13501416.pdf

Decree-Law No. 51/2011 (April 11, 2011). General Prison Regulation, Ministry of Justice. *Portuguese Official Gazette, No. 71, series I, 2180-2225*. Lisbon, Portugal. Retrieved from http://dre.pt/pdf1sdip/2011/04/07100/0218002225.pdf

DeLisi, M., Beaver, K. M., Vaughn, M. G., Trulson, C. R., Kosloski, A. E., Drury, A. J., ... & Wright, J. P. (2010). Personality, gender, and self-control theory revisited: Results from a sample of institutionalized juvenile delinquents. *Applied Psychology in Criminal Justice, 6*, 31-46.

*DeLisi, M., Berg, M. T., & Hochstetler, A. (2004). Gang members, career criminals and prison violence: Further specification of the importation model of inmate behavior. *Criminal Justice Studies, 17*, 369-383.

DeLisi, M., Caudill, J. W., Trulson, C. R., Marquart, J. W., Vaughn, M. G., & Beaver, K. M. (2010). Angry inmates are violent inmates: A Poisson regression approach to youthful offenders. *Journal of Forensic Psychology Practice, 10*, 419-439.

DeLisi, M., Drury, A. J., Kosloski, A. E., Caudill, J. W., Conis, P. J., Anderson, C. A., ... & Beaver, K. M. (2010). The cycle of violence behind bars: Traumatization and institutional misconduct among juvenile delinquents in confinement. *Youth Violence and Juvenile Justice, 8*, 107-121.

*DeLisi, M., Hochstetler, A., Higgins, G. E., Beaver, K. M., & Graeve, C. M. (2008). Toward a general theory of criminal justice: Low self-control and offender noncompliance. *Criminal Justice Review, 33*, 141-158.

*DeLisi, M., Trulson, C. R., Marquart, J. W., Drury, A. J., & Kosloski, A. E. (2011). Inside the prison black box: Toward a life course importation model of inmate behavior. *International Journal of Offender Therapy and Comparative Criminology, 55*, 1186-1207.

Derogatis, L.R. (1993). *Brief Symptoms Inventory (BSI): Administration, scoring and procedures manual*. Minneapolis: NCS Pearson, Inc.

DeRosia, V. R. (1998). *Living inside prison walls: Adjustment behavior*. Westport, CT: Praeger.

DGRSP (n.d.). *General Directorate of Reintegration and Prisons annual report 2011* (text in Portuguese). Unpublished report. Lisbon, Portugal: Ministry of Justice.

*Dhami, M. K., Ayton, P., & Loewenstein, G. (2007). Adaptation to imprisonment: Indigenous or imported? *Criminal Justice and Behavior, 34*, 1085-1100.

*Diamond, P. M., Magaletta, P. R., Harzke, A. J., & Baxter, J. (2008). Who requests psychological services upon admission to prison? *Psychological Services, 5*, 97-107.

DiLulio, J. J. (1987). *Governing prisons: A comparative study of correctional management*. New York: Free Press.

Dirkzwager, A. J., & Kruttschnitt, C. (2012). Prisoners' perceptions of correctional officers' behavior in English and Dutch prisons. *Journal of Criminal Justice, 40*, 404-412.

Doty, S., Smith, H. P., & Rojek, J. (2012). Self-Injurious Behaviors in Corrections: Informal Social Control and Institutional Responses in a State Prison System. *Victims & Offenders, 7*, 30-52.

*Drury, A. J., & DeLisi, M. (2010). The past is prologue: Prior adjustment to prison and institutional misconduct. *The Prison Journal, 90*, 331-352.

Edens, J. F., & Campbell, J. S. (2007). Identifying youths at risk for institutional misconduct: A meta-analytic investigation of the psychopathy checklist measures. *Psychological Services, 4*, 13-27.

Eftekhari, A., Turner, A. P., & Larimer, M. E. (2004). Anger expression, coping, and substance use in adolescent offenders. *Addictive Behaviors, 29*, 1001-1008.

Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple graphical test. *British Medical Journal, 315*, 629-634.

Einat, T., & Einat, H. (2000). Inmate argot as an expression of prison subculture: The Israeli case. *The Prison Journal, 80*(3), 309-325.

*Endrass, J., Rossegger, A., Frischknecht, A., Noll, T., & Urbaniok, F. (2008). Using the Violence Risk Appraisal Guide (VRAG) to predict in-prison aggressive behavior in a Swiss offender population. *International Journal of Offender Therapy and Comparative Criminology, 52*, 81-89.

*Falter, R. G. (1999). Selected predictors of health services needs of inmates over age 50. *Journal of Correctional Health Care, 6*, 149-175.

Fazel, S., & Baillargeon J. (2011). The health of prisoners. *Lancet, 377*, 956-965.

Fazel, S., Cartwright, J., Norman-Nott, A., & Hawton, K. (2008). Suicide in prisoners: a systematic review of risk factors. *Journal of Clinical Psychiatry, 69*, 1721-1731.

Fazel, S., Doll, H., & Långström, N. (2008). Mental disorders among adolescents in juvenile detention and correctional facilities: a systematic review and metaregression analysis of 25 surveys. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*, 1010-1019.

Fazel, S., Hope, T., O'Donnell, I., Piper, M., & Jacoby, R. (2001). Health of elderly male prisoners: Worse than the general population, worse than younger prisoners. *Age and ageing, 30*, 403-407.

Felson, R. B., Silver, E., & Remster, B. (2012). Mental disorder and offending in prison. *Criminal Justice and Behavior, 39*, 125-143.

*Fernandez, K. E., & Neiman, M. (1998). California's inmate classification system: Predicting inmate misconduct. *The Prison Journal, 78*, 406-422.

Ferrer, M., Carbonell, X., Sarrado, J. J., Cebrià, J., Virgili, C., & Castellana, M. (2010). Distinguishing male juvenile offenders through personality traits, coping strategies, feelings of guilt and level of anger. *The Spanish Journal of Psychology, 13*, 751-764.

Flanagan, T. J. (1981). Dealing with long-term confinement adaptive strategies and perspectives among long-term prisoners. *Criminal Justice and Behavior, 8*, 201-222.

Franklin, T. W., Franklin, C. A., & Pratt, T. C. (2006). Examining the empirical relationship between prison crowding and inmate misconduct: A meta-analysis of conflicting research results. *Journal of Criminal Justice, 34*, 401-412.

Gadon, L., Johnstone, L., & Cooke, D. (2006). Situational variables and institutional violence: A systematic review of the literature. *Clinical Psychology Review, 26*, 515-534

Gaes, G. G., Camp, S. D., Nelson, J. B., & Saylor, W. G. (2004). *Measuring prison performance: Government privatization and accountability*. Oxford, UK: Alta Mira Press.

*Garrity, T. F., Hiller, M. L., Staton, M., Webster, J. M., & Leukefeld, C. G. (2002). Factors predicting illness and health services use among male Kentucky prisoners with a history of drug abuse. *The Prison Journal, 82*, 295-313.

Gendreau, P., Goggin, C. E., & Law, M. A. (1997). Predicting prison misconducts. *Criminal Justice and Behavior, 24*, 414-431.

Goffman, E. (1961). *Asylums*. New York: Anchor Books.

*Gonçalves, L. C., & Gonçalves, R. A. (2012). Aggressiveness, criminal lifestyle and prison adjustment (text in Portuguese). *Psicologia USP, 23*, 559-584.

Gonçalves, L. C., Gonçalves, R. A., Martins, C., & Dirkzwager, A. J. E. (2014). Predicting infractions and health care utilization in prison: A meta-analysis. *Criminal Justice and Behavior*. Advance online publication. doi:10.1177/0093854814524402

Gonçalves, R. A. (1999). *Psychopathy and processes of adjustment to prison: From intervention to prevention* (text in Portuguese). Braga, Portugal: Institute of Education and Psychology, University of Minho.

Gonçalves, R. A. (2002/2008). *Delinquency, Crime and Adjustment to Prison* (text in Portuguese). Coimbra: Quarteto.

*Gonçalves, R. A. (2010). Violence in prison: Institutional constraints and inmates' aggressiveness. In M. Frias-Armenta & V. Corral-Verdugo (Eds.), *Bio-psycho-social perspectives on interpersonal violence*, 217-232. Nova Science Publishers.

Goodstein, L., & Wright, K. N. (1989). Inmate adjustment to prison. In L. Goodstein & D. L. MacKenzie (Eds.), *The American prison: Issues in research and policy*, 229-251. New York: Plenum.

Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

*Gover, A. R., Pérez, D. M., & Jennings, W. G. (2008). Gender differences in factors contributing to institutional misconduct. *The Prison Journal, 88*, 378-403.

*Graeve, C. M., DeLisi, M., & Hochstetler, A. (2007). Prison rioters: Exploring infraction characteristics, risk factors, social correlates, and criminal careers. *Psychological Reports, 100*, 407-419.

*Griffin, M. L., & Hepburn, J. R. (2006). The effect of gang affiliation on violent misconduct among inmates during the early years of confinement. *Criminal Justice and Behavior, 33*, 419-466.

Gullone, E., Jones, T., & Cummins, R. (2000). Coping styles and prison experience as predictors of psychological well-being in male prisoners. *Psychiatry, Psychology and Law, 7*, 171-181.

Guy, L. S., Edens, J. F., Anthony, C., & Douglas, K. S. (2005). Does psychopathy predict institutional misconduct among adults? A meta-analytic investigation. *Journal of Consulting and Clinical Psychology, 73*, 1056-1064.

Haney, C. (2003). The psychological impact of incarceration: Implications for post-prison adjustment. In J. Travis and M. Waul (eds.), *Prisoners once removed: The impact of incarceration and reentry on children, families, and communities*, 33-66. Washington, DC: Urban Institute Press.

*Harer, M. D., & Langan, N. P. (2001). Gender differences in predictors of prison violence: Assessing the predictive validity of a risk classification system. *Crime & Delinquency, 47*, 513-536.

*Harer, M. D., & Steffensmeier, D. J. (1996). Race and prison violence. *Criminology, 34*, 323-355.

Harvey, J. (2007). *Young men in prison: Surviving and adapting to life inside*. Cullompton, UK: Willan.

Hassan, L., Birmingham, L., Harty, M. A., Jarrett, M., Jones, P., King, C., ... & Shaw, J. (2011). Prospective cohort study of mental health during imprisonment. *The British Journal of Psychiatry, 198*, 37-42.

*Hassan, L., Rahman, M. S., King, C., Senior, J., & Shaw, J. (2012). Level of mental health intervention and clinical need among inmates with mental illness in five English jails. *Psychiatric Services, 63*, 1218-1224.

Hathaway, S. R., & McKinley, J. C. (1943). *The Minnesota Muhiphasic Personality Inventory*. New York: The Psychological Corporation

Heckman (1979). Sample selection bias as a specification error. *Econometrica, 47*, 153-161.

Higgins, J., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *British Medical Journal, 327*, 557-560.

Hilbe, J. M. (2011). *Negative binomial regression* (2nd ed.). Cambridge University Press.

Hochstetler, A. & DeLisi, M. (2005). Importation, deprivation, and varieties of serving time: An integrated-lifestyle-exposure model of prison offending. *Journal of Criminal Justice 33*, 257-266.

Hochstetler, A., DeLisi, M., & Pratt, T. C. (2010). Social support and feelings of hostility among released inmates. *Crime and Delinquency, 56*, 588-607.

Holmes, T. H, & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research, 11*, 213-218.

Holsinger, A. M., Lowenkamp, C. T., & Latessa, E. J. (2006). Predicting institutional misconduct using the Youth Level of Service/Case Management Inventory. *American Journal of Criminal Justice, 30*, 267-284.

http://www.cpt.coe.int/en/about.htm. European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment.

http://www.dgsp.mj.pt. Direcção Geral dos Serviços Prisionais, Ministério da Justiça.

*Huebner, B. M. (2003). Administrative determinants of inmate violence: A multilevel analysis. *Journal of Criminal Justice, 31*, 107-117.

Huedo-Medina, T. B., Sánchez-Meca, J., Marín-Martínez, F., & Botella, J. (2006). Assessing heterogeneity in meta-analysis: Q statistic or I^2 index? *Psychological Methods, 11*, 193-206.

Ireland, J. L., Brown, S. L., & Ballarini, S. (2006). Maladaptive personality traits, coping styles and psychological distress: A study of adult male prisoners. *Personality and Individual Differences, 41*, 561-573.

Ireland, J., Boustead, R., & Ireland, C. A. (2005). Coping style and psychological health among adolescent prisoners: A study of young and adolescent prisoners. *Journal of Adolescence, 28*, 411-423.

Irwin, J., & Cressey, D. (1962). Thieves, convicts, and the inmate culture. *Social Problems, 10*, 142-155.

Jewkes, Y. (2005). Men behind bars: "Doing" masculinity as an adaptation to imprisonment. *Men and Masculinities, 8*, 44-63.

*Jiang, S., & Fisher-Giorlando, M. (2002). Inmate misconduct: A test of the deprivation, importation, and situational models. *The Prison Journal, 82*, 335-358.

*Jiang, S., & Winfree, L. T. (2006). Social support, gender, and inmate adjustment to prison: Life insights from a national sample. *The Prison Journal, 86*, 32-55.

Johnson, R. (1996). *Hard time: Understanding and reforming the prison*. Monterey, CA: Brooks/Cole.

Johnson, R., & Dobrzanska, A. (2005). Mature coping among life-sentenced inmates: An exploratory study of adjustment dynamics. *Corrections Compendium, 30*, 8-9.

Koopmans, G. T., Uiters, E., Devillé, W., & Foets, M. (2013). The use of outpatient mental health care services of migrants vis-à-vis Dutch natives: Equal access? *International Journal of Social Psychiatry, 59*, 342-350.

*Kuanliang, A., Sorensen, J. R., & Cunningham, M. D. (2008). Juvenile inmates in an adult prison system: Rates of disciplinary misconduct and violence. *Criminal Justice and Behavior, 35*, 1186-1201.

*Lahm, K. F. (2008). Inmate-on-inmate assault: A multilevel examination of prison violence. *Criminal Justice and Behavior, 35*, 120-137.

Lakey, B., & Orehek, E. (2011). Relational regulation theory: A new approach to explain the link between perceived social support and mental health. *Psychological review, 118*, 482-495.

Law No. 115/2009 (October 12, 2009). Code on Execution of Criminal Sanctions, Ministry of Justice. *Portuguese Official Gazette, No. 197, series I, 7422-7464.* Lisbon, Portugal. Retrieved from http://www.dre.pt/pdf1s%5C2009%5C10%5C19700%5C0742207464.pdf

Law No. 59/2007 (September 4, 2007). Criminal Code, Ministry of Justice. *Portuguese Official Gazette, No. 170, series I, 6181-6258.* Lisbon, Portugal. Retrieved from http://dre.pt/pdf1s/2007/09/17000/0618106258.pdf

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Leahy, J. P. (1997). Coping strategies of prisoners in a maximum security prison: Minimals, optimals and utilitarians. *Social Thoughts and Research, 21*, 279-290.

*Lee, S. J., & Edens, J. F. (2005). Exploring predictors of institutional misbehavior among male Korean inmates. *Criminal Justice and Behavior, 32*, 412-432.

Leistico, A. M. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32*, 28-45.

Liebling, A. (1999). Prison suicide and prisoner coping. *Crime and Justice, 26*, 283-359.

Lindegaard, M. R., & Gear, S. (2014). Violence makes safe in South African prisons: Prison gangs, violent acts and victimization among inmates. *Focaal – Journal of Global and Historical Anthropology, 68*, 35-54.

*Lindquist, C. H., & Lindquist, C. A. (1999). Health behind bars: Utilization and evaluation of medical care among jail inmates. *Journal of Community Health, 24*, 285-303.

Lombroso, C. (1876). The criminal man studied in relationship to anthropology, forensic medicine and prison doctrines (text in Italian). Milan: Ulrico Hoepli.

Long, J. S., & Freese, F. (2005). *Regression models for categorical outcomes using Stata* (2nd ed.). College Station, TX: Stata Press.

Lovell, D., & Jemelka, R. (1996). When inmates misbehave: The costs of discipline. *The Prison Journal, 76*, 165-179.

*Loza, W., & Loza-Fanous, A. (2002). The effectiveness of the Self-Appraisal Questionnaire as an offenders' classification measure. *Journal of Interpersonal Violence, 17*, 3-13.

*Loza, W., Conley, M., & Warren, B. (2004). Concurrent cross-validation of the Self-Appraisal Questionnaire: A tool for assessing violent and nonviolent recidivism and institutional adjustment on a sample of North Carolina offenders. *International Journal of Offender Therapy and Comparative Criminology, 48*, 85-95.

Lusa (2014, March 31). Inmates cost more than 570 thousand euros per day (text in Portuguese). Expresso. Retrieved from http://expresso.sapo.pt/presos-custam-mais-de-570-mil-euros-por-dia=f827332

Maas, C. J. M., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences, 1*, 86-92.

MacKenzie, D. L. (1997). Criminal Justice and Crime Prevention. In L.W. Sherman et al. (Eds.), *Preventing Crime: What Works, What Doesn't, What's Promising*, 82-89. College Park, Maryland: Department of Criminology and Criminal Justice, University of Maryland.

McReynolds, L. S., & Wasserman, G. A. (2008). Risk for disciplinary infractions among incarcerated male youths: Influence of psychiatric disorder. *Criminal Justice and Behavior, 35*, 1174-1185.

Minder, R. (2012, November 26). Crowding and austerity strain Portugal's prisons. *The New York Times*. Retrieved from

http://www.nytimes.com/2012/11/27/world/europe/prison-hardships-rise-in-portugal-as-economic-crisis-drags-on.html

Mitchell, P., & Shaw, J. (2011). Factors affecting the recognition of mental health problems among adolescent offenders in custody. *Journal of Forensic Psychiatry & Psychology, 22*, 381-394.

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological review, 100*, 674-701.

Mohino, S., Kirchner, T., & Forns, M. (2004). Coping strategies in young male prisoners. *Journal of Youth and Adolescence, 33*(1), 41-49.

Monahan, K. C., Goldweber, A., & Cauffman, E. (2011). The effects of visitation on incarcerated juvenile offenders: How contact with the outside impacts adjustment on the inside. *Law and human behavior, 35*, 143-151.

Morris, P. K. (2008). Imprisoned in Jamaica: An exploratory study of inmate experiences and differential responses to prison life in a developing country. *International Criminal Justice Review, 18*, 435-454.

*Morris, R. G., & Worrall, J. L. (2010). Prison architecture and inmate misconduct: A multilevel assessment. *Crime & Delinquency*. Advance online publication. doi:10.1177/0011128710386204

Morris, R. G., Carriaga, M. L., Diamond, B., Piquero, N. L., & Piquero, A. R. (2012). Does prison strain lead to prison misbehavior? An application of general strain theory to inmate misconduct. *Journal of Criminal Justice, 40*, 194-201.

*Morris, R. G., Longmire, D. R., Buffington-Vollum, J., & Vollum, S. (2010). Institutional misconduct and differential parole eligibility among capital inmates. *Criminal Justice and Behavior, 37*, 417-438.

Motiuk, L. L. (1997). *Classification for correctional programming: The offender intake assessment (OIA) process*. *Forum on Corrections Research, 9*, 13-22.

Murrie, D., Henderson, C., Vincent, G., Rockett, J., & Mundt, C. (2009). Psychiatric symptoms among juveniles incarcerated in adult prison. *Psychiatric Services, 60*, 1092-1097.

Naggara, O., Raymond, J., Guilbert, F., Roy, D., Weill, A., Altman, D. G. (2011). Analysis by categorizing or dichotomizing continuous variables is inadvisable: An example from the natural history of unruptured aneurysms. *American Journal of Neuroradiology, 32*, 437–440.

*Nesset, M. B., Rustad, A. B., Kjelsberg, E., Almvik, R., & Bjørngaard, J. H. (2011). Health care help seeking behaviour among prisoners in Norway. *BioMed Central—Health Services Research, 11*, Article 301.

Ordinance No. 118/2013 (March 25, 2013). Nuclear Structure and Competences of the General Directorate of Reintegration and Prisons, Ministry of Justice. *Portuguese Official Gazette, No. 59, series I, 1848-1854*. Lisbon, Portugal. Retrieved from http://dre.pt/pdf1s/2013/08/15900/0498805005.pdf

Orrick, E. A., Worrall, J. L., Morris, R. G., Piquero, A. R., Bales, W. D., & Wang, X. (2011). Testing social support theory: A multilevel analysis of recidivism. *Journal of Criminal Justice, 39*, 499-508.

Palmer, E. J., & Farmer, S. (2002). Victimizing behaviour among juvenile and young offenders: How different are perpetrators? *Journal of adolescence, 25*, 469-481.

Paterline, B. A., & Petersen, D. M. (1999). Structural and social psychological determinants of prisonization. *Journal of Criminal Justice, 27*, 427-441.

Peterson, R. A., & Brown, S. P. (2005). On the use of beta coefficients in meta-analysis. *Journal of Applied Psychology, 90*, 175-181.

Pew Center on the States (2011). *State of recidivism: The revolving door of America's prisons*. Washington, DC: The Pew Charitable Trusts

Pigott, T. D. (2012). *Advances in meta-analysis*. New York: Springer.

Poole, E. D., & Regoli, R. M. (1983). Violence in juvenile institutions. *Criminology, 21*, 213-232.

Population Reference Bureau (2013). *World population data sheet 2013*. Washington, DC: Population Reference Bureau.

Rabe-Hesketh, S., & Skrondal, A. (2008). *Multilevel and longitudinal modeling using Stata* (2nd ed.). College Station, TX: Stata Press.

Reed, F., Alenazi, Y., & Potterton, F. (2009). Effect of time in prison on prisoners' use of coping strategies. *International Journal of Prisoner Health, 5*, 16-24.

*Reisig, M. D. (2002). Administrative control and inmate homicide. *Homicide Studies, 6*, 84-103.

Rosenthal, R. (1979). The "file drawer problem" and tolerance for null results. *Psychological Bulletin, 86*, 638-641.

Rosenthal, R., & Rubin, D. B. (2003). *r*(equivalent): A simple effect size indicator. *Psychological Methods, 8*, 492-496.

Sappington, A. A. (1996). Relationships among prison adjustment, beliefs, and cognitive coping style. *International Journal of Offender Therapy and Comparative Criminology, 40*, 54-62.

Sarason, I. G., Sarason, B. R., Potter, E. H., & Antoni, M. H. (1985). Life events, social support, and illness. *Psychosomatic Medicine, 47*, 156-163.

Schenk, A. M., & Fremouw, W. J. (2012). Individual characteristics related to prison violence: A critical review of the literature. *Aggression and Violent Behavior, 17*, 430-442.

Schmid, T. J., & Jones, R. S. (1993). Ambivalent actions: Prison adaptation strategies of first-time, short-term inmates. *Journal of Contemporary Ethnography, 21*, 439-463.

Schrag, C. (1961). A preliminary criminal typology. *Pacific Sociological Review, 1*, 11-16.

*Shaw, L. B., & Morgan, R. D. (2011). Inmate attitudes toward treatment: Mental health service utilization and treatment effects. *Law and Human Behavior, 35*, 249-261.

*Shermer, L. O., Bierie, D. M., & Stock, A. (2013). Endogeneity in prison risk classification. *International Journal of Offender Therapy and Comparative Criminology, 57*, 1248-1274. doi:10.1177/0306624X12452404

Shields, I. W., & Simourd, D. J. (1991). Predicting predatory behavior in a population of incarcerated young offenders. *Criminal Justice and Behavior, 18*, 180-194.

Singh, J. P., Grann, M., & Fazel, S. (2011). A comparative study of violence risk assessment tools: A systematic review and meta-regression analysis of 68 studies involving 25,980 participants. *Clinical Psychology Review, 31*, 499-513.

Sirdifield, C., Gojkovic, D., Brooker, C., & Ferriter, M. (2009). A systematic review of research on the epidemiology of mental health disorders in prison populations: A summary of findings. *The Journal of Forensic Psychiatry and Psychology, 20*, 78-101.

Skeem, J. L., & Cauffman, E. (2003). Views of the downward extension: Comparing the youth version of the Psychopathy Checklist with the Youth Psychopathic Traits Inventory. *Behavioral Sciences & the Law, 21*, 737-770.

Snijders, T. A. B. (2005). Power and sample size in multilevel linear models. In B. S. Everitt & D. C. Howell (Eds.), *Encyclopedia of statistics in behavioral science,* vol. III, 1570-1573. Chicester: Wiley.

Snijders, T. A. B., & Bosker, R. J. (2011). *Multilevel analysis: An introduction to basic and advanced multilevel modeling* (2nd ed.). London: Sage

Soderstrom, I. R., Castellano, T. C., & Figaro, H. R. (2001). Measuring mature coping skills among adult and juvenile offenders: A psychometric assessment of relevant instruments. *Criminal Justice and Behavior, 28*, 300-328.

Soeken, K. L., Prescott, P. A., Herron, D. G., & Creasia, J. (1991). Predictors of hospital readmission: A meta-analysis. *Evaluation & the Health Professions, 14*, 262-281.

Solomon, A. L., Johnson, K. D., Travis, J., & McBride, E. C. (2004). *From prison to work: The employment dimensions of prisoner reentry*. Washington, DC: The Urban Institute.

*Sorensen, J. R., & Davis, J. (2011). Violent criminals locked up: Examining the effect of incarceration on behavioral continuity. *Journal of Criminal Justice, 39*, 151-158.

Stanley, T. D., & Jarrell, S. B. (1989). Meta-regression analysis: A quantitative method of literature surveys. *Journal of Economic Surveys, 19*, 289-308.

State Health Care Spending Project (2013). *Managing prison health care spending*. Washington, DC: The Pew Charitable Trusts

*Steadman, H. J., Holohean, E. J., & Dvoskin, J. (1991). Estimating mental health needs and service utilization among prison inmates. *Journal of the American Academy of Psychiatry and the Law, 19*, 297-306.

*Steiner, B. (2009). Assessing static and dynamic influences on inmate violence levels. *Crime & Delinquency, 55*, 134-161.

Steiner, B., & Wooldredge, J. (2008). Inmate versus environmental effects on prison rule violations. *Criminal Justice and Behavior, 35*, 438-456.

*Steiner, B., & Wooldredge, J. (2009). The relevance of inmate race/ethnicity versus population composition for understanding prison rule violations. *Punishment & Society, 11*, 459-489.

Steinke, P. (1991). Using situational factors to predict types of prison violence. *Journal of Offender Rehabilitation, 17*, 119-132.

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research*. Newbury Park, CA: Sage.

Sykes, G. (1958). *The society of captives*. Princeton, NJ: Princeton University Press.

Tasca, M., Griffin, M. L., & Rodriguez, N. (2010). The effect of importation and deprivation factors on violent misconduct: an examination of Black and Latino youth in prison. *Youth Violence and Juvenile Justice, 8*, 234-249.

Taylor, J., Kemper, T. S., & Kistner, J. A. (2007). Predicting institutional maladjustment in severe male juvenile delinquents from criminal history and personality/clinical subtype. *Criminal Justice and Behavior, 34*, 769-780.

The Health Care Spending Project (2013). *Managing prison health care spending*. Washington, DC: The Pew Charitable Trusts.

Toch, H. (1977). *Living in prison: The ecology of survival*. New York: Free Press.

Toch, H., & Adams, K. (2002). *Acting out: Maladaptive behavior in confinement*. Washington, DC: American Psychological Association.

Trulson, C. R. (2007). Determinants of disruption: Institutional misconduct among state-committed delinquents. *Youth Violence and Juvenile Justice, 5*, 7-34.

Trulson, C. R., DeLisi, M., & Marquart, J. W. (2011). Institutional misconduct, delinquent background, and rearrest frequency among serious and violent delinquent offenders. *Crime and Delinquency, 57*, 709-731.

Trulson, C. R., DeLisi, M., Caudill, J. W., Belshaw, S., & Marquart, J. W. (2010). Delinquent careers behind bars. *Criminal Justice Review, 35*, 200-219.

United Nations Office on Drugs and Crime (2012). *Monitoring the Impact of Economic Crisis on Crime*. Vienna: United Nations Office on Drugs and Crime.

*Useem, B., & Reisig, M. D. (1999). Collective actions in prisons: Protests, disturbances, and riots. *Criminology, 37*, 735-760.

Van der Laan, A., & Eichelsheim, V. (2013). Juvenile adaptation to imprisonment: Feelings of safety, autonomy and well-being, and behaviour in prison. *European Journal of Criminology, 10*, 424-443.

Van Tongeren, D. R., & Klebe, K. J. (2010). Reconceptualizing prison adjustment: A multidimensional approach exploring female offenders' adjustment to prison life. *The Prison Journal, 90*, 48-68.

Walmsley, R. (2011). *World prison population list* (9th ed.). London, England: International Centre for Prison Studies.

Walters, G. D. (1992). *Foundations of Criminal Science: The development of knowledge 8* (vol. II). New York: Praeger Publishers.

*Walters, G. D. (1999). Short-term outcome of inmates participating in the lifestyle change program. *Criminal Justice and Behavior, 26*, 322-337.

Walters, G. D. (2003). Predicting institutional adjustment and recidivism with the Psychopathy Checklist factor scores: A meta-analysis. *Law and Human Behavior, 27*, 541-558.

*Walters, G. D. (2007[a]). Predicting institutional adjustment with the Lifestyle Criminality Screening Form and the Antisocial Features and Aggression scales of the PAI. *Journal of Personality Assessment, 88*, 99-105.

*Walters, G. D. (2007b). Predicting institutional adjustment with the Lifestyle Criminality Screening Form and the Antisocial Features and Aggression scales of the PAI. *Journal of Personality Assessment, 88*, 99-105.

*Walters, G. D., & Mandell, W. (2007). Incremental validity of the Psychological Inventory of Criminal Thinking Styles and Psychopathy Checklist: Screening version in predicting disciplinary outcome. *Law and Human Behavior, 31*, 141-157.

Watson, R., Stimpson, A., & Hostick, T. (2004). Prison health care: a review of the literature. *International Journal of Nursing Studies, 41*, 119-128.

Welch, M. (2011). *Corrections: A critical approach*. New York: Routledge.

Wheatley, M. (2008). Drugs. In Y. Jewkes & J. Bennett (Eds.), *Dictionary of Prisons and Punishment*, 70-73. Cullompton: Willan.

Wilson, D. B. (2010). Meta-analytic methods for criminology and criminal justice. In A. Piquero & D. Weisburd (eds.), *Handbook of Quantitative Criminology*, 181-208. New York: Springer.

Wolff, N., Blitz, C., & Shi, J. (2007). Rates of sexual victimization in prison for inmates with and without mental disorders. *Psychiatric Services, 58*, 1087-1094.

Wolfgang, M. E. (1961). Quantitative analysis of adjustments to the prison community. *Journal of Criminal Law, Criminology and Police Science, 51*, 607-618.

Wooldredge, J. D. (1999). Inmate experiences and psychological well-being. *Criminal Justice and Behavior, 26*, 235-250.

Wooldredge, J., Griffin, T., & Pratt, T. (2001). Considering hierarchical models for research on inmate behavior: Predicting misconduct with multilevel data. *Justice Quarterly, 18*, 203-231.

*Worrall, J. L., & Morris, R. G. (2011). Inmate custody levels and prison rule violations. *The Prison Journal, 91*, 131-157.

Wright, K. N. (1985). *Improving correctional classification through a study of the placement of inmates in environmental settings*. Washington, DC: U.S. Department of Justice.

Wright, K. N. (1991). A study of individual, environmental, and interactive effects in explaining adjustment to prison. *Justice Quarterly, 8*, 217-242.

Xenakis, S., & Cheliotis, L. K. (2013). Crime and economic downturn: The complexity of crime and crime politics in Greece since 2009. *British Journal of Criminology, 53*, 719-745.

Yang, S., Kadouri, A., Révah-Lévy, A., Mulvey, E. P., & Falissard, B. (2009). Doing time: A qualitative study of long-term incarceration and the impact of mental illness. *International Journal of Law and Psychiatry, 32*(5), 294-303.

Zamble, E. (1992). Behavior and adaptation in long-term prison inmates: Descriptive longitudinal results. *Criminal Justice and Behavior, 19*, 409-425.

Zamble, E., & Porporino, F. J. (1988). *Coping, behavior, and adaption in prison inmates*. New York: Springer.

Zamble, E., & Porporino, F. J. (1990). Coping, imprisonment, and rehabilitation: Some data and their implications. *Criminal Justice and Behavior, 17*, 53-70.

APPENDIXES

Appendix 1: List of the 90 Studies Included in the Meta-Analysis

1. Belfrage, H., Fransson, R., & Strand, S. (2000). Prediction of violence using the HCR-20: A prospective study in two maximum-security correctional institutions. *The Journal of Forensic Psychiatry, 11*, 167-175.

2. Bierie, D. M. (2012). Is tougher better? The impact of physical prison conditions on inmate violence. *International Journal of Offender Therapy and Comparative Criminology, 56*, 338-355.

3. Charton, T., Couture-Poulin, J. F., & Guay, J. P. (2011). The evaluation of the predictive validity of the LS/CMI in predicting disciplinary incidents in prison (text in French). *Criminologie, 44*, 279-303.

4. Clear, T. R., & Sumter, M. T. (2002). Prisoners, prison, and religion: Religion and adjustment to prison. *Journal of Offender Rehabilitation, 35*, 127-159.

5. Coid, J., Petruckevitch, A., Bebbington, P., Jenkins, R., Brugha, T., Lewis, G., Farrell, M., & Singleton, N. (2003). Psychiatric morbidity in prisoners and solitary cellular confinement, I: Disciplinary segregation. *Journal of Forensic Psychiatry & Psychology, 14*, 298-319.

6. Cooke, D. J., Michie, C., & Ryan, J. (2001). *Evaluating risk for violence: a preliminary study of the HCR-20, PCL-R and VRAG in a Scottish prison sample.* Scottish Prison Service, Occasional Paper Series 5/2001.

7. Cunningham, M. D., & Sorensen, J. R. (2007a). Capital offenders in Texas prisons: Rates, correlates, and an actuarial analysis of violent misconduct. *Law and Human Behavior, 31*, 553-571.

8. Cunningham, M. D., & Sorensen, J. R. (2007b). Predictive factors for violent misconduct in close custody. *The Prison Journal, 87*, 241-253.

9. Daggett, D. M., & Camp, S. D. (2009). Do official misconduct data tell the same story as the individuals who live in prison? *Criminal Justice Review, 34*, 428-449.

10. DeLisi, M., Berg, M. T., & Hochstetler, A. (2004). Gang members, career criminals and prison violence: Further specification of the importation model of inmate behavior. *Criminal Justice Studies, 17*, 369-383.

11. DeLisi, M., Hochstetler, A., Higgins, G. E., Beaver, K. M., & Graeve, C. M. (2008). Toward a general theory of criminal justice: Low self-control and offender noncompliance. *Criminal Justice Review, 33*, 141-158.

12. DeLisi, M., Trulson, C. R., Marquart, J. W., Drury, A. J., & Kosloski, A. E. (2011). Inside the prison black box: Toward a life course importation model of inmate behavior. *International Journal of Offender Therapy and Comparative Criminology, 55*, 1186-1207.

13. Dhami, M. K., Ayton, P., & Loewenstein, G. (2007). Adaptation to imprisonment: Indigenous or imported? *Criminal Justice and Behavior, 34*, 1085-1100.

14. Diamond, B., Morris, R. G., & Barnes J. C. (2012). Individual and group IQ predict inmate violence. *Intelligence, 40*, 115-122.

15. Diamond, P. M., Magaletta, P. R., Harzke, A. J., & Baxter, J. (2008). Who requests psychological services upon admission to prison? *Psychological Services, 5*, 97-107.

16. Douglas, K. S., & Webster, C. D. (1999). The HCR-20 violence risk assessment scheme: Concurrent validity in a sample of incarcerated offenders. *Criminal Justice and Behavior, 26*, 3-19.

17. Drury, A. J., & DeLisi, M. (2010). The past is prologue: Prior adjustment to prison and institutional misconduct. *The Prison Journal, 90*, 331-352.

18. Edens, J. F., & Ruiz, M. A. (2006). On the validity of validity scales: The importance of defensive responding in the prediction of institutional misconduct. *Psychological Assessment, 18*, 220-224.

19. Edens, J. F., & Ruiz, M. A. (2009). Predicting institutional aggression by defensive prison inmates: An examination of the Personality Assessment Inventory treatment consideration scales. *International Journal of Forensic Mental Health, 8*, 178-185.

20. Edens, J. F., Poythress, N. G., Lilienfeld, S. O., & Patrick, C. J. (2008). A prospective comparison of two measures of psychopathy in the prediction of institutional misconduct. *Behavioral Sciences & the Law, 26*, 529-541.

21. Edens, J. F., Poythress, N. G., Lilienfeld, S. O., Patrick, C. J., & Test, A. (2008). Further evidence of the divergent correlates of the Psychopathic Personality Inventory factors: Prediction of institutional misconduct among male prisoners. *Psychological Assessment, 20*, 86-91.

22. Endrass, J., Rossegger, A., Frischknecht, A., Noll, T., & Urbaniok, F. (2008a). Using the Violence Risk Appraisal Guide (VRAG) to predict in-prison aggressive behavior in a Swiss offender population. *International Journal of Offender Therapy and Comparative Criminology, 52*, 81-89.

23. Endrass, J., Rossegger, A., Frischknecht, A., Noll, T., & Urbaniok, F. (2008b). The predictive validity of the PCL: SV among a Swiss prison population. *International Journal of Forensic Mental Health, 7*, 191-199.

24. Endrass, J., Rossegger, A., Urbaniok, F., Laubacher, A., & Vetter, S. (2008). Predicting violent infractions in a Swiss state penitentiary: A replication study of the PCL-R in a population of sex and violent offenders. *BioMed Central - Psychiatry*, 8.

25. Falter, R. G. (1999). Selected predictors of health services needs of inmates over age 50. *Journal of Correctional Health Care, 6*, 149-175.

26. Fernandez, K. E., & Neiman, M. (1998). California's inmate classification system: Predicting inmate misconduct. *The Prison Journal, 78, 406-422.*

27. Fornells, A. R., Capdevila, J. M. L., & Andrés-Pueyo, A. (2002). Personality and prison behavior (text in Spanish). *Psicothema, 14*, 90-100.

28. Garrity, T. F., Hiller, M. L., Staton, M., Webster, J. M., & Leukefeld, C. G. (2002). Factors predicting illness and health services use among male Kentucky prisoners with a history of drug abuse. *The Prison Journal, 82*, 295-313.

29. Gillespie, W. (2002). *Prisonization: Individual and institutional factors affecting inmate conduct*. New York: LFB Scholarly Publishing.

30. Gonçalves, L. C., & Gonçalves, R. A. (2012). Aggressiveness, criminal lifestyle and prison adjustment (text in Portuguese). *Psicologia USP, 23*, 559-584.

31. Gonçalves, R. A. (2010). Violence in prison: Institutional constraints and inmates' aggressiveness. In M. Frias-Armenta & V. Corral-Verdugo (eds.), *Bio-psycho-social perspectives on interpersonal violence*, 217-232. Nova Science Publishers Inc.

32. Gover, A. R., Pérez, D. M., & Jennings, W. G. (2008). Gender differences in factors contributing to institutional misconduct. *The Prison Journal, 88*, 378-403.

33. Graeve C. M., DeLisi, M., Hochstetler, A. (2007). Prison rioters: exploring infraction characteristics, risk factors, social correlates, and criminal careers. *Psychological Reports, 100*, 407-419.

34. Griffin, M. L., & Hepburn, J. R. (2006). The effect of gang affiliation on violent misconduct among inmates during the early years of confinement. *Criminal Justice and Behavior, 33*, 419-466.

35. Hare, R. D., Clark, D., Grann, M., & Thornton, D. (2000). Psychopathy and the predictive validity of the PCL-R: An international perspective. *Behavioral Sciences & the Law, 18*, 623-645.

36. Harer, M. D., & Langan, N. P. (2001). Gender differences in predictors of prison violence: Assessing the predictive validity of a risk classification system. *Crime & Delinquency, 47*, 513-536.

37. Harer, M. D., & Steffensmeier, D. J. (1996). Race and prison violence. *Criminology, 34*, 323-355.

38. Hassan L., Rahman, M. S., King, C., Senior, J., & Shaw, J. (2012). Level of mental health intervention and clinical need among inmates with mental illness in five English jails. *Psychiatric Services, 63*, 1218-1224.

39. Hensley, C., Koscheski, M., & Tewksbury, R. (2003). The impact of institutional factors on officially reported sexual assaults in prisons. *Sexuality and Culture, 7*, 16-26.

40. Huebner, B. M. (2003). Administrative determinants of inmate violence: A multilevel analysis. *Journal of Criminal Justice, 31*, 107-117.

41. Jiang, S., & Fisher-Giorlando, M. (2002). Inmate misconduct: A test of the deprivation, importation, and situational models. *The Prison Journal, 82*, 335-358.

42. Jiang, S., & Winfree, L. T. (2006). Social support, gender, and inmate adjustment to prison: Life insights from a national sample. *The Prison Journal, 86*, 32-55.

43. Kellar, M., & Wang, H. M. (2005). Inmate assaults in Texas county jails. *The Prison Journal, 85*, 515-534.

44. Kroner, D. G., & Mills, J. F. (2001). The accuracy of five risk appraisal instruments in predicting institutional misconduct and new convictions. *Criminal Justice and Behavior, 28*, 471-489.

45. Kroner, D. G., Holden, R. R., & Reddon, J. R. (1997). Validity of the Basic Personality Inventory in a correctional setting. *Assessment, 4*, 141-153.

46. Kuanliang, A., Sorensen, J. R., & Cunningham, M. D. (2008). Juvenile inmates in an adult prison system: Rates of disciplinary misconduct and violence. *Criminal Justice and Behavior, 35*, 1186-1201.

47. Lahm, K. F. (2008). Inmate-on-inmate assault: A multilevel examination of prison violence. *Criminal Justice and Behavior, 35*, 120-137.

48. Lahm, K. F. (2009). Inmate assaults on prison staff: A multilevel examination of an overlooked form of prison violence. *The Prison Journal, 89*, 131-150.

49. Lee, S. J., & Edens, J. F. (2005). Exploring predictors of institutional misbehavior among male Korean inmates. *Criminal Justice and Behavior, 32*, 412-432.

50. Lindquist, C. H., & Lindquist, C. A. (1999). Health behind bars: utilization and evaluation of medical care among jail inmates. *Journal of Community Health, 24*, 285-303.

51. Loza, W., & Loza-Fanous, A. (2002). The effectiveness of the Self-Appraisal Questionnaire as an offenders' classification measure. *Journal of Interpersonal Violence, 17*, 3-13.

52. Loza, W., Conley, M., & Warren, B. (2004). Concurrent cross-validation of the Self-Appraisal Questionnaire: A tool for assessing violent and nonviolent recidivism and institutional adjustment on a sample of North Carolina offenders. *International Journal of Offender Therapy and Comparative Criminology, 48*, 85-95.

53. Lukemeyer, A., & McCorkle, R. C. (2006). Privatization of prisons: Impact on prison conditions. *The American Review of Public Administration, 36*, 189-206.

54. Mills, J. F., & Kroner, D. G. (2003a). Anger as a predictor of institutional misconduct and recidivism in a sample of violent offenders. *Journal of Interpersonal Violence, 18*, 282-294.

55. Mills, J. F., & Kroner, D. G. (2003b). Antisocial constructs in predicting institutional violence among violent offenders and child molesters. *International Journal of Offender Therapy and Comparative Criminology, 47*, 324-334.

56. Morris, R. G., & Worrall, J. L. (2010). Prison architecture and inmate misconduct: A multilevel assessment. *Crime & Delinquency*. Advanced online publication. doi: 10.1177/0011128710386204.

57. Morris, R. G., Longmire, D. R., Buffington-Vollum, J., & Vollum, S. (2010). Institutional misconduct and differential parole eligibility among capital inmates. *Criminal Justice and Behavior, 37*, 417-438.

58. Nesset, M. B., Rustad, A. B., Kjelsberg, E., Almvik, R., & Bjørngaard, J. H. (2011). Health care help seeking behaviour among prisoners in Norway. *BioMed Central - Health Services Research, 11*.

59. Nobile, C. G., Flotta, D., Nicotera, G., Pileggi, C., & Angelillo, I. F. (2011). Self-reported health status and access to health services in a sample of prisoners in Italy. *BioMed Central - Public Health, 11*.

60. Orrick, E. A., & Morris, R. G. (2012). Do Parole Technical Violators Pose a Safety Threat? An Analysis of Prison Misconduct. *Crime & Delinquency*. Advance online publication. doi: 10.1177/0011128712465585

61. Pass, M. G. (1999). Religious orientation and self-reported rule violations in a maximum security prison. *Journal of Offender Rehabilitation, 28*, 119-134.

62. Reisig, M. D. (2002). Administrative control and inmate homicide. *Homicide Studies, 6*, 84-103.

63. Reisig, M. D., & Mesko, G. (2009). Procedural justice, legitimacy, and prisoner misconduct. *Psychology, Crime & Law, 15*, 41-59.

64. Shaw, L. B., & Morgan, R. D. (2011). Inmate attitudes toward treatment: Mental health service utilization and treatment effects. *Law and Human Behavior*, 35, 249-261.

65. Shermer, L. O., Bierie, D. M., & Stock, A. (2013). Endogeneity in prison risk classification. *International Journal of Offender Therapy and Comparative Criminology, 57*, 1248-1274. doi:10.1177/0306624X12452404

66. Sorensen, J. R., & Davis, J. (2011). Violent criminals locked up: Examining the effect of incarceration on behavioral continuity. *Journal of Criminal Justice, 39*, 151-158.

67. Sorensen, J. R., & Pilgrim, R. L. (2000). An actuarial risk assessment of violence posed by capital murder defendants. *The Journal of Criminal Law & Criminology, 90*, 1251-1270.

68. Sorensen, J. R., Cunningham, M. D., Vigen, M. P., & Woods, S. O. (2011). Serious assaults on prison staff: A descriptive analysis. *Journal of Criminal Justice, 39*, 143-150.

69. Steadman, H. J., Holohean, E. J., & Dvoskin, J. (1991). Estimating mental health needs and service utilization among prison inmates. *Journal of the American Academy of Psychiatry and the Law, 19*, 297-306.

70. Steiner, B. (2009). Assessing static and dynamic influences on inmate violence levels. *Crime & Delinquency, 55*, 134-161.

71. Steiner, B., & Wooldredge, J. (2009). The relevance of inmate race/ethnicity versus population composition for understanding prison rule violations. *Punishment & Society, 11*, 459-489.

72. Suls, J., Gaes, G., & Philo, V. (1991). Stress and illness behavior in prison: Effects of life events, self-care attitudes, and race. *Journal of Prison and Jail Health, 10*, 117-132.

73. Tartaro, C. (2002). The impact of density on jail violence. *Journal of Criminal Justice, 30*, 499-510.

74. Tartaro, C., & Levy, M. P. (2007). Density, inmate assaults, and direct supervision jails. *Criminal Justice Policy Review, 18*, 395-417.

75. Useem, B., & Reisig, M. D. (1999). Collective actions in prisons: Protests, disturbances, and riots. *Criminology, 37*, 735-760.

76. Walters, G. D. (1996). The psychological inventory of criminal thinking styles: Part III. Predictive validity. *International Journal of Offender Therapy and Comparative Criminology, 40*, 105-112.

77. Walters, G. D. (1999). Short-term outcome of inmates participating in the lifestyle change program. *Criminal Justice and Behavior, 26*, 322-337.

78. Walters, G. D. (2006). Use of the Psychological Inventory of Criminal Thinking Styles to predict disciplinary adjustment in male inmate program participants. *International Journal of Offender Therapy and Comparative Criminology, 50*, 166-173.

79. Walters, G. D. (2007a). Predicting institutional adjustment with the Psychological Inventory of Criminal Thinking Styles composite scales: Replication and extension. *Legal and Criminological Psychology, 12*, 69-81.

80. Walters, G. D. (2007b). Predicting institutional adjustment with the Lifestyle Criminality Screening Form and the Antisocial Features and Aggression scales of the PAI. *Journal of Personality Assessment, 88*, 99-105.

81. Walters, G. D., & Geyer, M. D. (2005). Construct validity of the Psychological Inventory of Criminal Thinking Styles in relationship to the PAI, disciplinary adjustment, and program completion. *Journal of Personality Assessment, 84*, 252-260.

82. Walters, G. D., & Heilbrun, K. (2010). Violence risk assessment and Facet 4 of the Psychopathy Checklist: Predicting institutional and community aggression in two forensic samples. *Assessment, 17*, 259-268.

83. Walters, G. D., & Mandell, W. (2007). Incremental validity of the Psychological Inventory of Criminal Thinking Styles and Psychopathy Checklist: Screening version in predicting disciplinary outcome. *Law and Human Behavior, 31*, 141-157.

84. Walters, G. D., & Schlauch, C. (2008). The Psychological Inventory of Criminal Thinking Styles and Level of Service Inventory-Revised. *Law and Human Behavior, 32*, 454-462.

85. Walters, G., Duncan, S., & Geyer, M. (2003). Predicting disciplinary adjustment in inmates undergoing forensic evaluation: A direct comparison of the PCL-R and the PAI. *Journal of Forensic Psychiatry & Psychology, 14*, 382-393.

86. Worrall, J. L., & Morris, R. G. (2011). Inmate custody levels and prison rule violations. *The Prison Journal, 91*, 131-157.

87. Worrall, J. L., & Morris, R. G. (2012). Prison gang integration and inmate violence. *Journal of Criminal Justice, 40*, 425-432.

88. Young, D. S. (2002). Non-psychiatric services provided in a mental health unit in a county jail. *Journal of Offender Rehabilitation, 35*, 63-82.

89. Young, D. S. (2003). Predictors of placement on a jail mental health unit: Assessing equitable access to care. *Journal of Correctional Health Care, 9*, 399-423.

90. Young, M. H., Justice, J. V., & Erdberg, P. (2004). Assault in prison and assault in prison psychiatric treatment. *Journal of Forensic Sciences, 49*, 141-149.

Appendix 2: Meta-Analysis Coding Manual

Study and author descriptors

Reference. Write the reference of the study in APA format and English language:

_____

_____

_____

1. *Publication type*. Indicate the type of publication:

    1. Journal article

    2. Book/chapter

    3. Governmental/technical report

2. *Publication year*. Indicate the year of publication: _____

3. *Country.* Record the country in which the study was conduct: _____

4. *Author affiliation.* Indicate the affiliation of the author. In the case of multiple authors, record the affiliation of the lead author only.

    1. Academic

    2. Government

    3. Private agency

    4. Mixed (some combination of 1, 2, 3)

    5. Information not available

5. *Author academic area.* Indicate the academic area of the author. In the case of multiple authors, record the area of study of the lead author only.

    1. Psychology/psychiatry

    2. Criminology/criminal justice

    3. Sociology

    4. Other. Specify: _____

    5. Information not available

Sample descriptors

Personal level – Inmates

6. *Race*. Indicate the code that best characterizes the inmate sample with respect to race:

    1. White (> 75% are White)

    2. Black (> 75% are Black)

    3. Mixed (none > 75%)

    4. Information not available/cannot estimate proportion

7. *Age*. Indicate the code that best characterizes the sample with respect to age. Note that samples with a mean age under 18 years are excluded from the meta-analysis.

    1. Young (> 75% have 25 years old or less)

    2. Old (> 75% have 50 years old or more)

    3. Mixed (none > 75%)

    4. Information not available/cannot estimate proportion

8. *Marital status*. Indicate the code that best characterizes the marital status of the sample:

    1. Single (> 75% are single)

    2. Relation (> 75% are married/have a lasting relation)

    3. Mixed (none > 75%)

    4. Information not available/cannot estimate proportion

9. *Education*. Indicate the code that best characterizes the education of the sample:

    1. High (> 75% have more than 9 years of schooling)

    2. Low (> 75% have less than 6 years of schooling)

    3. Mixed (none > 75%)

    4. Information not available/cannot estimate proportion

10. *Substance abuse*. Indicate "Yes" if more than 75% of the sample have drug/alcohol problems (actually or in the past). Indicate "No" if more than 75% have no history of substance abuse (including moderated smoke and drink habits).

    1. Yes

    2. No

    3. Mixed (none > 75%)

    4. Information not available/cannot estimate proportion

11. *Mental treatment.* Is the sample based on prisoners with mental treatment history or actually receiving mental/physical health treatment in prison? Note that samples gathered from psychiatric settings (e.g., psychiatric hospitals) are excluded from the meta-analysis.

    1. Yes (> 75% have prior/present mental treatment)
    2. No (> 75% have no prior/present mental treatment)
    3. Mixed (none > 75%)
    4. Information not available/cannot estimate proportion

12. *Penal situation*. Indicate the code that best characterizes the penal situation of the sample:

    1. Remand (> 75% are on pre-trial custody)
    2. Sentenced (> 75% are already convicted)
    3. Mixed (none > 75%)
    4. Information not available/cannot estimate proportion

13. *Time served*. Indicate the code that best characterizes the sample with respect to the time already served in prison:

    1. Short (> 75% under 3 years)
    2. Medium (> 75% between 3 and 6 years)
    3. Long (> 75% more than 6 years)
    4. Mixed (none > 75%)
    5. Information not available/cannot estimate proportion

14. *Sentence length*. Indicate the code that best characterizes the sample attending to the sentence length (court verdict):

    1. Short (> 75% under 3 years)
    2. Medium (> 75% between 3 and 6 years)
    3. Long (> 75% more than 6 years)
    4. Mixed (none > 75%)
    5. Information not available/cannot estimate proportion

15. *Violent offense.* Indicate "Yes" if more than 75% of the sample was convicted for a violent crime (i.e., crimes against persons, including sexual offences) actually or in the past. Indicate "No" if more than 75% of the sample was convicted for other type

of crimes. Note that studies (or sub-samples within a study) focusing on sexual offenders are excluded from the meta-analysis.

    1. Yes

    2. No

    3. Mixed (none > 75%)

    4. Information not available/cannot estimate proportion

16. *Recidivism.* Indicate "Yes" if more than 75% of the sample has an incarceration history. Indicate "No" if more than 75% of the sample is for the first time in prison.

    1. Yes

    2. No

    3. Mixed (none > 75%)

    4. Information not available/cannot estimate proportion

17. *Program sample.* Was the sample composed by prisoners enrolled in any type of intervention/treatment program (e.g., lifestyle change program, drug treatment, school)?

    1. Yes (more than 75% were)

    2. No (more than 75% were not)

    3. Mixed

18. *Life sentenced sample.* Is the sample based on life sentenced inmates? Note that samples (or sub-samples) composed by prisoners on death row or life without the opportunity of parole are excluded from the meta-analysis.

    1. Yes (more than 75% are)

    2. No (more than 75% are not)

    3. Mixed (none > 75%)

19. *Probation/parole.* Is the sample based on prisoners on probation or parole?

    1. Yes (more than 75% are)

    2. No (more than 75% are not)

20. *Mixed females.* Indicate if the sample includes females for the effects sizes that will be extracted. Note that when analyzing predictors of institutional infractions, at the personal level, studies combining males and females are excluded (as well as studies based on females only). Only for contextual predictors of infractions and predictors

158

of health care utilization (any type) and are studies mixing males and females included in the meta-analysis.

    1. Yes

    2. No

Contextual level – Prisons

21. *Prison type*. Indicate the code that best characterizes the prison sample attending to the type of prison institutions it includes. If the study was made in only one prison it is considered 100% of the sample.

    1. Local / jails / remand centers (> 75%)

    2. Central / federal and state prisons (> 75%)

    3. Mixed (none > 75%)

    4. Information not available/cannot estimate proportion

22. *Security level*. Indicate the code that best characterizes the prison sample with regard to the security level:

    1. Low / minimum (> 75%)

    2. Moderate / medium (> 75%)

    3. High / maximum (> 75%)

    4. Mixed (none > 75%)

    5. Information not available/cannot estimate proportion

23. *Population size*. Indicate the code that best characterizes the population size of the prisons included in the sample. Note that this is not the total sample size.

    1. Small (> 75% house less than 200 inmates)

    2. Medium (> 75% house between 200 and 1000 inmates)

    3. Large (> 75% house more than 1000 inmates)

    4. Information not available/cannot estimate proportion

24. *Crowding*. Indicate "Yes" if more than 75% of the prisons included in the sample (or mean value) were crowded. This information is generally provided by the occupancy rate divided by the official prison capacity. If greater than 1 (or 100%), the prison sample is considered crowded. Indicate "No" otherwise.

    1. Yes

    2. No

3. Information not available/cannot estimate proportion

Methodological descriptors and effect sizes

25. *Unit of analysis*. Indicate if the study explores predictors measured at the inmate level (e.g., age), prison level (e.g., crowding), or both (multilevel studies):
    1. Inmates
    2. Prisons
    3. Both

26. *Sample selection*. Describe how the units of analysis, either inmates or prisons, were selected from the larger population:
    1. Convenience sampling
    2. Random sampling
    3. Stratified sampling

27. *Inmate sample size.* Indicate the number of prisoners included in the sample. If a different number of subjects were included in different analyses, or only a particular sample of subjects within the total sample will be used, indicate the number of prisoners included in the statistical model(s) from which the data will be extracted.
    1. Small (< 100 inmates)
    2. Medium (between 100 and 1000)
    3. Large (> than 1000)
    4. Information not available

28. *Prison sample size.* Indicate the number of prisons included in the sample. Make use of the considerations exposed in the previous question:
    1. Small (only 1 prison)
    2. Medium (between 2 and 10)
    3. Large (> than 10)
    4. Information not available

29. *Follow-up length.* Indicate the duration of the observation period for the outcome(s) that will be recorded. For this purpose, also consider studies that follow prisoners over different amounts of time, generally exposed as "time at risk". If different outcomes were measured over varying amounts of time, indicate the follow-up length for each one.

1. Short (< 1 year), for: _____

2. Medium (1 - 2 years), for: _____

3. Long (> 2 years), for: _____

4. Information not available

30. *Fixed follow-up*. Indicate "Yes" if prisoners were followed over a fixed observation period (e.g., one year, two years, etc.). Indicate "No" if prisoners were measured over different amounts of time (e.g., some were observed over 6 months and others 6 years), as alluded above. If no, does the author include an exposure/offset variable in the statistical model(s)?

    1. Yes

    2. No, _____

31. *Design*. Is the observation period prospective or retrospective (i.e., were the outcomes of interest measured backward or forward in time)?

    1. Prospective

    2. Retrospective

32. *Record type*. Indicate the source from where the outcome information comes from:

    1. Prison record (official prison files)

    2. Self-report (inmates indicate their frequency of incurrence on the outcomes)

33. *Variable type*. Indicate what type of variable are the outcomes (how they are measured?) as analyzed in the models that will be used.

    1. Continuous

    2. Categorical

34. *Data analysis*. Indicate the analysis used in the models from which data will be extracted:

    1. Correlations (e.g., Pearson, Spearman, Point biserial correlation)

    2. Covariance (e.g., Anova, Manova, *F*).

    3. Regressions (e.g., OLS, Logistic, Poisson, Negative binomial).

    4. AUC

    5. Other. Specify: _____

35. *Statistic type*. Indicate the type of statistic used in the model(s) from which the data will be extracted:

1. Bivariate (relation between two variables)
2. Multivariate (more than two variables are analyzed together)

36. *Effect sizes.* Record as detailed as possible the effect sizes (and error terms) for the association between each predictor and outcome variable. Use the following table for guidance.

Predictor	Outcome	Effect size and error
Age	Total infractions	b = , SE or CI =
Education	Severe infractions	β = , SE or CI =
Criminal history	Drug use/smuggling	OR = , SE or CI =
Drug abuse	Physical treatment	AUC = , SE or CI =
Prior mental treatment	Total treatment	*F* (1df only) =
Depression	Mental treatment	Wald (1df only) =
Prison crowding	Assault on staff	*r* =
Prison population size	Assault on inmates	*t* or *z* =
Prison security level	Riot	*p* =

Note. b = unstandardized regression coefficient, β = standardized regressions coefficient, OR = odds ratio, AUC = area under the curve, *F* = test of equality of variances, Wald = test for statistical significance of regression coefficients, *r* = correlation coefficient, *t* and *z* = test of significance (regression coefficient divided by standard error), *p* = statistical significance level, SE = standard error, CI = confidence interval.

Appendix 3: Descriptive Information of the Independent Samples Included in the Meta-Analysis

Sample	Country	N_i	N_p	Predictor level	Outcome
Belfrage et al., 2000	SE	41	2	Inmate	Infractions
Bierie, 2012	US	1,738	114	Prison	Infractions
Charton et al., 2011	CA	934	18	Inmate	Infractions
Clear & Sumter, 2002	US	769	20	Inmate	Infractions
Coid et al., 2003 (male)	EN & WL	2,370	131	Inmate	Infractions
Cooke et al., 2001	SF	243	1	Inmate	Infractions
Cunningham & Sorensen, 2007a	US	136	*na*	Inmate	Infractions
Cunningham & Sorensen, 2007b	US	24,517	52	Inmate	Infractions
Daggett & Camp, 2009	US	950	10	Prison	Infractions
DeLisi et al., 2004; Graeve et al., 2007; Drury & DeLisi, 2010 (males) [+]	US	831	*na*	Inmate	Infractions
DeLisi et al., 2008	US	193	*na*	Inmate	Infractions
DeLisi et al., 2011	US	1,779	*na*	Inmate	Infractions
Dhami et al., 2007	US	712	3	Inmate	Infractions
Diamond et al., 2008	US	2,674	14	Inmate	Health care
Douglas & Webster, 1999	CA	74	1	Inmate	Infractions
Edens & Ruiz, 2006; 2009 (Non-defensive PAI sample) [+]	US	349	4	Inmate	Infractions
Edens et al., 2008a	US	131	3	Inmate	Infractions
Edens et al., 2008b	US	46	1	Inmate	Infractions
Endrass et al., 2008a; 2008b; 2008c [+]	CH	114	1	Inmate	Infractions
Falter, 1999	US	1,051	*na*	Inmate	Health care
Fernandez & Neiman, 1998	US	13,161	*na*	Inmate	Infractions
Fornells et al., 2002	ES	99	1	Inmate	Infractions
Garrity et al., 2002	US	176	4	Inmate	Health care
Gillespie, 2002; Lahm, 2008; 2009 [+]	US	1,054	30	Both	Infractions

Goncalves & Goncalves, 2012	PT	31	1	Inmate	Both
Goncalves, 2010	PT	79	1	Inmate	Infractions
Gover et al., 2008 (males)	US	190	6	Inmate	Infractions
Griffin & Hepburn, 2006	US	2,158	*na*	Inmate	Infractions
Hare et al., 2000 (English sample)	EN	652	7	Inmate	Infractions
Harer & Langan, 2001 (males)	US	177,767	*na*	Inmate	Infractions
Harer & Steffensmeier, 1996	US	24,327	58	Both	Infractions
Hassan et al., 2012	EN	391	5	Inmate	Health care
Hensley et al., 2003	US	*na*	226	Prison	Infractions
Huebner, 2003	US	4,168	185	Both	Infractions
Jiang & Fisher-Giorlando, 2002	US	186	1	Inmate	Infractions
Jiang & Winfree, 2006 (males)	US	8,934	207	Both	Infractions
Kellar & Wang, 2005	US	*na*	138	Prison	Infractions
Kroner & Mills, 2001	CA	97	1	Inmate	Infractions
Kroner et al., 1997	CA	101	1	Inmate	Both
Kuanliang et al., 2008	US	33,817	*na*	Inmate	Infractions
Lee & Edens, 2005	KR	777	30	Inmate	Infractions
Lindquist & Lindquist, 1999	US	198	1	Inmate	Health care
Loza & Loza-Fanous, 2002	CA	303	*na*	Inmate	Infractions
Loza et al., 2004	US	86	2	Inmate	Infractions
Lukemeyer & McCorkle, 2006	US	*na*	873	Prison	Infractions
Mills & Kroner, 2003a; 2003b (violent offenders) [+]	CA	138	1	Inmate	Infractions
Morris & Worrall, 2010; Diamond et al., 2012[+]	US	2,500	30	Both	Infractions
Morris et al., 2010	US	400	*na*	Inmate	Infractions
Nesset et al., 2011	NO	1,454	29	Both	Health care
Nobile et al., 2011	IT	468	4	Inmate	Health care
Orrick & Morris, 2012 (matched sample)	US	13,483	47	Inmate	Infractions

		N_i	N_p		
Pass, 1999	US	345	1	Inmate	Infractions
Reisig & Mesko, 2009 (prison record)	SI	102	1	Inmate	Infractions
Shaw & Morgan, 2011	US	278	3	Inmate	Both
Shermer et al., 2013*	US	8,442	111	Inmate	Infractions
Sorensen & Davis, 2011 (admission cohort)	US	13,816	na	Inmate	Infractions
Sorensen & Pilgrim, 2000	US	6,390	na	Inmate	Infractions
Sorensen et al., 2011	US	193	na	Inmate	Infractions
Steadman et al., 1991 (males)	US	3,537	na	Inmate	Health care
Steiner & Wooldredge, 2009 (1997 cohort)	US	8,566	175	Both	Infractions
Steiner, 2009 (2000 cohort)	US	na	512	Prison	Infractions
Suls et al., 1991	US	121	2	Inmate	Health care
Tartaro & Levy, 2007	US	na	150	Prison	Infractions
Tartaro, 2002	US	na	608	Prison	Infractions
Useem & Reisig, 1999; Reisig, 2002 [+]	US	na	298	Prison	Infractions
Walters & Geyer, 2005; Walters, 2006 (CODE sample); 2007b [+]	US	191	1	Inmate	Infractions
Walters & Mandell, 2007	US	136	1	Inmate	Infractions
Walters & Schlauch, 2008 (prison record)	US	159	1	Inmate	Infractions
Walters et al., 2003; Walters & Heilburn, 2010 (sample2) [+]	US	185	1	Inmate	Infractions
Walters, 1996; 1999 [+]	US	536	1	Inmate	Infractions
Walters, 2006 (LCP sample); 2007 [+]	US	219	1	Inmate	Infractions
Worrall & Morris, 2011	US	71,203	47	Both	Infractions
Worrall & Morris, 2012 (gang sample)	US	2,169	47	Both	Infractions
Young et al., 2004 (infractions in prison)	US	222	na	Inmate	Infractions
Young, 2002; 2003 [+]	US	359	1	Inmate	Health care

Note. [+] = aggregated studies; N_i = number of inmates (max.); N_p = number of prisons (max.); *na* = information not available/cannot estimate. CA = Canada, CH = Switzerland, EN = England, ES = Spain, IT = Italia, KR = Korea, NO = Norway, PT = Portugal, SF = Scotland, SE = Sweden, SI = Slovenia, US = United States of America, WL = Wales.

*the online first version of this paper was used and date 2012.

Appendix 4: Changes in Institutional Infractions and Health care Utilization over Time in Prison

	1ˢᵗ month (n = 75)	3ʳᵈ month (n = 67)	6ᵗʰ month (n = 60)	12ᵗʰ month (n = 55)	*Mean # Contrasts*
Severe infractions					
M (SD)	0.03 (0.16)	0.24 (0.52)	0.15 (0.40)	0.49 (0.94)	6.23†
Range	0 – 1	0 – 2	0 – 2	0 – 4	[1 -3 1 1]*
M_pred (SE)	0.03 (0.02)	0.12 (0.04)	0.05 (0.02)	0.08 (0.02)	
Minor infractions					
M (SD)	0.08 (0.32)	0.18 (0.42)	0.38 (0.58)	0.53 (0.90)	
Range	0 – 2	0 – 2	0 – 2	0 – 4	*n.s.*
M_pred (SE)	0.08 (0.04)	0.09 (0.03)	0.13 (0.03)	0.09 (0.02)	
Mental treatment					
M (SD)	0.47 (1.03)	1.04 (1.52)	1.57 (1.81)	3.76 (4.09)	
Range	0 – 6	0 – 6	0 – 8	0 – 18	*n.s.*
M_pred (SE)	0.47 (0.14)	0.51 (0.12)	0.52 (0.11)	0.63 (0.14)	
Physical treatment					
M (SD)	1.63 (1.27)	1.90 (1.62)	2.52 (2.02)	4.00 (4.12)	51.92***
Range	0 – 6	0 – 7	0 – 7	0 – 22	[-3 1 1 1]***
M_pred (SE)	1.64 (0.15)	0.95 (0.10)	0.84 (0.09)	0.65 (0.09)	[0 -1 0 1]*

Note. M = observed mean, *SD* = standard deviation of *M*; *M_pred* = predicted mean controlled for the length of the wave (Figures are based on those estimates), *SE* = robust standard error around *M_pred*. *Mean #* = test of equality of means (Wald χ^2); *Contrasts* = user-defined orthogonal contrasts between predicted means adjusted through Bonferroni's correction (for multiple comparisons).

† $p < .10$, * $p < .05$, *** $p < .001$, *n.s.* = not significant (two-tailed).

Appendix 5: Bivariate Analyses Regressing Outcomes on Predictor Variables

Predictor	Infractions		Health care	
	SI (b)	MI (b)	MT (b)	PT (b)
Time in prison	-0.01	-0.01	0.03	-0.07***
Age	-0.21	-0.11	0.17*	0.02
Education	-0.04	0.03	-0.14*	0.01
Portuguese	0.05	0.07	1.15***	0.17
Single	0.49	1.80**	-0.56	0.12
Visits	-0.04†	-0.01	0.01	-0.01
White	-0.72†	0.15	0.78**	0.18
Drug abuse history	0.48	0.52	0.77†	-0.03
Mental treatment history	-0.00	0.21	0.73*	0.17
BSI total (GSI)	-0.10	-0.43†	0.41†	0.01
BSI Somatization	-0.16	-0.31	0.35†	0.02
BSI Obsessive/Compulsive	-0.35	-0.05	0.22	-0.08
BSI Interpersonal sensitive	-0.03	-0.42*	0.37*	0.03
BSI Depression	-0.01	-0.46*	0.33†	-0.03
BSI Anxiety	-0.06	-0.42*	0.35†	0.05
BSI Hostility	0.44†	0.04	0.20	0.10
BSI Phobic anxiety	-0.04	-0.24	0.40†	-0.03
BSI Paranoid Ideation	-0.24	-0.28	0.20	-0.02
BSI Psychoticism	-0.28	-0.32†	0.25	-0.03
Age at 1st prison	-0.22	-0.22*	0.21*	0.11**
Arrests before age 16	0.41	0.58†	0.73*	0.15
Crime: drug related	-2.08*	-0.96	-0.01	0.19
Crime: property	1.20*	0.37	-0.01	-0.01
Crime: violent	-0.59	0.06	0.01	-0.16
Prior prison infractions	0.06	0.08*	0.03	0.01
Prior time served	-0.00	0.02†	-0.03*	-0.01
Sentenced status	-0.04	0.75*	-0.20	-0.09
LSI-R total score	0.02	0.02	0.07*	0.01
LSI-R Criminal history	0.17†	0.09	0.18*	0.06†
LSI-R Education/Employment	0.02	0.29*	-0.10	-0.01
LSI-R Alcohol/Drug problems	0.01	-0.02	0.10	-0.00
LSI-R Emotional/Personal	-0.22†	-0.11	0.35***	0.03
Severe infractions (SI)	–	–	0.35***	0.07

Note. b = unstandardized regression coefficient; SI = severe infractions, MI = minor infractions, MT = mental treatment, PT = physical treatment. Observations = 257, *n* = 75.

† *p* < .10, * *p* < .05, ** *p* < .01, *** *p* < .001 (two-tailed).