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The influence of importation and deprivation factors on prison adaptation: Insights from Chinese prisons

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ABSTRACT

While prison adaptation has been studied extensively in Western societies, relatively few studies have examined incarcerated people in China. Given the differences in sociocultural and prison environments, findings from Western nations may not be generalizable to the Chinese context. Adopting the importation and deprivation models, we specifically examine how incarcerated individuals' adaptation in the form of attitudes toward imprisonment and rehabilitation is shaped by various pre- and post-incarceration factors. Using a unique dataset collected in Zhejiang, China, we demonstrate that prison adaptation is associated more with importation factors than with deprivation factors. Specifically, prison adaptation is positively associated with the province of origin, parental attachment, peer attachment, and neighborhood cohesion. Furthermore, sentence length shows an unexpected positive association with adaptation. Situated in the literature, our findings further confirm that prison adaptation is a multifaceted phenomenon and that distinctive aspects of adaptation are evidently influenced by different sets of factors.

1. Introduction

As a crucial part of the research on imprisonment and rehabilitation, prison adaptation has been studied extensively, particularly in Western societies (see Steiner et al., 2014). Prison adaptation, or the lack thereof, has been identified as a multidimensional concept finding expression in, but not limited to, prison misconduct, disciplinary infraction, prison violence, overall well-being, feeling safe, physical and mental health, suicide, peer relationships, criminal thoughts, participation in rehabilitation activities, and attitudes towards the prison and imprisonment (see Lutze, 2001; Van Tongeren and Klebe, 2010; van der Laan and Eichelsheim, 2013; Tewksbury et al., 2014; Steiner et al., 2014; Brosens et al., 2016; Armour, 2012; Dye, 2010; van der Laan and Eichelsheim, 2013; Bowler et al., 2018). Regardless of its conceptualization and operationalization, the causes of prison adaption have been sought mostly from two theoretical models, i.e., importation and deprivation (Jiang and Fisher-Giorlando, 2002; Bowler et al., 2018).

The importation theory suggests that the personal characteristics that people bring with them into incarceration are the main factors explaining adaptation to imprisonment. Typically, importation factors include socio-demographic characteristics, such as age, marital status, gender, along with prior offending or risk characteristics, such as prior incarceration, gang affiliation, and drug use. Alternatively, deprivation theory stipulates that the most salient predictors of prison adaptation are those pertaining to the experience

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of imprisonment. The theory relates incarcerated individuals' adaptation, or maladaptation, to factors reflecting deprivation and loss within prisons, commonly described as the "pains of imprisonment" (Sykes, 1958). Such deprivation factors include sentence length, restricted family contact, lack of freedom, mistreatment, and prison security level. Both theoretical perspectives have received a good deal of empirical support (e.g. Steiner et al., 2014; Lahm, 2016; DeLisi et al., 2011; Dâmboeanu and Nieuwbeerta, 2016; Lai, 2019). Scholars have thus increasingly argued that prison adaptation is best explained by an integrated model of importation and deprivation theories (Steiner et al., 2014).

In contrast to the Western literature, prison adaptation remains an understudied area in China even though mental health issues, misconducts, and infractions during incarceration continue to be serious problems in Chinese prisons (Xu, 2018; Pan and Zeng, 2009; Xu and Qiu, 2007). While Chinese scholars acknowledge the importance of prison adaptation to rehabilitation of the incarcerated population and their general well-being during imprisonment, only limited efforts have been taken to understand the factors giving rise to such problems of prison adaptation. Relevant studies in China are mostly theoretical and descriptive in nature and thus fail to provide empirical accounts of differential adaptation to imprisonment among incarcerated individuals. An empirical study informed by importation and deprivation models would provide us with a better understanding of the process of prison adaptation in China and direct attention to policy implications facilitating healthier adaptation and more effective rehabilitation.

Building on prior research, the current study sets out to extend the literature by focusing on the general attitudes of people in incarceration toward prison life as a global measure of prison adaptation. Specifically, we construct and analyze a global attitude variable that reflects better adaptation to the prison in the form of a more positive attitude toward prison life and rehabilitation. Using a unique Chinese dataset on people experiencing imprisonment, we explore how a range of importation and deprivation factors help explain variation in this particular manifestation of prison adaptation.

2. The Chinese context

Chinese prisons are distinct from those in the West in multiple respects, including the administrative system, prison environment, daily routine, and correctional ideology. Regarding the administrative system, prisons in most Western countries are under the authority of a unified agency in a given jurisdiction (Hill, 2007a). Both the jails and the prisons are administered by a prison service, prison administration or department of corrections under the Ministry of Justice or other ministries. However, in China, the Ministry of Justice administers the prisons and reformatories, while the Ministry of Public Security is in charge of the jails. In addition, the penalties are executed by different institutions (Hill, 2007a).

The difference in prison environment is reflected in both prison structure and appearance. For example, in the U.S., prisons are generally classified by the level of security, while in China, there are only three types of prisons: reformatory, female prisons, and adult male prisons (Hill, 2007a). Furthermore, according to American Correctional Association standards, the designed capacity of prisons should not exceed 500 inmates (Hill, 2006). However, in China, limiting capacity is not as much valued (Wu, 2003). Unlike the diversity among Western prisons with respect to scale, capacity, security level, and functions, Chinese prisons are all fairly similar, especially in appearance – tall, thick walls with barbed or razor wire and watchtowers (Hill, 2006). The housing units in the Western countries have single cells or double cells and even one-inmate-per-cell rules are implemented in some countries. However, in China, the majority of housing facilities in prisons are dormitories (Hill, 2006).

The differences in prison systems are particularly important in terms of daily routines. In most of the Western countries, people in prisons have a greater level of freedom of choice for schedules and activities than their counterparts in China. Incarcerated persons in China are managed using the military-style and semi-military-style, and are often engaged in organized activities, such as moral education and labor work, on most of the weekdays (Hill, 2007a). Similar to most Western countries, imprisoned people are encouraged to participate in academic and vocational programs delivered in prison.

However, such programs in Chinese prisons face many challenges. For example, in many Western countries, academic teachers and vocational training instructors in prisons are individuals with relevant professional qualifications (Hill, 2007b). By contrast, Chinese prisons lack qualified instructors and often rely on prison staff. Also because of the lack of instructors, the inmate-to-teacher ratio in general is higher than that observed in Western prisons (Hill, 2007b). Other challenges with rehabilitation programs include lack of funding and equipment, the absence of a research-based unified rehabilitation and evaluation system, and obsolete pedagogy (Wan, 2007; Li, 2017).

Western and Chinese prison systems also exhibit important differences in ideological foundations. In Western correctional systems, especially in the U. S., the dominant correctional ideologies appear to be deterrence and retribution. Reflecting these correctional ideologies, the justice model of correction is favored over the medical model as a 'get tough' policy dominates the U.S. criminal justice system (Wu, 2003). The situation in China is different. As Wu and Vander Beken (2018) observed, the Chinese prison has two distinctive functions. The deterrence/punishment function emphasizes the shaming and repression for order maintenance, whereas the reformation function stresses the educative and rehabilitative value of imprisonment. Rehabilitation is upheld as the primary goal in Chinese prisons.

The approach to rehabilitation in China is closely related to traditional Chinese philosophy suggesting that people can be changed from within, and the majority of the imprisoned population can be reformed (Wu, 2003). Heavily influenced by features of Confucian culture that stress the importance of propriety and benevolence, prisons and correctional facilities typically consider correcting an inmates' mind and attitude as the starting point of holistic rehabilitation (Hu, 2012). To facilitate rehabilitation, people incarcerated in Chinese prisons are mandated to participate in moral education. The moral education is expected to help incarcerated individuals correct the delinquent beliefs and values that they held prior to imprisonment via lessons and consultations from both legal and ethical perspectives. Such moral education aims explicitly to assist people who are incarcerated in establishing a positive attitude towards the

prison, imprisonment, and rehabilitation. Such positive attitude in turn can be considered not only as a manifestation of prison adaptation, but also an indispensable foundation for successful rehabilitation (Wang, 2008; Hu, 2012).

Despite being an important component of prison adaptation, attitude of the incarcerated individuals in China has been largely neglected by the research community. Little is known about what factors shape an incarcerated person's attitude in Chinese prisons and how. In the absence of rigorous empirical research, the staff in Chinese prisons largely rely on conventional wisdom pertaining to moral education and ideological dictates in their efforts to facilitate prison adaptation with respect to attitude and belief. The lack of research in the Chinese context is particularly conspicuous given the large prison population, which continues to increase. According data released by National Bureau of Statistics of China, the prison population in China had reached 1.64 million in2011.[1] Based on statistics from the World Prison Brief,[2] the prison population in China has grown from 1.4 million to 1.7 million between the year 2000 and 2018. In other words, on average, there has been a steady annual increase of over 16,000 in the total prison population over the past two decades.

In sum, prisons in China differ from those in the West in important respects. Chinese prisons are guided by a distinctive cultural emphasis on the ways in which thought guides behavior, which plays a prominent role in the development and implementation of rehabilitation programming. Moreover, issues surrounding the prison population have become highly salient in contemporary China, given the steadily increasing prison population, the persistent mental and behavioral challenges confronting people who are incarcerated, and the lack of research to inform evidence-based policy. There is thus ample reason to assess the extent to which Western insights about the determinants of person adaptation are generalizable to the Chinese context.

3. Prior research

3.1. Theoretical models

3.1.1. Prisonization

Through investigation of prison life in a maximum security prison, Clemmer (1958) brought the latent inmate community to the attention of social scientists. One of his most important contributions was the concept of prisonization, which was defined as taking on the "folkways, mores, customs, and general culture of the penitentiary" (Clemmer, 1958, p299). Clemmer suggested that incarcerated persons are prepared to enter the prisonization process as they experience a number of "universal factors of prisonization", such as the acceptance of an inferior status, learning to suppress one's own needs, and striving to adopt to regulations and structure of the prison. For men and women behind bars, prisons act as total institutions which are cut off from the outside world. Through the process of prisonization, individuals' thoughts, feelings, and acts are shaped by prison norms, customs, and subcultures (Clemmer, 1958; Haney, 2003). The prisonization combined with other individual and institutional characteristics further shape various prison adaptation results.

3.1.2. Adaptation to prison: The deprivation model

Following Clemmer, a series of efforts were taken to explain prisonization as well prison adaptation results. One of the most prominent theories is the deprivation model, pioneered by Sykes (1958). Expanding Clemmer's work, Sykes (1958) argued that prison subcultures exhibit a common pervasive value system of people who are incarcerated, regardless of the location and characteristics of the institution. The value system is manifested as an explicit inmate code guiding individuals' behaviors and relationships with fellow prisoners and guards. In particular, Sykes (1958) argued that incarceration is bound up with the "pains of imprisonment" as individuals are deprived of liberty, goods and services, heterosexual relationships, autonomy and security. Such deprivations affect adaptation to prison life in various ways because they may increase individual opposition (e.g. violence or suicide) or produce solidarity, cooperation, and subcultures among the incarcerated (Dye, 2010). In other words, prisoners' adaptation to imprisonment is thus the result of both sufferings caused by deprivation and the efforts taken as coping strategies. Therefore, the overall argument made by the advocates of the deprivation models is that behaviors of imprisoned individuals are largely determined by prison-specific factors, or in other words, by the correctional environment rather than their personal characteristics (Cao et al., 1997; Jiang and Fisher-Giorlando, 2002). The theory has inspired a large body of literature at both macro- and micro-levels. At the macro-level, researchers were concerned over how harsh prison settings and management strategies affect rates of misconducts in prison, such as suicide, homicide and other violent acts (see Franklin et al., 2006; McCorkle et al., 1995). At micro-level, deprivation factors have been examined for their effects on various aspects of individual attitude and behaviors, e.g., frequency and probability of misconduct.

3.1.3. Adaptation to Prison: The importation model

The *importation model*, in contrast, shifts the focus of attention. Developed in the 1960s, advocates of the importation approach do not consider the prison as a truly closed system (Irwin and Cressey, 1962). Rather, prisons are seen as systems that interact with the outside world, thereby allowing prisoners to bring their social backgrounds and personal characteristics into incarceration (Huebner, 2003; Jiang and Fisher-Giorlando, 2002; Lahm, 2008). Therefore, advocates of the importation model believe that adaptation to

[1] China Statistical Yearbook 2003–2012, Table 23–10, http://www.stats.gov.cn/tjsj/ndsj/. Last visited on 06/16/2020. Unfortunately, National Bureau of Statistics of China had stopped releasing prison population data in 2013.

[2] See World Prison Brief for relevant information on prison population, https://www.prisonstudies.org/country/china. Last visited on 06/18/2020.

imprisonment is determined to an appreciable degree by characteristics of prisoners themselves (Dye, 2010; Brosens et al., 2016).

Emphasizing different approaches to prison adaptation, the importation and deprivation models are commonly considered to be complementary in providing us with a fuller picture of socialization, integration and rehabilitation of incarcerated people in prison (e.g. Jiang and Fisher-Giorlando, 2002; Steiner et al., 2014). For example, some researchers have compared explanatory powers of the two models and found differential results depending on the specific dependent variable examined (Jiang and Fisher-Giorlando, 2002; Lahm, 2008; Slotboom et al., 2011; Lai, 2019).

3.2. Previous findings

In their discussion of the multidimensionality of prison adaptation/adjustment, Van Tongeren and Klebe (2010) argued that prison adaptation could be categorized into three large categories including prison adjustment, societal adjustment, and criminal thinking. The three categories were respectively defined by incarcerated individuals' ability to satisfactorily transition into the prison environment, their orientation toward long-term societal rehabilitation, and their thoughts pertaining to criminal thinking, norms and subcultures. In terms of the ability to satisfactorily transition into the prison environment, a great deal of studies employing the importation and deprivation models have focused on negative behavioral responses to imprisonment, particularly prison violence, misconduct, and disciplinary infraction (see Steiner et al., 2014; Ricciardelli and Sit, 2016; Leigey, 2019; Connor and Tewksbury, 2016). Regarding the deprivation model, previous studies have demonstrated that such factors as time served in prison, prison security level, victimization in prison, sentence length, mental health problems are likely to enhance the level of maladaptation (see Steiner et al., 2014; Dye, 2010; Dhami et al., 2007). On the other hand, factors like prison visits, contact with family, family support, healthy relationships with peers in person and prison staff, and participation in religion or training have been shown to facilitate successful adaptation to prison life and reduce the likelihood of misconduct and infractions (Steiner et al., 2014; Lai, 2019). In terms of the importation models, researchers have found that being a young single male or a racial/ethnic minority, lower education level, prior gang membership, drug use, abuse and victimization prior to imprisonment, volatile temper and previous prison misconduct are generally associated with more problematic behaviors and worse prison adaptation (Steiner et al., 2014; Kigerl and Hamilton, 2016; Lai, 2019). By contrast, being married, having children, prior employment, and higher education level appear to facilitate adaptation (Steiner et al., 2014; Leigey, 2019).

Bowler et al. (2018), on the other hand, examined the effect of a range of importation factors on mental health status of people who are incarcerated using data from two UK prisons. The authors discovered that pre-prison dispositions, childhood sexual abuse, and learning difficulties at school were strong predictors of mental health problems. Also examining psychological well-being, Slotboom et al. (2011) compared importation and deprivation factors in terms of explanatory power over depressive complaints, irritability, and risk of self-harm. Specifically, the authors found that all three indicators of adaptation were predicted by both sets of factors, but the evidence suggested that the deprivation factors exert greater impact than importation variables. Shifting to other dimensions of adaptation, van der Laan and Eichelsheim (2013) studied the relationship between importation/deprivation factors and four distinct dependent variables including feeling safe, autonomy, well-being, and aggressive misconduct. Based on data from 207 juvenile offenders incarcerated in Dutch juvenile correctional institutions, the authors found gender and number of previous detentions as strong predictors for well-being and feeling safe, respectively. Furthermore, controlling for importation factors, strong associations of adaptation to imprisonment were found with interactions with peers and staff, justice, daily activities, and the number of juveniles in a group.

Scholars have also examined inmates' participation in rehabilitation programs as an importation indicator of prison adaptation (see Brosens et al., 2016; Bowler et al., 2018; Dhami et al., 2007; Dye, 2010; Slotboom et al., 2011; van der Laan and Eichelsheim, 2013). Brosens et al. (2016), for example, examined factors determining inmate adaptation measured as participation in prison activities. Using survey data collected from 486 imprisoned persons in Belgium, the authors found that both importation factors (e.g. age, children, and language) and deprivation factors (e.g. prison visits and time served) are salient predictors of participation. Another study that examined participation was conducted by Dhami et al. (2007). The authors studied various aspects of prison adaptation, including participation in the regimen, individuals' thoughts, emotions, and misconduct. The authors found that both time spent in prison (deprivation factor) and quality of life before prison (importation factor) produced strong effects on incarcerated people's participation in programs, their thoughts of needing control over their lives, feelings of hopelessness, and disciplinary infractions in prison.

Research on incarcerated individuals' thoughts, attitude, values and subcultures have also yielded a sizeable literature, particularly those examining inmate code and prison gangs (e.g. Wellford, 1967; Jensen and Jones, 1976; Goodstein, 1979; Trammell, 2009; Wiernik, 2013; Mears et al., 2013; Scott, 2014). Researchers have found that criminal thoughts, attitude and adoption of inmate code and subcultures are under the influence of a wide range of both importation factors, such as gender, religious affiliation, previous gang membership, drug history and code of the street (e.g. Jensen and Jones, 1976; Winfree et al., 1994; Mears et al., 2013), as well as deprivation factors like sentence length, length of imprisonment, and prison staff performance (Molleman and Leeuw, 2012; Wellford, 1967).

While it is widely acknowledged that the relationship between attitude and behavior is complicated and one does not necessarily

predict the other, research has shown that the association between them can be strong in certain contexts (Montano and Kasprzyk, 2015; Bohner and Dickel, 2011). For example, studies on imprisoned individuals have demonstrated that while criminal thoughts, attitude, and subcultures do not perfectly predict their behaviors during imprisonment, a prosocial and positive attitude towards imprisonment and rehabilitation appears to not only reduce misconduct in prison, but also decrease the chance of post-release recidivism and facilitate reintegration (Scott, 2014; Goodstein, 1979; Pizarro et al., 2014; Cochran and Mears, 2017; Pyrooz et al., 2016). Therefore, a positive attitude toward prison life and rehabilitation is not only a crucial aspect of prison adaptation, but also a critical conduit to the general positive adaptation to prison life and social reintegration upon release.

3.3. Research in China

As noted, the prior literature on prison adaptation based on importation and deprivation approaches has focused primarily on prisoners in Western societies (see Steiner et al., 2014), and little is known about how these models apply to prison adaptation for people incarcerated in China., especially with respect to attitude towards prison life and rehabilitation. The study by Lai (2019) is one of the few that explored prison adaptation in the Chinese context. Lai studied the effects of importation and deprivation factors on a group of juvenile offenders in Taiwan. The author found that such deprivation factors as imprisonment stress, time served, and victimization during incarceration increased the levels of violent misconduct. Likewise, imported risk factors including prior gang membership, volatile temper, and pre-commitment victimization also elevated violent misconduct. On the other hand, ongoing support from family and healthy relationships with prison staff was associated with less violent behaviors.

Enriching the existing literature on prison adaptation in mainland China, Zhao et al. (2019) conducted research examining one particular aspect of adaptation, i.e. participation in rehabilitation programs using data from prisons in Zhejiang province. Given the focus, the authors situated their analyses with reference to the "push/pull perspective" that has been commonly applied in studies of participation in rehabilitation programs. Specifically, their analyses considered how incarcerated individuals were pushed or pulled into differential participation in vocational and academic training by specified pre- and post-incarceration factors. The results revealed that some factors found to affect participation in the West (e.g. marital status, having children, and relationships with parents, friends, and the neighborhood) failed to exhibit significant relationships with participation among people serving sentences in the selected Chinese prisons. In addition, the factors most significantly associated with participation were those that were incarceration-related, such as prison visits, prison phone calls, and sentence lengths. Lastly, some independent variables performed differently across sex-specific groups and types of program. For example, prison visits exhibited significant associations with the dependent variables (any participation, participation in vocational programs only, and participation in both programs) only for females.

The current study builds upon the prior research, particularly the study by Zhao et al. (2019), by examining incarcerated individuals' general attitude toward prison life and rehabilitation. Given our focus on general attitudes toward the prison setting, we structure our analyses with reference to the "importation/deprivation" framework. Many of the predictor variables relevant to the "push/pull" framework applied in the research on participation in rehabilitation programs can be readily incorporated into the importation/deprivation framework. By broadening the scope of the dimensions of prison adaptation under examination, our analyses permit not only a comparison of the applicability of importation/deprivation theoretical arguments across Western and non-Western contexts, they also allow for an assessment of the generalizability of predictors across different domains of prison adaptation.

4. The current study

The current study examines the effect of a range of importation and deprivation factors on our generalized indicator of prison adaptation, namely, expressing positive attitudes towards specified features of the prison setting. Building on the existing literature, we include variables that have been commonly examined, such as gender, age, marital status, having children, sentence length, prison visit/phone call, and time served. In addition, factors that have been understudied are also included in our analysis as enumerated below. Furthermore, we include several factors that are unique to the Chinese context and the sample, including urban Hukou status and location of origin.

4.1. Hypotheses

We formulate a set of hypotheses for each theoretical model in light of previous findings:

Hypothesis 1. Controlling for deprivation factors, the importation variables, i.e. age, delinquent propensity, peer criminality, negative emotion and prior incarceration will be negatively associated with the indicator of successful prison adaptation. On the other hand, higher education level, being married, having children, possessing urban Hukou, being from the same province where the prison is located, good relationships with parents, friends and neighborhood, and higher self-control will be positively related to the indicator of successful prison adaption.

Hypothesis 2. Controlling for importation factors, sentence length and time served in prison, will be negatively associated with the indicator of prison adaptation. By contrast, frequent prison visits and phone calls will be positively related to the indicator of successful adaptation.

4.2. Data and method

[3]The current study employs survey data collected from inmates incarcerated in Zhejiang, a Southeastern coastal province of China. The procedures for the research were approved by the prison authorities, and they complied with widely accepted ethical standards in similar research in China (see Kong, 2019; Jin, 2017; Liu, 2015). Before conducting research in Chinese prisons, researchers must first acquire permission from prison administrators who will then assist with the administration of surveys or interviews (Kong, 2019; Jin, 2017; Liu, 2015). Respondents in the study were selected using a stratified random sampling design. In the first stages of sampling, researchers selected four out of the total 14 prisons in the province, 9 provisional prisons, and 5 municipal prisons. Each of the selected prisons represents a particular type of prison with respect to inmates' gender and terms of sentence. Of the four prisons, three are populated by male inmates and the other one by female inmates. The female prison (Zhejiang F Female Prison) holds female offenders who were serving a range of sentences. Of the three male prisons, one is populated by inmates sentenced for more than 15 years (Zhejiang T Prison). A second male prison holds inmates who serve a sentence between 3 and 15 years (Zhejiang Q Prison). A third prison consists of comparatively less serious male inmates who were serving 3 years and below (Hangzhou S Prison). The prison with the less serious male offenders was selected from the municipal prisons, while the other three prisons, including the women's prison, were selected from the provisional prisons. Given that the sampling design over-samples females and differs somewhat from males with respect to the types of prions represented, we conduct statistical analyses and report the results separately for the two sexes.

The target sample was to include 2000 inmates, 500 from each selected prison. Given that participation in the research was completely voluntary, researchers ended up with an effective sample size of 1933, 500 from Zhejiang Q Prison, 497 from Zhejiang T Prison, 444 from Zhejiang F Female Prison, and 492 from Hangzhou S Prison. The overall participation rate was about 97%, which is consistent with other prison surveys that have been officially authorized and conducted in China (see Ke et al., 2018; Shao, 2017; Ma, 2009; Zhejiang Qiaosi Prison Research Committee, 2016). Respondents in general showed interest in the survey and were largely cooperative in filling out the questionnaire. We offered a very small appreciation gift to each participating inmate as it helped build a friendly atmosphere at the site which in turn enhanced respondents' willingness to fill out the survey carefully.

The research team administered the survey in the four selected prisons in July and August of 2014. The general procedure was similar in each survey site. The research group leader first introduced all of the researchers involved in the data collection, who were members of a juvenile delinquency research society in the province. Then, he explained the nature and scope of the survey. The group leader emphasized that the survey was completely anonymous and voluntary, and that the respondents had the liberty to refuse to answer any questions. Respondents were also assured that the data would be used only for academic research and would not be shared with the prison administration or any other official agencies. Oral consent was acquired from each participant. Lastly, the group leader explained that the results of the research would hopefully be beneficial to the imprisoned population, stimulating better public policies with respect to rehabilitation and future job prospects for people released from prison.

The surveys were conducted in a work site in prison during break hours, and the average time for completing the survey was about 30 min. The respondents were advised to fill in the questionnaire carefully based on their own situation and understanding of the questions. They were allowed to ask the researchers on site for clarification if necessary. In the very small number of cases with illiterate respondents (4 in the prison with sentences from 3 to 15 years, and 9 in the women's prison), the researchers provided assistance in completing the questionnaire with his/her permission.

Because respondents had the option to refuse to answer any of the questions, missing values were observed for various variables. Preliminary regression analysis revealed that an appreciable share of the sample would be excluded with listwise deletion – 483 cases (24.95%). Therefore, we applied multiple imputation (with STATA). The missing data display a non-monotone missing pattern, so we implemented multiple imputation with the MICE (Multiple Imputation by Chained Equations) method. The sample N after the multiple imputation is 1933. Imputation summary statistics are presented in Appendix B. Specifically, we present the number of cases with a valid value for each variable along with the number of missing values for both males and females. Imputation has been implemented for all missing values in the analyses reported below.

It is worth noting that cases that would be omitted in listwise deletion because of a missing value for any variable in the analyses nevertheless frequently contain much information. To be more specific, the total number of cells in our male dataset is 28,291 = 1489 (the male sample size) * 19 (total number of variables). The number of cells with missing value is 1788 (see Appendix B). Therefore, the cell missing percentage for males is fairly low, being 6.32%. By the same token, the cell missing percent is 5.263% for females and 6.142% for the whole sample. We nevertheless conducted additional analyses to ensure the appropriateness of our imputation technique. First, we conducted an MCAR (Missing Completely at Random) test in Stata for males and females separately. Test results, i.e. coefficients and p-values, are presented in Appendices C and D. As shown in the Appendices, we discover that the null hypothesis is rejected for males ($p = 0.0204$) but not females ($p = 0.117$), meaning that missing values in the male sample were not completely at random. Accordingly, as a second step, we compared results from models with and without imputation for missing values for both gender groups and found only marginal differences in the magnitude of the coefficients (see models 3 and 6 in Table 2 for results from

[3] The description of the sampling and data collection draws upon [Zhao et al., 2019].

the male and female samples). This suggests that while the missing values in the male sample were not completely random, our imputation does not alter the conclusions derived from its use in significant ways.

4.3. Measures

Our prisoner data contain a range of inmates' pre- and post-imprisonment characteristics. Pre-imprisonment information depicts their socioeconomic status, demographic characteristics, psychological characteristics, social networks, and a number of potentially relevant experiences, such as those with offenses and incarceration. Post-sentence information indicates inmates' experience with incarceration, such as sentence length, time served and prison visits and phone calls.

4.3.1. Dependent variable

Our dependent variable is conceptualized as adaptation to the prison in the form of more positive general attitudes toward the experience of incarceration. We created a composite measure based on seven survey items (see Appendix A) to capture two components of such attitudes. The first three items indicate the respondents' perceptions of the quality of their relationships with incarcerated peers and prison staff. The remaining four questions probe respondents' personal evaluations of the importance of prison staff support and group activities during the time of imprisonment, and the importance of vocational and academic programs for the rehabilitation of incarcerated people in general. Note that these latter four items do not ask respondents to assess their prison's actual performance in offering such support and delivering the specified programs. Rather, the items capture respondents' evaluations of the importance of such accommodations.

Each of the items features a Likert-scale response set that ranges from 1 (strongly disagree) to 5 (strongly agree). The composite score is created using the principal component analysis with a single-component solution. Since gender-specific regressions are conducted in this study, all composite scores based on factor analysis are created for males and females separately. Factor loadings of the seven items range from 0.542 to 0.777 for males and 0.502 to 0.824 for females. A higher final factor score indicates more positive attitudes toward prison life and rehabilitation, thereby suggesting more successful adaptation. Table 1 presents descriptive statistics for male and female samples, respectively. As a factor score, the average of prison adaptation is 0 for both gender groups. The value ranges from −5.189 to 4.012 for males and −4.779 to 3.614 for females.

Table 1
Descriptive statistics by sex.

	Male				Female			
	Mean	s.e.	Min	Max	Mean	s.e.	Min	Max
Dependent Variable								
Prison Adaptation	0	0.028	−5.189	4.012	0	0.051	−4.779	3.614
Importation Variables								
Age	32.874[a]	0.225	18	68	36.693	0.513	16	61
Education	2.048[a]	0.026	1	6	2.508	0.070	1	6
Marital Status	0.381	0.013	0	1	0.411	0.024	0	1
Children	0.499[a]	0.013	0	1	0.648	0.023	0	1
Urban Hukou	0.157[a]	0.010	0	1	0.403	0.023	0	1
Province of Origin	0.636[a]	0.014	0	1	0.427	0.025	0	1
Delinquency	2.422[a]	0.087	0	30	1.838	0.122	0	14
Parental Relationship	0	0.027	−3.938	4.052	0	0.049	−4.103	3.482
Friendship	0	0.028	−4.832	3.088	0	0.049	−3.814	3.011
Neighborhood Relationship	0	0.028	−5.836	4.295	0	0.049	−3.833	3.296
Peer Delinquency	0	0.027	−3.867	5.516	0	0.048	−3.234	5.605
Low Self-Control	0	0.028	−3.913	3.982	0	0.049	−3.242	4.135
Negative Emotion	0	0.028	−4.295	3.608	0	0.050	−4.038	3.197
Deprivation Variables								
Sentence Length (logged)	4.301	0.026	0.693	7.878	4.367	0.048	0.788	7.548
Time Served (logged)	3.324	0.023	0	5.920	3.150	0.048	−0.693	6.316
Prior Incarceration	0.247[a]	0.012	0	1	0.082	0.014	0	1
Visits	3.120[a]	0.114	0	50	4.291	0.299	0	90
Phone Call	3.205[a]	0.110	0	30	4.351	0.276	0	36
N	1489				444			

**N* indicates the number of cases.
[a] The mean of the male group is significantly different from that of the female group at .05 probability level.

4.3.2. Deprivation variables

We include four post-imprisonment variables: sentence length, time served, prison visits, and prison phone calls. Sentence length is measured as the total number of months respondents need to serve for the current incarceration. We took natural logarithm of the original value to correct skewness. The average value is 4.301 for males and 4.367 for females and not significant difference is observed for the two gender groups. Similarly, time served is measured as the logged total number of months respondents have spent in prison for their current sentence. The average value of time served is 3.324 for males, being marginally higher than that for females. Both prison visits and prison phone calls indicate respondents' contact with the outside world, particularly with their families. The two variables are constructed based on respondents' self-report indicating the number of times an incarcerated person's family called or visited him/her in the past 12 months. The average number of prison visit for males is 3.120, with some people received no visit in the past 12 months while others received as many as 50 visits. The average number of visits for females is 4.291, significantly higher than that for males. A similar pattern is observed for phone calls where the average number of prison calls received by females is 4.351 compared to the lower number for males (3.205).

4.3.3. Importation variables

Compared to deprivation factors, importation variables available in the data set are more extensive. First, our importation variables feature a number of demographic characteristics. Age is measured as a continuous variable coded in years ranging from 16 to 68. The male sample has an average age that is statistically lower that females. Education level is an ordinal variable ranging from 1 (Primary school and below) to 6 (Bachelor's degree and above). On average, female respondents are better educated than their male counterparts. Marital status is a binary variable where respondents who are currently married are coded as "1" and otherwise "0". The average proportion of respondents' report being married is 0.381 for males, which is lower than that for females. However, the difference is not statistically significant. Individuals with one child or more are coded "1" for the variable having children and "0" otherwise. On average, more female respondents (64.8%) report having children than males (49.9%). Hukou is a unique demographic characteristic in the Chinese context. It indicates both specific location of birth and type of that location, being either urban or rural. People holding a rural Hukou status are often associated with economic disadvantage and social discrimination (Han, 2010; Zhang, 2001). In this study, respondents holding an urban Hukou are coded as "1" and those holding a rural Hukou are coded as "0". A bit over 40% of the female sample reported to have urban Hukou compared to only 15.7% for males. Another relevant variable is province of origin. Incarcerated individuals with language and cultural barriers are faced with greater difficulty adjusting to imprisonment as they are prevented from effective communication with prison staff and meaningful rehabilitation experiences (see Barkan et al., 2011). The Chinese population exhibits great diversity in terms of culture, dialect, custom, and lifestyle. It is reasonable to expect prison adaptation to be harder for those who are held in areas with cultures and languages that are very different from their own. Our variable thus

Table 2
Standardized coefficients of importation & deprivation variables by sex.

	Male			Female		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Importation Variables						
Age	0.043	−0.022	−0.064	−0.058	−0.111	−0.094
Education	−0.044	−0.054	−0.062	0.068	0.001	−0.006
Marital Status	−0.026	−0.045	−0.025	0.002	0.000	0.019
Children	0.006	0.001	0.012	0.065	0.029	0.043
Urban Hukou	0.013	0.026	0.033	−0.009	−0.011	−0.017
Province of Origin	0.104*	0.070*	0.079*	0.049	0.046	0.121
Delinquency	−0.157***	−0.045	−0.075	−0.163**	−0.022	0.074
Parental Attachment	/	0.135***	0.118***	/	0.128*	0.106*
Peer Attachment	/	0.137***	0.139***	/	0.167**	0.161*
Neighborhood Cohesion	/	0.238***	0.232***	/	0.198***	0.167*
Peer Criminality	/	−0.048	−0.037	/	−0.117*	−0.144*
Low Self-Control	/	−0.045	−0.045	/	−0.051	−0.097
Negative Emotion	/	−0.006	−0.023	/	−0.036	−0.073
Deprivation Variables						
Sentence Length	0.143*	0.105*	0.125*	0.201**	0.188**	0.199*
Time Served	−0.081	−0.078	−0.050	−0.159	−0.127	−0.138
Prior Incarceration	−0.133**	−0.038	−0.043	−0.092	−0.088	−0.091
Visits	0.018	−0.016	0.008	0.034	−0.006	−0.086
Phone Calls	0.079*	0.055	0.032	0.011	0.033	0.045
Constant	0.043	0.137	0.119	-.174	0.048	0.210
Adjusted R-squared	.059	.195	0.198	.057	.218	0.171
N	1489	1489	1099	444	444	351

*p < 0.05; **p < 0.01; ***p < 0.001.

indicates whether a respondent's place of origin and the prison where they are currently held are in the same province, i.e. Zhejiang. A person is coded "1" if so and "0" otherwise. Compared to females, male respondents are much more likely to come from Zhejiang province (63.6%).

In addition to demographic information, additional importation variables reflecting respondents' pre-imprisonment predisposition and experiences are considered. Delinquency propensity is measured by the number times a person had committed a set of delinquent behaviors (e.g. domestic violence, illegal drug use, and vandalism). A Cronbach's Alpha of .646 indicates reasonable internal consistency. The values range from 0 to 30 for males, with a mean of 2.422 which is significantly higher than that for females (1.838). Furthermore, the delinquent propensity values range between 0 and 14 for females. Prior incarceration is a binary variable to indicate whether a respondent had been imprisoned prior to the current incarceration. The value "1" indicates the record of previous incarceration and "0" otherwise. About 25% of male respondents had prior incarceration compared to on 8.2% among females.

To indicate incarcerated persons' relationships with family, friends, and the neighborhoods lived in prior to incarceration, we construct a variable for each using principle component analysis. Specific items used to construct each variable are shown in Appendix A along with factor loadings. Finally, criminal peers, negative emotions, and low self-control are included in our model. These variables, as well as the aforementioned relational variables are not derived strictly from the importation perspective, but rather from other prominent criminology perspectives on social bonds, social control, differential association, strain and self-control. These are not considered as importation factors in the classical sense and thus rarely included in prison studies employing importation perspective. However, they are included in the current study for two reasons. First, these variables, broadly speaking, reflect personal characteristics incarcerated persons import into prison and could produce significant influence on their attitude, socialization, behaviors and mental status, and rehabilitation during incarceration. Second, prior research in China had not empirically examined how attitude and other aspects of prison adaptation are affected by these factors, and our unique data offers such opportunity.

Our operationalization of associations with criminal peers, negative emotions (as a proxy of strain) and low self-control follows well-established practices in Western research (see respectively Akers and Jensen, 2006:47; Kim et al., 2011; Grasmick et al., 1993). Following previous procedures, we conducted principle component analysis to create a composite measure for each variable (see Appendix A for specific item and factor loadings). Again, as factors scores, these variables display a mean value of zero. Minimum and maximum values are reported in Table 1 for both males and females.

4.3.4. Control variable

In the statistical models, we control for prison sector to minimize the effect of a range of unmeasurable contextual differences that might influence prison adaptation, such as routine activities of incarcerated individuals, rehabilitation policy and program provided, and the number of prison staff. Sampled respondents come from 16 prison sectors, 13 holding males and 3 holding females. Since we analyze the data separately for males and females, we arbitrarily selected one prison sector from each sex-specific group as the corresponding reference category.

5. Results

To explore our research questions, we conducted gender-specific regression analysis in three steps. First, for each gender group, we started with a model excluding variables that are not traditionally considered as importation factors, including parental attachment, peer attachment, neighborhood cohesion, peer criminality, low self-control and negative emotion (as a proxy for strain). This model allows us to compare our results with findings from prior studies where such variables were not considered. This step is followed by a complete model[4] in which all variables are included. The first two steps are realized with imputed data. Lastly, as mentioned earlier, we ran a complete model with listwise deletion of cases with missing values. This model is implemented as a sensitivity check for our imputation.

Our regression results are presented in Table 2. To address our research question, we present standardized coefficients in Table 2 as they allow us to compare explanatory power of each variable. Unstandardized coefficients and standard errors are included in Appendix E. While we include prison sector as a control variable in our models, it fails to show a significant effect on prison adaptation for either sex. Therefore, we do not include the coefficients for prison sector in the table. Starting with males, province of origin in Model 1 is positively associated with prison adaptation, meaning that individuals who are from the same province as they are currently incarcerated, i.e. Zhejiang province, are better adapted to the prison. Delinquency propensity is negatively associated with prison adaptation. This finding is consistent with the literature that imprisoned persons with longer and more serious criminal/delinquent history, or stronger attachment to criminal thinking were less able to adapt to prison life in both attitude and behavior.

Switching to deprivation factors, sentence length shows a positive association with prison adaptation, indicating that male respondents with longer sentence are better adapted to prison. This finding contradicts our hypothesis. In their study on long-term imprisonment, Crewe et al. (2017) discussed prison adaptation as a dynamic process in which prisoners shift from a reactive agency to one that is productive. In other words, people with long-term sentences learn to accept their predicament and to find purpose and meaning in their lives in prison. As the authors observed, such incarcerated individuals have learned to "swim with, rather than against, the tide of their situation" (p. 517). These people develop what Schinkel (2014) describe as "coping-acceptance" as they suppress feelings of frustration and resentment about their conviction or sentence length, and refuse to struggle in a futile fashion

[4] We checked variance inflation factors (VIF) for multicollinearity based on this full model. VIF values range from 1.14 to 3.26 for males, and 1.08 to 2.41 for females. As these values are well below the usual criteria, multicollinearity is not a problem for this study.

against the circumstances that could not be overcome (Crewe et al., 2017). Therefore, it is plausible to speculate that people with longer sentence are better adapted to prison insofar as they have prepared themselves mentally and psychologically for the long-term predicament. Prior incarceration in Model 1 is negatively associated with prison adaptation, while more phone calls during incarceration is associated with better adaptation.

Turning to the complete model for the male sample (Model 2), the positive association with prison adaptation observed for province of origin is reduced in strength considerably but remains significant. Among the newly introduced variables, all three relational variables show significant positive associations with prison adaptation. Specifically, male respondents with stronger parental attachment, peer attachment, and neighborhood cohesion have better prison adaptation. The positive relationship between parental attachment and adaptation echoes one of the findings by Lai (2019) wherein family support facilitated prison adaptation as it reduced violent misconduct. Other demographic and risk factors fail to show any significant association with prison adaptation. The negative effect observed for delinquency propensity disappears in Model 2. One possibility is that the effect is explained by the relationship variables, suggesting that people with stronger parental attachment, peer attachment and neighborhood cohesion are less likely to have both a lower delinquency level in general and better adaptation during incarceration. Taken together, our findings based on the male sample provide support for the hypothesis regarding importation variables.

Regarding deprivation variables, the positive effect of sentence length remains, although the strength is reduced. On the other hand, neither prior incarceration nor phone calls in prison show any significant relationship with prison adaptation. It thus appears that the effects for these variables observed in Model 1 are explained away with the introduction of the three relationship variables. Results presented in Model 3 are largely the same with those in Model 2, except for marginal changes in the magnitude of coefficients. Overall, our findings for males failed to provide support for the hypothesis pertaining to deprivation factors.

Turning to the female sample, similar findings emerge for relationship variables. Similar to their male counterparts, female respondents with stronger parental attachment, peer attachment, and neighborhood cohesion are better adapted to prison. In addition, we also observe a negative effect of delinquency propensity on prison adaption only in the partial model (Model 4), which becomes insignificant in the full models (5 and 6). Furthermore, the full models show that peer criminality is a salient predictor of prison adaptation as it reduces a person's positive attitude toward prison and rehabilitation. Therefore, our findings on the female sample also provide support for hypotheses for the importation variables. In terms of deprivation factors, contrary to our hypothesis, we again find that a longer sentence length is related to better adaptation. Therefore, our results for females also fail to provide support for the hypothesis on deprivation factors.

Considered as a whole, prison adaptation, conceptualized and measured as incarcerated individuals' general attitude toward the prison life and rehabilitation, shows more associations with importation factors than deprivation factors. Specifically, the regression coefficients reveal that respondents' attitude toward prison life and rehabilitation is shaped more by pre-incarceration characteristics than post-incarceration attributes. This particular finding is also supported by changes in adjusted R-squared. The adjusted R-squared values are 0.079 and 0.057 for males and females in the partial models. After introducing additional importation variables, the adjusted R-squared increases to 0.195 and 0.218 respectively for the two gender groups.

6. Summary & conclusions

The current study applied the importation/deprivation framework to examine prison adaptation conceptualized and measured as incarcerated individuals' overall attitude toward prison life and rehabilitation using survey data from China. Overall, our findings provide support for the importation framework. Stronger parental attachment, peer attachment and neighborhood cohesion in particular are salient predictors of better prison adaptation in the form of general attitude for both male and female samples. Furthermore, province of origin is significantly associated with adaptation for males. Individuals originating from the Zhejiang province, where they are currently incarcerated, are better adapted to the prison. This finding provides evidence not only for our hypothesis regarding importation factors, but also for the idea that imprisoned males with language and cultural barriers face greater adversity in prison adaptation and rehabilitation. The absence of any relationship for females is curious and constitutes an important task for future theorizing and research.

Our hypothesis pertaining to deprivation factors receives little support. Contrary to our expectation, we find that sentence length is positively associated with prison adaptation for both males and females. Sentence length is the only variable with consistent performance across models and gender groups. And for males, prior incarceration and phone calls are significantly associated with prison adaptation only in the partial model.

Our finding that prison adaptation is most significantly associated with importation variables, particularly attachment to parents and peers, and neighborhood cohesion, stands in contrast to Zhao et al. (2019) results for prison rehabilitation program participation. They found that the most significant factors were incarceration-related. Combined with findings from prior studies, our research suggests that prison adaptation is a multi-faceted phenomenon. Different dimensions of adaptation evidently react to importation and deprivation factors in different ways, and both sets of variables need to be considered to better assist incarcerated individuals for adaptation and rehabilitation. Furthermore, we caution against generalizing findings on the effects of importation/deprivation factors for a specific aspect of prison adaptation to other dimensions.

Our study also offers important policy implications. Specifically, the findings on the relationship variables points to the fact that

prison adaptation and rehabilitation should not be a burden imposed exclusively on the prison and its staff, but instead is a shared mission of the prison, families and friends of the incarcerated, and the larger society. As we study factors affecting prison adaptation and rehabilitation within the prison setting, it is important also to examine the factors that had brought people into the prison, such as poor education, weak social bonds with parents and friends, neighborhoods filled with poverty, instability, hostility and crime. Therefore, the prison needs to be connected with the larger community and with imprisoned persons' families and friends in order to create holistic plans to help them adapt to the prison life, and prepare them for reintegration upon release. In addition, our finding for province of origin underscores the importance of providing extra assistance and care to incarcerated individuals from areas with dialect, culture, customs, and socioeconomic characters that differ from the region in which the prison is located. Prison administrators should strive to mitigate psychological and emotional distance between such people from fellow prisoners and staff, and help them create an environment where they feel comfortable, safe, and supported. Last but not least, the finding of the negative relationship between peer criminality and adaptation further highlights the need to reform criminal thinking and bonding with peers with similar delinquency/criminal orientations.

The results should be interpreted with caution given limitations of the study. First, our research is based on respondents' self-reports only, and the validity of such data may be open to question. Our access to prison- and prisoner-related information kept by the prison was very limited. Future research should consider combining self-reports from incarcerated persons and prison-provided data to improve measurement. Second, although we implemented a control for prison sector, we are unable to examine the specific contextual features of the prison setting. While prison adaptation is strongly influenced by individual characteristics, the prison environment should also play a significant role in shaping prison adaptation. For example, daily routine of incarcerated individuals, living conditions, prison staffing, and overall rehabilitation policy would be expected to have appreciable impacts. Therefore, we call for more studies to examine environmental effects on prison adaptation. Furthermore, with macro-level structured data, future studies should also examine how Chinese prison characteristics at the aggregate level could explain variation in diverse aspects of prison performance across different facilities. Third, we acknowledge that our findings are limited in generalizability. Because China has such a vast territory populated by diverse ethnic groups, its population composition varies appreciably from place to place. Therefore, the representativeness of regional data such as ours may be limited. To illustrate, about 40% of our female sample possess urban Hukou. This figure could be much lower if the sample were to be selected from prisons located in more rural regions. The observed relationships might be heavily dependent on sample composition. We therefore encourage the implementation of similar studies in other regions of China, such as the Northern and Eastern areas. Such regions possess distinctive attributes in economy, demography, and culture in comparison with those in Zhejiang.

With these caveats in mind, the present study represents one of the first quantitative studies on prison adaptation in China with a focus on general attitude to incarceration and rehabilitation. Our study demonstrates that adaptation is associated with a range of importation and deprivation factors, such as parental attachment, neighborhood cohesion, and sentence length. Situated in the larger research context, our findings show that prison adaptation is a multi-dimensional phenomenon, and it responds to importation and deprivation factors in divergent manners depending on the specific dimension under investigation.

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Appendix A. Items comprising factor score variables

Variable and Items	Factor Loadings	
	Male	Female
Prison Adaptation		
I get along with other prisoners	.542	.502
I get along with prison staff	.676	.584
Other prisoners treat me well	.663	.530
It is important for me to have prison staffs' support during incarceration	.694	.805
It is important for me to have group activities during incarceration	.759	.778
I believe prison education programs are important to rehabilitation	.777	.824
I believe prison vocational training programs are important to rehabilitation	.758	.821
Parental Attachment		
I get along just fine with my father (stepfather)	.813	.836
I get along just fine with my mother (stepmother)	.825	.865
I can easily get emotional support and care from my parents	.770	.794
I would feel very bad disappointing my parents	.657	.763
Peer Attachment		
Peers' evaluation is important to me	.516	.591
My friends seem to enjoy having me around	.659	.617

(*continued on next page*)

(*continued*)

Variable and Items	Factor Loadings	
	Male	Female
Prison Adaptation		
I think I am an important person for friends	.680	.725
I get a lot of respect from my friends	.779	.833
My friends treat me as one of them	.748	.807
My friends are always there for me when I need them	.674	.703
Neighborhood Cohesion		
Many of my neighbors know me	.509	.617
People in my neighborhood often do things together	.620	.671
People in this neighborhood can be trusted	.756	.776
People in this neighborhood generally get along well with each other	.759	.815
People in my neighborhood will intervene if they see youths doing things they shouldn't do	.612	.697
There are people I can turn to in my city for help dealing with problems, i.e. Community or village cadres or community police officers	.694	.704
I was very often invited to attend the activities (such as lanterns festivals and evening parties) organized by local community or village	.670	.706
Peer Criminality		
How many friends do you know who have used soft or hard drugs like weed, hash, ecstasy, speed, heroin, or coke?	.708	.618
How many friends do you know who have entered a building without permission to steal something?	.686	.656
How many friends do you know who have threatened somebody with a knife or beaten someone up, just to get their money or other things?	.800	.749
How many friends do you know who have beaten someone up or hurt someone badly with something like a stick or a knife?	.781	.812
Negative Emotions		
How often during the past 12 months before you were in prison have you experienced fear?	.720	.761
How often during the past 12 months before you were in prison have you experienced anger?	.790	.806
How often during the past 12 months before you were in prison have you experienced depression?	.829	.870
How often during the past 12 months before you were in prison have you experienced humiliation?	.732	.644
Low Self-Control		
I do whatever brings me pleasure here and now, even at the cost of some future goal	.773	.760
I'm more concerned with what happens to me in the short run than in the long run	.769	.798
I like to test myself every now and then by doing something a little risky	.711	.723
Excitement and adventure are more important to me than security	.811	.812
I try to look out for myself first, even if it means making things difficult for other people	.821	.874
If things I do upset people, it's their problem not mine	.751	.804
I will try to get the things I want even when I know it's causing problems for other people	.760	.824
I lose my temper easily	.599	.612

Appendix B. Complete and Incomplete/imputed case numbers by variable and sex

	Male		Female	
	Complete	Incomplete /imputed	Complete	Incomplete /imputed
Variables				
Adaptation	1324	165	400	44
Age	1444	45	429	15
Parental Attachment	1368	121	413	31
Peer Attachment	1379	110	416	28
Neighborhood Cohesion	1328	161	408	36
Peer Criminality	1421	68	429	15
Low Self-Control	1349	140	412	32
Sentence Length	1314	175	385	59
Time Served	1369	120	409	35
Negative Emotion	1364	125	410	34
Education	1467	22	437	7
Marital Status	1430	59	418	26
Children	1402	87	428	16
Urban Hukou	1457	32	434	10
Province of Origin	1232	257	391	53
Prior Incarceration	1388	101	417	27
Total Cells Imputed	/	1788	/	468

Appendix C. Coefficients of MCAR (Missing Completely at Random) Test for Males

	Adaptation	Age	Edu	Marital Status	Children	Urban Hukou	Province of Origin	Parental Attachment	Peer Attachment	Neighborhood Cohesion	Delinquency	Peer Criminality	Low Self-Control	Negative Emotion	Sentence Length	Time Served	Prior Incarceration	Visits	Phone Calls
_cons	0.01	32.88	2.05	0.38	0.50	0.16	0.64	0.00	0.00	0.02	2.42	−0.01	−0.01	−0.01	4.30	3.32	0.25	3.12	3.20
Adaptation	1.00	0.72	0.02	0.02	0.04	0.01	−0.04	0.28	0.27	0.36	−0.53	−0.17	−0.17	−0.12	0.01	−0.06	−0.05	0.25	0.31
Age	0.72	74.22	0.26	1.77	2.33	0.82	−1.32	1.16	0.44	1.69	−4.75	−1.92	−1.01	−0.46	0.79	0.51	0.30	0.62	−2.24
Education	0.02	0.26	0.96	0.01	0.01	0.12	−0.11	0.10	0.10	−0.01	−0.08	−0.04	−0.05	−0.02	−0.03	−0.04	−0.04	1.07	0.69
Marital Status	0.02	1.77	0.01	0.23	0.17	0.01	−0.01	0.06	0.02	0.08	−0.26	−0.10	−0.08	−0.02	−0.03	−0.05	−0.01	0.17	0.04
Children	0.04	2.33	0.01	0.17	0.25	0.02	−0.03	0.06	0.03	0.09	−0.26	−0.11	−0.07	−0.01	−0.02	−0.06	−0.01	0.14	0.00
Urban Hukou	0.01	0.82	0.12	0.01	0.02	0.13	−0.04	0.02	0.02	0.00	0.05	0.00	−0.01	−0.03	0.00	0.00	0.00	0.24	0.08
Province of Origin	−0.04	−1.32	−0.11	−0.01	−0.03	−0.04	0.23	−0.03	−0.04	−0.03	−0.05	0.00	−0.01	0.01	0.03	0.02	−0.02	−0.56	−0.05
Parental Attachment	0.28	1.16	0.10	0.06	0.06	0.02	−0.03	1.00	0.24	0.32	−0.69	−0.20	−0.23	−0.18	−0.02	−0.03	−0.07	0.52	0.33
Peer Attachment	0.27	0.44	0.10	0.02	0.03	0.02	−0.04	0.24	1.00	0.32	−0.11	−0.02	−0.11	−0.09	−0.02	−0.07	−0.03	0.57	0.26
Neighborhood Cohesion	0.36	1.69	−0.01	0.08	0.09	0.00	−0.03	0.32	0.32	1.01	−0.72	−0.24	−0.17	−0.15	−0.01	−0.08	−0.03	0.25	0.14
Delinquency	−0.53	−4.75	−0.08	−0.26	−0.26	0.05	−0.05	−0.69	−0.11	−0.72	11.14	1.78	1.25	0.78	0.03	0.10	0.21	0.31	0.85
Peer Criminality	−0.17	−1.92	−0.04	−0.10	−0.11	0.00	0.00	−0.20	−0.02	−0.24	1.78	1.00	0.36	0.25	0.03	0.06	0.09	−0.10	0.03
Low Self-Control	−0.17	−1.01	−0.05	−0.08	−0.07	−0.01	−0.01	−0.23	−0.11	−0.17	1.25	0.36	0.99	0.34	0.04	0.07	0.07	−0.39	−0.11
Negative Emotion	−0.12	−0.46	−0.02	−0.02	−0.01	−0.03	0.01	−0.18	−0.09	−0.15	0.78	0.25	0.34	1.00	0.02	0.02	0.05	−0.23	0.18
Sentence Length	0.01	0.79	−0.03	−0.03	−0.02	0.00	0.03	−0.02	−0.02	−0.01	0.03	0.03	0.04	0.02	0.88	0.59	−0.02	0.09	−0.01
Time Served	−0.06	0.51	−0.04	−0.05	−0.06	0.00	0.02	−0.03	−0.07	−0.08	0.10	0.06	0.07	0.02	0.59	0.72	−0.01	0.07	0.17
Prior Incarceration	−0.05	0.30	−0.04	−0.01	−0.01	0.00	−0.02	−0.07	−0.03	−0.03	0.21	0.09	0.07	0.05	−0.02	−0.01	0.18	−0.19	−0.11
Visits	0.25	0.62	1.07	0.17	0.14	0.24	−0.56	0.52	0.57	0.25	0.31	−0.10	−0.39	−0.23	0.09	0.07	−0.19	19.29	7.39
Phone Calls	0.31	−2.24	0.69	0.04	0.00	0.08	−0.05	0.33	0.26	0.14	0.85	0.03	−0.11	0.18	−0.01	0.17	−0.11	7.39	17.98

Little's MCAR test.
Number of obs = 1489.
Prob > chi-square = 0.0204.

Appendix D. Coefficients of MCAR (Missing Completely at Random) Test Results for Females

	Adaptation	Age	Edu	Marital Status	Children	Urban Hukou	Province of Origin	Parental Attachment	Peer Attachment
_cons	0.01	36.73	2.50	0.41	0.65	0.40	0.42	0.01	0.00
Adaptation	1.00	0.84	0.17	0.03	0.03	0.02	−0.04	0.32	0.34
Age	0.84	112.97	0.74	2.01	3.12	1.74	−1.60	1.85	0.36
Education	0.17	0.74	2.11	0.02	−0.06	0.30	−0.16	0.20	0.35
Marital Status	0.03	2.01	0.02	0.24	0.11	0.01	−0.04	0.05	0.02
Children	0.03	3.12	−0.06	0.11	0.23	0.04	−0.04	0.05	0.00
Urban Hukou	0.02	1.74	0.30	0.01	0.04	0.24	−0.05	0.04	0.07
Province of Origin	−0.04	−1.60	−0.16	−0.04	−0.04	−0.05	0.24	0.01	−0.03
Parental Attachment	0.32	1.85	0.20	0.05	0.05	0.04	0.01	0.99	0.38
Peer Attachment	0.34	0.36	0.35	0.02	0.00	0.07	−0.03	0.38	0.99
Neighborhood Cohesion	0.34	2.38	0.16	0.07	0.10	0.04	−0.10	0.37	0.44
Delinquency	−0.49	−8.09	−0.56	−0.28	−0.29	0.01	0.07	−0.78	−0.35
Peer Criminality	−0.26	−2.76	−0.23	−0.08	−0.11	−0.02	0.05	−0.30	−0.20
Low Self-Control	−0.21	−1.12	−0.23	−0.03	−0.04	−0.01	−0.03	−0.28	−0.22
Negative Emotion	−0.13	−0.66	−0.02	−0.04	−0.02	−0.02	−0.03	−0.14	−0.11
Sentence Length	0.10	3.35	0.08	−0.02	0.05	0.09	−0.06	0.05	0.00
Time Served	−0.01	1.84	−0.01	−0.04	−0.01	0.07	−0.02	−0.03	−0.10
Prior Incarceration	−0.04	0.23	−0.05	0.00	0.01	0.00	−0.01	−0.01	−0.02
Visits	0.48	6.08	2.07	0.31	−0.02	0.45	−0.60	0.57	0.73
Phone Calls	0.01	−1.80	0.55	−0.33	−0.32	0.16	0.09	−0.53	−0.43

Neighborhood Cohesion	Delinquency	Peer Criminality	Low Self-Control	Negative Emotion	Sentence Length	Time Served	Prior Incarceration	Visits	Phone Calls
0.02	1.84	−0.01	−0.01	0.00	4.37	3.14	0.08	4.29	4.35
0.34	−0.49	−0.26	−0.21	−0.13	0.10	−0.01	−0.04	0.48	0.01
2.38	−8.09	−2.76	−1.12	−0.66	3.35	1.84	0.23	6.08	−1.80
0.16	−0.56	−0.23	−0.23	−0.02	0.08	−0.01	−0.05	2.07	0.55
0.07	−0.28	−0.08	−0.03	−0.04	−0.02	−0.04	0.00	0.31	−0.33
0.10	−0.29	−0.11	−0.04	−0.02	0.05	−0.01	0.01	−0.02	−0.32
0.04	0.01	−0.02	−0.01	−0.02	0.09	0.07	0.00	0.45	0.16
−0.10	0.07	0.05	−0.03	−0.03	−0.06	−0.02	−0.01	−0.60	0.09
0.37	−0.78	−0.30	−0.28	−0.14	0.05	−0.03	−0.01	0.57	−0.53
0.44	−0.35	−0.20	−0.22	−0.11	0.00	−0.10	−0.02	0.73	−0.43
0.99	−0.59	−0.21	−0.12	−0.14	−0.02	−0.06	0.00	0.68	−0.40
−0.59	6.56	1.11	0.87	0.48	0.05	0.21	0.08	−0.55	2.23
−0.21	1.11	0.99	0.32	0.17	−0.04	−0.01	0.01	−0.31	0.56
−0.12	0.87	0.32	0.99	0.33	0.01	0.04	0.00	−0.34	0.16
−0.14	0.48	0.17	0.33	1.00	0.01	−0.11	0.02	−0.45	−0.43
−0.02	0.05	−0.04	0.01	0.01	0.90	0.60	0.00	0.63	1.43
−0.06	0.21	−0.01	0.04	−0.11	0.60	0.90	0.00	1.11	2.23
0.00	0.08	0.01	0.00	0.02	0.00	0.00	0.07	−0.18	−0.08
0.68	−0.55	−0.31	−0.34	−0.45	0.63	1.11	−0.18	39.65	5.92
−0.40	2.23	0.56	0.16	−0.43	1.43	2.23	−0.08	5.92	33.65

Appendix E. . Unstandardized Coefficients of Importation & Deprivation Variables by Sex

	Male			Female		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Importation Variables						
Age	0.005 (0.005)	−0.003 (0.004)	−0.008 (0.005)	−0.005 (0.008)	−0.010 (0.007)	−0.009 (0.009)
Education	−0.045 (0.031)	−0.055 (0.029)	−0.062 (0.032)	0.047 (0.040)	0.001 (0.038)	−0.004 (0.046)
Marital Status	−0.055 (0.086)	−0.093 (0.081)	−0.052 (0.090)	0.005 (0.119)	0.001 (0.109)	0.038 (0.132)
Children	0.011 (0.092)	0.003 (0.086)	0.023 (0.092)	0.137 (0.142)	0.061 (0.133)	0.084 (0.157)
Urban Hukou	0.035 (0.081)	0.073 (0.075)	0.087 (0.085)	−0.019 (0.127)	−0.023 (0.119)	−0.032 (0.131)
Province of Origin	−0.175* (0.071)	−0.146* (0.066)	−0.159* (0.069)	−0.099 (0.113)	0.093 (0.105)	0.236 (0.123)
Delinquency	−0.044*** (0.008)	−0.014 (0.009)	−0.021 (0.010)	−0.064** (0.021)	−0.009 (0.021)	0.022 (0.024)
Parental Attachment	/	0.135*** (0.029)	0.115*** (0.032)	/	0.128* (0.053)	0.102* (0.062)
Peer Attachment	/	0.138*** (0.027)	0.141*** (0.033)	/	0.168** (0.059)	0.163* (0.070)
Neighborhood Cohesion	/	0.237*** (0.028)	0.224*** (0.032)	/	0.199*** (0.057)	0.141* (0.064)
Peer Criminality	/	−0.048 (0.033)	−0.036 (0.037)	/	−0.118* (0.051)	−0.143* (0.068)
Low Self-Control	/	−0.045 (0.029)	−0.044 (0.034)	/	−0.051 (0.052)	−0.098 (0.068)
Negative Emotion	/	−0.006 (0.028)	−0.022 (0.032)	/	−0.036 (0.049)	−0.069 (0.059)
Deprivation Variables						
Sentence Length	0.153* (0.061)	0.113* (0.055)	0.133* (0.064)	0.211** (0.077)	0.198** (0.074)	0.206* (0.083)
Time Served	−0.179 (0.055)	−0.092 (0.050)	−0.057 (0.057)	−0.168 (0.088)	−0.134 (0.082)	−0.186 (0.092)
Prior Incarceration	−0.216** (0.067)	−0.089 (0.063)	−0.099 (0.073)	−0.039 (0.213)	−0.324 (0.197)	−0.359 (0.224)
Visits	0.004 (0.007)	−0.004 (0.007)	0.002 (0.007)	0.005 (0.008)	−0.001 (0.008)	−0.017 (0.012)
Phone Calls	0.019* (0.007)	0.013 (0.007)	0.007 (0.008)	0.002 (0.009)	0.006 (0.008)	0.006 (0.010)
Constant	0.043	0.137	0.119	-.174	0.048	0.210
Adjusted R-squared	.059	.195	0.198	.057	.218	0.171
N	1489	1489	1099	444	444	351

*p < 0.05; **p < 0.01; ***p < 0.001.
Standard errors in parentheses.

Appendix E. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijlcj.2020.100425.

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