Journal of Police and Criminal Psychology (2020) 35:219–227
https://doi.org/10.1007/s11896-018-9296-7

Personality Characteristics Associated with Different Criminal Typologies in a Sample of Spanish Inmates

María Penado Abilleira[1,2] · María Luisa Rodicio-García[3]

Published online: 6 October 2018

Abstract
The objective of this research is to study the personality characteristics of a sample of men and women who are serving prison sentences in Spanish prisons, to determine their distinguishing characteristics, and to analyze whether the personality traits are related to the type of crime for which they are condemned. The sample is composed of 294 inmates (265 men and 29 women) (M = 41.20; SD = 10.51). The results indicate that the main crime for which they are imprison is for acts against property that involve violence or threat of violence against people (30.4%); to a lesser extent, acts that involve the use of psychoactive substances or other drugs (19.8%); acts that cause harm or that are intended to cause harm to people (17.9%); and acts that cause death or are intended to cause death (13.9%). Paranoia is the personality trait that most predicts criminal behaviors consisting of acts against people (homicide, injuries, and threats). Acts against property involving violence or threat against a person are more likely in people who have problems with alcohol and antisocial behavior. Finally, borderline personality traits are associated more with acts involving controlled psychoactive substances or other drugs.

Keywords Crime · Inmate · Personality traits · Prison sentences · Psychological characteristics

Introduction

The special characteristics of the prison environment (isolation, loneliness, violence, etc.), combined with the length of incarceration that any person convicted of a crime is subject to, make it increasingly common for the prison population to suffer from psychological problems that can lead to serious pathology. Such personality characteristics may be derived from the prison stay or from part of the characteristics that predetermine the commission of criminal offenses. That is why a deeper knowledge of the differential personality characteristics that lie behind the different types of crime is fundamental for the design of specific prevention and treatment strategies based on the crime committed and that favors the prevention and reinsertion of the offender, this being the purpose of the present investigation.

On a global scale and through an examination performed in 24 countries by Fazel and Seewald (2012), it can be argued that the prevalence of psychotic and depressive disturbances occurs in one of every seven inmates and that the high comorbidity of such disturbances is related to substance abuse.

This worldwide reality is reflected in a distinguishing manner in different prison populations, where the psychopathological disturbances can vary. In a study of a Colombian population, Acero et al. (2007) indicated a high prevalence of psychiatric disorders (90%), conduct disorders (75%), psychoactive substance abuse disorders (55%), and psychotic symptoms (34%) in young people from that country.

In a sample of 78 prisoners in Ecuador, using the brief version of the Minnesota Multiphasic Personality Inventory (MMPI), Arias et al. (2016) found clinically significant scores on the scales that indicate somatization (hypochondria), depression, psychopathic deviation, and schizophrenia.

In a Spanish population, Marín-Basallote and Navarro-Repiso (2012) analyzed 128 inmates that requested psychiatric assistance within the prisons of Puerto de Santa Maria (Cádiz), and reported that around 46.1% of subjects were diagnosed with a disorder corresponding to Axis I (disorders that can be

✉ María Penado Abilleira

María Luisa Rodicio-García
m.rodicio@udc.es

[1] Universidad Isabel I de Castilla, Burgos, Spain

[2] Pontevedra, Spain

[3] Métodos de Investigación y Diagnóstico en Educación, Universidad de A Coruña, Coruña, Spain

subject to clinical attention), of which 35.2% displayed substance abuse disorders. In the study, they highlight the high percentage (60.94%) of subjects who displayed psychiatric antecedents, half of whom displayed a serious mental disorder that required treatment with antipsychotic drugs.

A recent review carried out by Zabala-Baños et al. (2016) with a sample of 184 inmates that were serving sentences in the prisons of Castilla La Mancha and Madrid indicates a prevalence 5.3 times greater than that of the general population, with substance abuse being the most common disorder (72.3%), followed by mood disorder (anxiety and depression, 38.5%) and psychotic-type disorders (34.2%).

The broadest sample used to date for the study of mental disorders in the Spanish prison environment was that compiled by Vicens et al. (2011), which, based on 707 inmates, estimated the presence of mental disorders in the life of the individual and in the month prior to the collection of data. In their research, they establish that the prevalence of mental disorders in the life of inmates approximates 84.4%, the most common being substance-related disorders (abuse as well as dependency) at 76.2%, followed by anxiety-related disorders (45.3%), mood disorders (41%), and psychotic-type disorders (10.7%). Regarding the prevalence of disorders during the previous month, the percentages decreased to 41.2%, with anxiety disorders being the most prevalent (23.3%), followed by substance abuse disorders (abuse and dependency, 17.5%), mood disorders (14.9%), and psychotic-type disorders (4.2%).

The elevated presence of psychopathology is not only limited to male inmates but also demonstrated when considering imprisoned women. James and Glaze (2006) contend that 75% of women who enter prison display symptoms of different mental disorders, and three-quarters of these meet the diagnostic criteria for substance abuse disorder.

In a sample of 98 female inmates in the Villabona (Asturias) prison, Villagrá et al. (2011) confirm that 44.06% of the sample meets the requirements for a diagnosis of some psychological disorder, predominantly depression, somatization, obsessive-compulsive disorder, and paranoid ideation.

In addition to the question of the presence of psychopathology in the prison population, it is important to know whether particular personality characteristics determine criminal typology. Regarding this aspect, there is research that distinguishes sociodemographic features and psychological traits that precipitate the perpetration of a violent offense as opposed to other nonviolent offenses (Dausey et al. 2016), with few approaches to the study of personality variables associated with specific criminal typologies.

To date, the only contribution is that made by Burneo-Garcés (2017) through a sample of 576 men who were serving sentences in two prisons in Ecuador for crimes of robbery, murder, rape, and drug trafficking. The above authors maintain that the subjects serving sentences for robbery offenses displayed high scores on the scales of antisocial conduct, alcohol and drug use, and aggressiveness. The subjects whose main offense was an attempt against the life of another (homicide and murder) displayed fewer antisocial characteristics, fewer aggressive behaviors, and fewer problems with substance abuse than the rest of the subjects participating in the study. Those inmates convicted of rape displayed differentiated personality characteristics compared to the rest of the groups, with an elevated score in suicidal ideation. Finally, subjects who committed a drug trafficking crime displayed fewer characteristics of depressive symptoms than the others.

The previous results and the scarcity of existing research on the subject justify a more detailed study of the personality characteristics of men and women serving prison sentences, aimed at broadening knowledge about the psychological profile of this population and confirming the hypothesis that certain personality traits lead to the commission of some crimes.

Similarly, and with the aim of preventing criminal conduct, it is important to know whether personality characteristics in any way determine criminal typology, understood as a construct that is subject to contextual and temporary changes, such as that suggested by Clinard et al. (2015, p. 13), "(…) Typologies, like theories, are historical, time-bound mental construction." This temporary characteristic makes it necessary to address the evolution and development of criminal conduct according to the specific community and historical moment to make sense of the information collected; but, what will always be useful is to know whether the personality characteristics influence the prevalence of criminal conduct or not, so that the design of specific intervention programs can be required in populations with a high frequency of criminal offenses.

The objectives of this investigation are to:

(1) Define personality profiles and criminal profiles of the men and women that are serving sentences in the Spanish population.
(2) Corroborate whether there is a higher percentage of subjects in the prison population with personality characteristics considered clinically problematic, as previous studies have indicated.
(3) Analyze whether the personality characteristics influence the commission of a determined offense, identifying which characteristic it is according to the type of offense.

Material and Methods

Participants and Research Design

The sample is composed of 509 inmates (449 men and 60 women) who are serving sentences in the prisons of Galicia, as well as measures of conditional release in the centers of social integration.

Of the initial sample, only those subjects who were able to fully complete the Personality Assessment Inventory (PAI) were selected, with the final sample being composed of 294 inmates (265 men and 29 women), excluding 17 questionnaires that could not be included as they presented an elevated number of blank responses (omissions) and thus did not allow for the collection of results on the questionnaire's scales.

The average age was 41.20 years (SD = 10.51), convicted of a single offense, with sentencing average of 8 years, of which they have already completed more than 3 years.

Access to the prisons was requested in writing from the General Secretariat of Penitentiary Institutions (Department of Interior). In this request, the aims of the project, facilities to be accessed, and the main areas of work with their corresponding information gathering instruments were specified.

Coordination with the facilities was first made in writing, addressed to the director, who delegated it to the person in charge of education or the treatment subdivision whom we had already contacted by phone to gain access to the facilities. Together, we were able to set a schedule for the fieldwork, establishing the best days and times for conducting tests, altering to the least extent possible, the life of the facilities, and the daily activities of the inmates (workshops, school, work, etc.).

Once the schedules were agreed upon, a written presentation by the investigators, including objectives, and details of their participation were provided to the facilities so that they had the information necessary to make a decision to participate. Attached to this document is a sample of the informed consent that was incorporated, which had to be addressed to the contact person in their unit. After a period of one week for them to provide consent, we entered the facilities and introduced ourselves to the inmates during the early morning daily informational assembly, which they all had to attend whether they had already given their consent or not. During our explanation, we observed that many were deciding to collaborate, since they had considerable reluctance in the beginning due to the fear of punishment from merely voicing their opinion. In these cases, the consent was provided to them right there so that they could complete it on the spot.

There had not been any prior requirement established for the participation of the inmates; consequently, the target population of the study was formed of those who freely decided to participate, independent of their module (therapeutic, ordinary, or respect module). The inmates were informed about the objective of the research, the importance of their collaboration to make prison life known, and of the confidentiality of information they provided to us. Such information would be treated only in a global manner, and the prison staff would not have any access to it.

Those that demonstrated willingness to participate signed an informed consent and gathered in a common space in the prison (library, dining room, or workshop), where they completed the questionnaire. At all times, a member of the study team was present to be able to respond to any question, reiterating the need to be sincere with the declarations expressed. During the process of information gathering, no member from the security team or technical teams of the prison was present at any time so as not to intimidate the participants. The time invested did not exceed one hour and as they finished, they were incorporated into their daily work.

The classification of crimes is based on The International Classification of Crimes for Statistical Purposes, published by the United Nations Office on Drugs and Crime (UNODC 2015), which establishes the following categories of level 1 crimes (see Table 1) and was used for the coding of crimes committed by the inmates. Category 11 established by UNODC was used in the present study to include those subjects whose reported offense was a sentence violation that was imposed without being the principal offense.

In addition to the previous categories, an extra category was established (number 12) that includes the commission of crimes against a partner, ex-partner, or a person related with equal bond or affective relation on the part of a man, which constitutes a specific typology of the Spanish judicial system called "Gender violence" (see Table 1).

Measures

The Personality Assessment Inventory (PAI) was used for this study, including a sheet of sociodemographic variables of the subjects such as sex, age, crime(s) for which they are currently imprison serving a sentence (open question), whether it was their first time in prison or whether they had previously served a sentence (recidivism), and the sentence term imposed in months.

The PAI (Morey 2007), adapted to the Spanish population by Cardenal et al. (2011), was used to obtain personality measurements. Subjects must assess how the inventory's 344 statements reflect their way of being, thinking, feeling, and acting, on a scale ranging from false (0), slightly true (1),

Table 1 Categories for UNODC level 1 crimes

1. Acts leading to death or intending to cause death
2. Acts leading to harm or intending to cause harm to the person
3. Injurious acts of a sexual nature
4. Acts against property involving violence or threat against a person
5. Acts against property only
6. Acts involving controlled psychoactive substances or other drugs
7. Acts involving fraud, deception, or corruption
8. Acts against public order, authority, and provisions of the state
9. Acts against public safety and state security
10. Acts against the natural environment
11. Sentence violation
12. Gender violence

Prepared by the author from The International Classification of Crimes for Statistical Purposes, published by the United Nations Office on Drugs and Crime (UNODC 2015)

mainly true (2), and very true (3). The results provide a comprehensive assessment of the psychopathology, measured on a 22-point scale: four validity scales (inconsistency, infrequency, negative impression, and positive impression), 11 clinical scales (somatic concerns, anxiety, anxiety-related disorders, depression, mania, paranoia, schizophrenia, borderline features, antisocial features, alcohol problems, and drug problems), five treatment consideration scales (aggression, suicidal ideation, nonsupport, stress, and treatment rejection), and two interpersonal scales (dominance and warmth).

The correctional norms of the instrument allow for the use of a short version answering the first 165 items, which allows for obtaining a score on the global scales, but not on the subscales or on the complementary indexes.

Experts in the area of forensic evaluation support that the latter instrument has advantages at a psychometric level with respect to other personality questionnaires validated for use in a forensic context such as the Minnesota Multiphasic Personality Inventory 2 Revised (MMPI-2-RF) (Ben-Porath and Tellegen 2015) and the Millon Clinical Multiaxial Inventory (MCMI-III) (Cardenal y Sánchez 2007). Among the advantages suggested for the use of the PAI, the experts highlight the fact that it offers four levels of response in addition to using non-overlapping scales, which increases its discriminant validity (Seijo et al. 2014). The versatility that the instrument presents has fostered its increased acceptance for use in the forensic context in recent years (Edens et al. 2001; Morey and Quigley 2002). Despite this, its use in the international context has been inconsistent. As underscored by a study regarding the use of instruments for the study of personality traits in 17 European countries (Evers et al. 2012), the PAI is seldom used in Europe, investigators opting instead for the use of other personality inventories such as the Minnesota Multiphasic Inventory (MMPI), the Sixteen Personality Factor Questionnaire (16PF), or the Neuroticism-Extraversion-Openness Personality Inventory (NEO-PI).

Despite the irregular use in the forensic context, the studies show the validity of the PAI in the prediction of violent behavior among inmates (Gardner et al. 2015; Reidy et al. 2016) and, to a lesser extent, the criminal recidivism of the same.

The technical manual for the Spanish adaptation of the Personality Assessment Inventory (Cardenal et al. 2011) establishes that for a typical score to be considered significant, it must be above 70 on all clinical scales related to treatment, except in the case of mania where the score is considered significant if it is above the cutoff point of 65 and treatment refusal where the significance cutoff point is at a typical score of 50. For the scales of interpersonal relations (dominance and reliability), the cutoff point is above 60.

The reliability data obtained in the assessment of the instrument with the Spanish population show good results for the short version, with Cronbach's alpha coefficient of .74 with the normal population and .81 with clinical groups.

Data Analysis

The data analysis began with a reliability study of the abbreviated version of the PAI in the Spanish prison population using Cronbach's alpha coefficient.

At first, a descriptive analysis was performed of the total sample, on the variables of identification and those relating to the crimes committed and for personality traits. After, the men and women were analyzed separately to define the profiles in each case, while it is necessary to take the information on the subsample of women with caution because of its small size. Finally, the subsample of men was addressed to analyze whether the personality traits influence the commission of a determined offense and which features these were in each one of the cases.

To calculate the association between personality features and the different criminal typologies, the multivariate analysis technique of dependence was used, specifically discriminant analysis, considering personality characteristics as independent variables and criminal typology as dependent variables. Then, we proceeded to verify compliance with the assumptions required to apply the discriminant analysis and thus calculate and establish the objective function, in order to determine which personality traits discriminate best when evaluating the type of crime committed (Torrado and Berlanga 2013). The precision of the model was also calculated to predict the future behavior of the personality indicators in the commission of a determined crime.

The analyses were performed with SPSS v.22.0 statistical software.

Results

Reliability

The reliability analysis of the abbreviated version of the PAI showed good results in the sample used, with high reliability based on Cronbach's alpha coefficient, whether we consider the total sample ($\alpha = .962$) or the subsample of men ($\alpha = .961$).

The reliability analysis of the different scales shows that the Cronbach's alpha coefficient oscillates between .708 and .902 for the anxiety scale; between .605 and .833 for those related to treatment; and between .590 and .630 for the interpersonal relationship scales (see Table 2).

Type of Offense Committed and Personality Characteristics of the Total Sample

The subjects under study have been serving sentences essentially for having committed acts against property involving violence or threat against a person (category 4) (30.4%); to a lesser extent, acts involving controlled psychoactive substances or other drugs (category 6) (19.8%); acts leading to harm or

Table 2 Cronbach's alpha for the clinical, treatment consideration, and interpersonal scales

Scales		α
Clinical scales	SOM	.868
	ANX	.902
	ARD	.793
	DEP	.833
	MAN	.804
	PAR	.708
	SCZ	.811
	BOR	.859
	ANT	.739
	ALC	.883
	DRG	.847
Treatment consideration scales	AGR	.768
	SUI	.833
	STR	.716
	NON	.712
	RTR	.605
Interpersonal scales	DOM	.630
	WRM	.590
Global scale		.962

SOM, somatic concerns; *ANX*, anxiety; *ARD*, anxiety-related disorders; *DEP*, depression; *MAN*, mania; *PAR*, paranoia; *SCZ*, schizophrenia; *BOR*, borderline features; *ANT*, antisocial features; *ALC*, alcohol problems; *DRG*, drug problems; *AGC*, aggression; *SUI*, suicidal ideation; *STR*, stress; *NON*, non-support; *RXR*, treatment rejection; *DOM*, dominance; *WRM*, warmth

intending to cause harm to the person (category 2) (17.9%); and acts leading to death or intending to cause death (category 1) (13.9%). Given that the size of the subsample of women is very small and does not permit a comparison, we present information differentiated according to the said variable to know the criminal profile of each group separately. Both women and men correspond in the most common crime identified, that is, they are imprison for acts against property involving violence or threat of violence against a person (see Table 3). The women do not commit crimes of personal harm, injurious acts of a sexual nature, or against the public order, while like men, they perform acts involving controlled psychoactive substances or other drugs. To a larger extent than the men, the women commit more crimes that involve fraud, deception, or corruption.

The analysis of personality traits in prison allows us to conclude that there is a prevalence of subjects that exceed the score considered critical (set at 70 points) for each one of the personality scales studied. The greatest incidence of serious psychological problems relates to drug use (41.5% of the subjects exceeded the cutoff point), followed by antisocial features (20.7%) and depression (20.4%). These problems vary according to gender: the men present problems derived from drug use (43%), antisocial features (20.4%), and refusal of treatment (19.02%); whereas, women's problems are related to stress (37.9%), depression (31%), borderline features (27.6%), and suicidal features (27.6%) (see Table 4).

Table 3 Distribution of men and women by type of offense committed

Category of offense committed	Men		Women	
	n	%	*n*	%
1	34	13.7	4	16
2	49	19.8	0	0
3	11	4.4	0	0
4	71	28.6	12	48
5	0	0	0	0
6	48	19.4	6	24
7	8	3.2	3	12
8	1	0.4	0	0
9	1	0.4	0	0
10	0	0	0	0
11	4	1.6	0	0
12	21	8.5	0	0

Table 4 Percentage of the sample that exceeds the cutoff point for each of the scales

	General population	Men	Women
SOM	12.6	10.9	24.1
ANX	12.2	10.6	24.1
ARD	9.5	6.8	24.1
DEP	20.4	18.9	31.0
MAN	14.6	15.5	24.1
PAR	17.3	16.6	24.1
SCZ	13.9	12.8	24.1
BOR	17.0	15.5	27.6
ANT	20.7	20.4	20.6
ALC	16.0	17.0	6.9
DRG	41.5	43.0	24.1
AGG	7.8	6.8	17.2
SUI	16.3	15.1	27.6
STR	19.4	17.4	37.9
NON	10.2	10.9	3.4
RXR	19.7	19.2	24.1
DOM	13.9	12.8	24.1
WRM	9.5	8.3	20.7

SOM, somatic concerns; *ANX*, anxiety; *ARD*, anxiety-related disorders; *DEP*, depression; *MAN*, mania; *PAR*, paranoia; *SCZ*, schizophrenia; *BOR*, borderline features; *ANT*, antisocial features; *ALC*, alcohol problems; *DRG*, drug problems; *AGC*, aggression; *SUI*, suicidal ideation; *NON*, non-support; *STR*, stress; *RXR*, treatment rejection; *DOM*, dominance; *WRM*, warmth

The limited number of women that participated does not permit significant contrasts or extrapolation of results, but there is a marked tendency to consider them in further studies. What is clear is that in both crimes committed and personality traits, remarkable differences between men and women are evident. To these differences, those derived from "life in prison" should be added. The elevated number of men who serve sentences predetermines the organization of space and time, occupation of the greatest number of modules, and the different groupings into ordinary, respect, and even therapeutic modules, for those who want to undergo rehabilitation for substance use. The reality of women, being significantly lower in number, forces all to share the same module, independent of the crime committed, the time of sentence, or the treatment needs derived from their personality traits.

Type of Offense Committed and Personality Characteristics of Male Inmates

To know if the personality traits are associated with the commission of a particular crime, that is, if a determined personality trait can predict the most probable crime, a predictive type of multivariate discriminant analysis (MDA) was performed.

Analysis of the resulting contingency table, cross-checking personality traits with type of crime committed (see Table 5), allows for the establishment of three distinguishing patterns of offenders: those who commit acts against property that involve violence (theft and robbery) (category 4), offenders who commit acts with the intention of harming people (category 2), and acts that primarily involve the failure to comply with the conditions imposed for their parole (sentence violation) (category 11).

In the case of men who commit acts that involve a sentence violation, significantly higher scores on the alcohol use scales, and an elevated score on borderline features, which did not reach the cutoff point to be considered clinically alarming, were observed.

Subjects who perform acts involving physical harm and threats and who have the shared intention of harming a person are characterized by having higher paranoia scores.

Finally, subjects who commit theft and robbery display an increase on the aggression scale that accurately characterizes the violent theft of objects in the crimes mentioned, in addition to elevated scores for drug use and antisocial behavior.

The results obtained on Box's M test inform us of the desired existence of the heteroscedasticity assumption or difference of group averages on the different categories of crimes studied, as such, the hypothesis of statistically significant differences of group averages, with relation to personality characteristics, is accepted. (Box's M = 72.794 and a $p = .000 < .05$).

The discriminant model to classify and predict that this analysis emerges is formed by five types of crime selected attending to the requirement of having an $n > 20$ on all the categories studied: acts leading to death or intending to cause death (category 1) ($n = 34$), acts leading to harm or intending to cause harm to the person (category 2) ($n = 49$), acts against property involving violence (category 4) ($n = 71$), acts involving controlled psychoactive substances or other drugs (category 6) ($n = 48$), sentence violation (category 11) ($n = 21$), and gender violence (category 12) ($n = 21$).

The test of equality of group averages indicates that initially, there are only five variables that can enter into the discriminant function, taking as reference values $F > 3.84$. These variables are the following: paranoia ($F = 5.511$; $p = .000 < .05$); alcohol problems ($F = 4.754$; $p = .000 < .05$); antisocial features ($F = 4.545$; $p = .000 < .05$); drug problems ($F = 4.284$; $p = .000 < .05$); borderline features ($F = 4.046$; $p = .000 < .05$) (Table 6).

The discriminant capacity evaluation of the canonical functions is obtained with the "Self-values" statistic that suggests four functions that offer the best combination of personality traits with a 94% explanation of the variance of the crimes committed. Once the discriminant function is calculated, it is determined whether this is globally significant. For that, the null hypothesis is posed whether the population averages differ significantly in the groups considered, obtaining a result of $\chi^2 = 43.043$; g.l. = 8; and $p = .000 < .05$, which allows us to affirm the significance of the discriminant function. The greater percentage of variance explained is provided by the function 1, with 43.9% and an elevated canonical correlation of .877. These values are elevated which supposes a good discrimination (see Table 7).

As a criterion for selecting the variables that best discriminate personality traits in the commission of a specific crime, Fisher's linear discriminant functions were used. Paranoia is the personality trait that most predicts criminal behaviors consisting of acts that cause death or that are intended to cause death, followed by problems with drugs. The personality trait that precipitates acts leading to harm or intending to cause harm to the person is also paranoia. Acts against property involving violence or threat against a person are more likely in people who have problems with alcohol and antisocial behavior. Finally, borderline personality traits are associated more with acts involving controlled psychoactive substances or other drugs (see Table 8).

Discussion

The data collected in this study allow for a marked trend in terms of criminal typologies and personality characteristics of inmates in Spanish prisons. Although it has not been possible to analyze the significance of the differences between men and women due to the scarcity of women in prison, certain tendencies have been revealed that indicate that there are differentiated profiles according to gender.

The analysis of personality traits within the prison permits the conclusion that the greatest incidence of personality traits

Table 5 Mean and standard deviation of the 22 PAI scales for the subsample of men and type of crime

		1	2	3	4	5	6	7	8	9	10	11	12
SOM	M	56.44	53.49	54.64	57.03	–	55.29	54.88	47	49	–	65.50	54.14
	S.D.	13.58	10.34	9.32	12.32	–	13.33	12.72	–	–	–	19.36	13.24
ANX	M	53.74	53.82	56.64	55.75	–	52.17	50.13	48	39	–	55.25	49.71
	S.D.	13.31	11.12	8.15	13.55	–	11.13	11.99	–	–	–	14.01	10.45
ARD	M	57.00	54.49	59.64	55.89	–	53.27	52.00	49	37	–	57.25	54.81
	S.D.	8.76	9.28	7.72	10.27	–	10.41	8.60	–	–	–	9.43	11.76
DEP	M	60.47	58.39	59.82	62.69	–	57.85	56.25	53	45	–	59.75	53.38
	S.D.	15.06	10.94	9.47	13.94	–	11.20	13.57	–	–	–	11.06	12.18
MAN	M	53.59	54.43	48.91	54.51	–	49.29	54.00	40	40	–	60.00	52.00
	S.D.	13.36	11.21	12.83	11.22	–	11.49	17.24	–	–	–	15.14	11.23
PAR	M	60.44	66.16	65.82	63.04	–	61.27	57.25	58	40	–	56.75	59.71
	S.D.	9.96	11.97	10.02	10.10	–	08.35	09.59	–	–	–	04.50	10.71
SCZ	M	57.68	58.37	59.45	58.41	–	54.21	55.25	42	27	–	56.00	50.62
	S.D.	12.83	12.28	8.39	13.38	–	12.71	19.07	–	–	–	12.00	11.02
BOR	M	54.09	57.84	59.45	57.92	–	49.79	51.63	50	37	–	62.40	53.86
	S.D.	13.56	12.19	12.75	12.96	–	09.57	12.76	–	–	–	14.27	11.46
ANT	M	60.24	63.29	58.09	67.27	–	57.19	63.25	63	52	.	57.25	60.90
	S.D.	13.80	12.74	9.82	11.97	–	10.63	12.73	–	–	–	18.25	10.54
ALC	M	56.09	69.51	52.27	58.10	–	52.73	73.00	46	46	–	84.50	58.86
	S.D.	18.93	24.56	18.60	16.94	–	14.98	29.19	–	–	–	28.87	18.11
DRG	M	65.03	70.24	61.82	80.62	–	66.27	66.00	48	55	–	73.00	71.71
	S.D.	24.08	19.45	20.76	21.63	–	20.74	20.46	–	–	–	25.05	25.54
AGG	M	53.24	56.59	50.73	57.08	–	48.13	49.50	50	45	–	49.50	53.57
	S.D.	12.80	12.96	10.44	10.94	–	6.73	12.70	–	–	–	15.00	10.62
SUI	M	59.91	54.51	52.27	57.97	–	52.06	54.63	46	46	–	60.00	56.48
	S.D.	19.65	14.40	8.91	17.05	–	12.23	17.99	–	–	–	20.20	20.93
STR	M	57.41	58.45	56.09	61.96	–	54.54	59.25	62	45	–	59.00	59.90
	S.D.	14.67	11.81	8.81	14.50	–	11.56	11.07	–	–	–	02.00	14.69
NON	M	58.38	59.96	58.27	61.21	–	57.44	49.75	74	44	–	53.75	55.10
	S.D.	12.96	13.70	10.92	11.79	–	11.70	12.76	–	–	–	07.27	12.89
RXR	M	44.88	47.90	42.91	44.56	–	49.25	44.88	43	53	–	42.75	45.90
	S.D.	11.02	09.15	08.03	08.42	–	09.72	08.10	–	–	–	05.19	10.56
DOM	M	51.79	51.61	49.18	50.38	–	52.15	57.00	46	62	–	48.25	53.48
	S.D.	9.11	9.02	12.69	10.68	–	11.52	11.02	–	–	–	09.60	10.18
WRM	M	49.06	47.63	46.18	47.58	–	49.44	53.00	63	51	–	50.00	54.62
	S.D.	9.86	10.48	12.72	10.99	–	10.13	09.32	–	–	–	06.00	08.19

SOM, somatic concerns; *ANX*, anxiety; *ARD*, anxiety-related disorders; *DEP*, depression; *MAN*, mania; *PAR*, paranoia; *SCZ*, schizophrenia; *BOR*, borderline features; *ANT*, antisocial features; *ALC*, alcohol problems; *DRG*, drug problems; *AGC*, aggression; *SUI*, suicidal ideation; *NON*, non-support; *STR*, stress; *RXR*, treatment rejection; *DOM*, dominance; *WRM*, warmth

that can be seen as pathological due to their elevated incidence relates to drug use (41.5% of the subjects exceeded the cutoff point), antisocial features (20.7%), depression (20.4%), treatment refusal (19.7%), and stress (19.4%). These results are in line with those found in other research (Acero et al. 2007; Vicens et al. 2011; Fazel and Seewald 2012; Arias et al. 2016; Zabala-Baños et al. 2016; Burneo-Garcés 2017; Molina-Coloma et al. 2018). It is observed that women, more often than men, self-report somatic complaints, problems related to anxiety, depression, disorders related to aggression and stress, and suicidal ideation. Although women are the ones who display higher scores than men on the previous scales, they are not serious enough to be considered a psychological problem, therefore contradicting the studies that indicate a greater prevalence of mental disturbance in female inmates (James and Glaze 2006; Villagrá et al. 2011). In any case, this data should be taken with caution due to one of the limitations of this study, the small sample of women participants.

Table 6 Variables included/excluded[a,b,c,d]

Wilks of Lambda									
						F exact			
Step	Personality trait	λ	df1	df2	df3	F	df1	df2	Sig.
1	Paranoia	.908	1	4	218	5.511	4	218.000	.000
2	Alcohol problems	.845	2	4	218	4.754	8	434.000	.000
3	Antisocial features	.786	3	4	218	4.545	12	571.774	.000
4	Drug problems	.739	4	4	218	4.284	16	657.473	.000
5	Borderline features	.699	5	4	218	4.046	20	710.708	.000

[a] The maximum number of steps is 30

[b] The partial minimum F to enter is 3.84

[c] The partial maximum F to eliminate is 2.71

[d] Level F, tolerance, or VIN not enough for an additional calculation

With respect to the distinguishing personality characteristics of men based on criminal typology, there are no in-depth studies to date that make comparisons of this type and that corroborate the profiles found in the present investigation. The results obtained allow us to identify four criminal typologies with associated personality characteristics: the first, characterized by criminal behaviors consisting of acts that cause death or that are destined to cause death (category 1), to which paranoid traits and drug use are associated; the second, violent acts that cause harm or are intended to cause harm (injuries and threats) (category 2) in which people with traits of paranoia are also associated; the third, characterized by acts against property that involve violence or threat of violence against people (theft and robbery) (category 4) in which antisocial people and alcohol problems are framed; and the fourth, acts that involve psychoactive substances or other drugs (category 6), which are associated with borderline traits.

The criminal profile found in the inmates who committed theft and robbery coincides with those obtained using the same measuring instrument on the Ecuadorian population (Burneo-Garcés 2017), and, as with the Spanish prison population, the profiles indicate that the subjects who commit a crime of theft or robbery display elevated scores in antisocial personality, aggression, and problems with alcohol use.

Another limitation of this work is that it is a cross-sectional study in which we have not been able to determine if the personality traits of the inmates analyzed precede imprisonment or if they are a consequence of the characteristics of life within the prison environment.

The scales that analyze the consumption of alcohol and drugs deserve special consideration, and it would be interesting to study whether the abuse of these substances occurs before or after imprisonment, as a means of escaping the conditions of life in prison.

In spite of the limitations set out, the conclusions of this study allow a more complete view of the characteristics of the Spanish prison population, their differential profiles, and the personality traits that discriminate the type of crime that has led them to prison.

The tendencies found can be useful for the design of specific interventions within the prison environment that involve personalized attention depending on the type of crime committed and the personality characteristics that explain it.

Likewise, they represent an advance in the use of Personality Assessment Inventory (PAI) in forensic contexts, adding to the ability to predict violent behavior and recidivism (Gardner et al. 2015; Reidy et al. 2016) and the possibility of being used as a discriminant instrument of personality characteristics according to the criminal typology.

Table 7 Self-values

Function	Self-value	% de variance	% variance accumulated	Canonical correlation
1	.966	43.9	48.9	.877
2	.726	30.2	80.1	.735
3	.547	13.9	94.0	.701
4	.275	6.0	94.0	.612

The first four canonical discriminant functions were used in the analysis

Table 8 Classification function coefficients

	Criminal typology			
	1	2	4	6
Paranoia	.031	.883	.531	.036
Alcohol features	.032	.144	.651	.052
Antisocial features	.830	.350	.750	.288
Drug problems	.614	.053	.079	.781
Borderline features	.204	.098	.124	.578
(Constant)	− 15.892	− 17.176	− 17.158	− 13.140

1. Acts leading to death or intending to cause death

2. Acts leading to harm or intending to cause harm to the person

4. Acts against property involving violence or threat against a person

6. Acts involving controlled psychoactive substances or other drugs

Author Contributions All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Compliance with Ethical Standards

Ethics Statement This study was approved by the Ethics Committee of the University of Coruña (Spain). Data were processed in compliance with the Spanish Data Protection Law. All subjects gave written informed consent in accordance with the Declaration of Helsinki.

Conflict of Interest The authors declare that they have no conflict of interest.

References

Acero R, Escobar-Córdoba F, Castellanos G (2007) Factores de riesgo para la violencia y homicidio juvenil. [Risk factors for violence and juvenile homicide]. Rev Colomb Psiquiatr XXXVI(1):78–97

Arias WL, Canales FR, De la Torre N (2016) Características psicopatológicas en los reclusos del Penal de Socabaya de Arequipa (Perú). [Psychopathological characteristics in the inmates of the Socabaya Prison in Arequipa (Peru)]. An Psic Jur 26:80–87. https://doi.org/10.1016/j.apj.2015.08.001

Ben-Porath YS, Tellegen A (2015) MMPI–2–RF. Inventario Multifásico de Personalidad de Minnesota-2 Reestructurado (*P. santamaria*, adaptador). TEA Ediciones, Madrid

Burneo-Garcés C (2017) Modalidades de agresión en entornos penitenciarios hispanohablantes. [Modalities of aggression in Spanish-speaking penitentiary settings]. (Tesis doctoral, Universidad de Granada, Granada). Retrieved from http://digibug.ugr.es/handle/10481/47998#.WoVmbujOXD4

Cardenal V, Ortiz-Tallo M, Santamaría P, Sánchez MP (2011) Adaptación española del inventario de evaluación de la Personalidad (PAI). [Spanish adaptation of the Personality Assessment Inventory (PAI)]. TEA, Madrid

Cardenal M, Sánchez M (2007) MCMI-III, inventario clínico multiaxial de Millon-III, manual. Tea Ediciones, Madrid

Clinard MB, Quinney R, Wildeman J (2015) Criminal behavior systems. A typology, 3rd edn. Taylor & Francis, New York

Dausey DJ, Greenberg G, Valasek J, Cook T, Teufel J, Pilver L, Desai R (2016) Sex differences in risk factors and conditions of incarcerated violent offenders. Health Syst Policy Res 3(4). https://doi.org/10.21767/2254-9137.100056

Edens JF, Cruise KR, Buffington-Vollum JK (2001) Forensic and correctional applications of the Personality Assessment Inventory. Behav Sci Law 19:519–543. https://doi.org/10.1002/bsl.457

Evers A, Muñiz J, Bartram D, Boben D, Egeland J, Fernández-Hermida JR, Frans Ö, Gintiliené G, Hagemeister C, Halama P, Iliescu D, Jaworowska A, Jiménez P, Manthouli M, Matesic K, Schittekatte M, Sümer HC, Urbánek T (2012) Testing practices in the 21st century: developments and European psychologists's opinions. Eur Psychol 17(4):300–319. https://doi.org/10.1027/1016-9040/a000102

Fazel S, Seewald K (2012) Severe mental illness in 33.588 prisoners worldwide: systematic review and meta-regression analysis. Br J Psychiatry J Ment Sci 200(5):364–373. https://doi.org/10.1192/bjp.bp.111.096370

Gardner BO, Boccaccini MT, Bitting BS, Edens JF (2015) Personality Assessment Inventory scores as predictors of misconduct, recidivism, and violence: a meta-analytic review. Psichol Assess 27:534–544. https://doi.org/10.1037/pas0000065

James D, Glaze L (2006) Mental health problems of prisons and jail inmates. Bureau of Justice Statistics, Washington, D.C.

Marín-Basallote N, Navarro-Repiso C (2012) Estudio de la prevalencia de trastorno mental grave (TMG) en los centros penitenciarios de Puerto I, II y III del Puerto de Santa María (Cádiz): nuevas estrategias en la asistencia psiquiátrica en las prisiones. [Study of the prevalence of severe mental disorder (TMG) in the prisons of Puerto I, II and III of Puerto de Santa María (Cádiz): new strategies in psychiatric care in prisons]. Rev Esp Sanid Penit 14(3):80–85

Molina-Coloma V, Salaberría K, Pérez JI (2018) La personalidad en población carcelaria: un estudio comparativo en Ecuador. [Personality in the prison population: a comparative study in Ecuador]. An Psic Jur 28:1–7. https://doi.org/10.5093/apj2018a5

Morey LC (2007) Personality Assessment Inventory. Psychological Assessment Resources, Florida

Morey LC, Quigley BD (2002) The use or Personality Assessment Inventory in assessing offender. Int J Offender Ther Comp Criminol 46:333–349. https://doi.org/10.1177/0306624X02463007

Oficina de las Naciones Unidas Contra la Droga y el Delito (2015). Clasificación internacional de delitos con fines estadísticos, versión 1.0. [International classification of crimes for statistical purposes, version 1.0.]. Retrieved from https://www.unodc.org/documents/data-and-analysis/statistics/crime/ICCS/ICCS_SPANISH_2016_web.pdf

Reidy T, Sorensen JR, Davidson M (2016) Testing the predictive validity of the Personality Assessment Inventory (PAI) in relation to inmate misconduct and violence. Psychol Assess 28(8):871–884. https://doi.org/10.1037/pas0000224

Seijo D, Fariña F, Vilariño M (2014) Procedimientos y técnicas para la evaluación psicológica forense [Procedures and techniques for forensic psychological evaluation]. In: Salud y Bienestar. GEU Editorial

Torrado M, Berlanga V (2013) Análisis discriminante mediante SPSS. [Discriminant analysis through SPSS]. Revista d'Innovació i Recerca en Educació 6(2):150–166. https://doi.org/10.1344/reire2013.6.26210

Vicens E, Tort V, Dueñas RM, Muro A, Pérez-Arnau F, Arroyo-Cobo JM (2011) The prevalence of mental disorders in Spanish prisons. Crim Behav Ment Health 21(5):321–323. https://doi.org/10.1002/cbm.815

Villagrá P, González A, Fernández P, Casares MJ, Martín JL, Rodriguez F (2011) Perfil adictivo, delictivo y psicopatológico de una muestra de mujeres en prisión. [Addictive, criminal and psychopathological profile of a sample of women in prison]. Adicciones 23(3):219–226

Zabala-Baños MC, Segura A, Maestre-Miquel C, Martínez-Lorca M, Rodríguez-Martín B, Romero D, Rodríguez M (2016) Mental disorder prevalence and associated risk factors in three prisons of Spain. Rev Esp Sanid Penit 18(1):13–23. https://doi.org/10.4321/S1575-06202016000100003