

## Single and multiple clinical syndromes in incarcerated offenders

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# Single and Multiple Clinical Syndromes in Incarcerated Offenders: Associations With Dissociative Experiences and Emotionality

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## Abstract

The present study examined the prevalence and correlates of clinical syndromes in a large group ( $N = 438$ ) of incarcerated violent offenders, looking at differences between inmates with one and those with more than one clinical syndromes. More than a half of the sample (57%) reported clinically relevant symptoms for at least one clinical syndrome ( $n = 252$ ), and the majority of them (38%) reported more syndromes in comorbidity ( $n = 169$ ). Increased severity of clinical conditions (none, one, more than one syndrome) corresponded with significantly greater levels of personality disorder traits, psychological symptoms, dissociation, and negative emotionality, with large effect sizes. After controlling for co-occurrence of personality disorder traits and other symptoms, the presence of more than one comorbid syndrome significantly predicted unique variance in dissociation (positively) and positive emotionality (negatively). The presence of one clinical syndrome significantly and positively predicted negative emotionality. Findings support the possibility that the complexity, and not just the presence, of psychopathology could identify different groups of inmates.

## Keywords

psychopathology, psychiatric disorders, personality disorders, dissociation, negative emotionality

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There is substantial evidence of high prevalence of psychopathology among incarcerated offenders (Birmingham, Mason, & Grubin, 1996; Coid, 1984; Fazel & Danesh, 2002; Fazel & Seewald, 2012). Personality disorders are typically reported as the most prevalent diagnosis, followed by major depressive and psychotic disorders, though with high heterogeneity across samples (Fazel & Danesh, 2002). In addition, in a more recent meta-analysis, it was reported that up to 43% of inmates with any form of psychopathology suffered from a comorbid substance use disorder (Fazel & Seewald, 2012). Nevertheless, comorbidity rates widely vary across samples, ranging between 9% and 95% (Fazel & Seewald, 2012). Interestingly, incarcerated offenders who present with multiple diagnoses usually show more serious offending behaviors and higher levels of psychopathy (Coid, 2003), thus likely representing a particularly at-risk population of inmates. Likewise, when compared with those with a single diagnosis (or those without any psychiatric disorder), inmates with more than one disorder in comorbidity are more likely to show severe impairment in social functioning, reporting greater problems in the areas of employment, substance abuse, and relationships with family (Piselli, Elisei, Murgia, Quartesan, & Abram, 2009).

This complex clinical picture requires careful screening assessment at intake, to deliver appropriate treatment programmes during detention and ensure an effective transition to mental health services in the community upon release (Okasha, 2004; Prior, 2007). Even though in recent years there has been an increased interest for specific psychopathological features of violent offenders (Nestor, 2002), there is a need to clarify how specific psychological issues characterize inmates' mental functioning. Among possible correlates of psychiatric morbidity in prisoner populations, some evidence has been found regarding the role of dissociative symptoms (i.e., a detachment from physical and emotional experience including derealization, depersonalization, and absorption symptoms; Ruiz, Poythress, Lilienfeld, & Douglas, 2008; Zavattini et al., 2015), emotion dysregulation, and negative emotionality (Garofalo, Holden, Zeigler-Hill, & Vellotti, 2016; Sun, Luo, Wu, & Lin, 2016), as well as selected psychological symptoms such as paranoid ideation and delusional thinking (Fazel & Yu, 2011; Nestor, 2002). For instance, greater levels of dissociative experiences have consistently been reported among prisoners, as compared with community samples (Moskowitz, Barker-Collo, & Ellson, 2005), and this difference remained significant after controlling for general psychological distress (Zavattini et al., 2015). Furthermore, inmates typically present higher levels of negative emotionality (Verona, Patrick, & Joiner, 2001), and in particular higher levels of disgust, fear, guilt, and shame (Garofalo, 2015; Tangney, Stuewig, Mashek, & Hastings, 2011).

Although the presence of negative emotionality and dissociative symptoms among inmates is well established, little is known about whether these clinical domains are associated with the presence of single or multiple clinical syndromes (i.e., psychiatric disorders formerly included in the Axis I of the *Diagnostic and Statistical Manual of Mental Disorders* [4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association [APA], 2000]) in incarcerated populations. The co-occurrence of different clinical syndromes could be conceptualized as an index of severity of psychopathology (Dimaggio et al., 2013). However, it is unclear whether dissociative experiences and negative

emotionality are associated with the *presence* or the *severity* of psychopathology. It is possible that inmates with one or more clinical syndromes show similar levels of dissociation and negative emotionality. Nonetheless, greater severity of psychopathology (i.e., suffering from more than one syndrome) might correspond with increased levels of dissociative experiences and negative emotionality. Indeed, to understand the mental health needs of inmates, it could be important to examine whether different degrees of severity of psychiatric disorders (i.e., a single vs. two or more co-occurring syndromes), correspond with different levels of impairment in selected domains, such as dissociation and negative emotionality. In line with current advances in theoretical and empirical psychopathology (e.g., Wright, Pincus, & Lenzenweger, 2012), it would be anticipated that, rather than relating to psychopathology as such, the extent of dissociative experiences and negative emotionality would depend on the severity of psychopathology. In other words, it is likely that regardless of distinct psychiatric diagnoses, inmates with more complex psychopathology (i.e., with a co-occurrence of more than one syndrome) would feature greater impairment in various domains when compared with inmates with a single syndrome. Preliminary evidence has supported this hypothesis reporting significant associations between comorbid clinical syndromes and higher rates of recidivism (Coid et al., 2009; Compton, Conway, Stinson, Colliver, & Grant, 2005; Morgan, Fisher, Duan, Mandracchia, & Murray, 2010). Yet, to our knowledge, no prior studies have examined the association between comorbid clinical syndromes and other aspects of psychological dysfunctions, which could have important implications for clinical work in prison settings. Indeed, based on this hypothesis, different treatment targets could be more appropriate for different sub-populations of offenders.

In addition, assessment measures used to investigate complex mental mechanisms in incarcerated samples have been mainly interview-based or clinician-rated instruments (Fazel & Seewald, 2012), which are often time-consuming and require extensive training. Notwithstanding their inevitable limitations, indeed, the use of self-report questionnaires may be more appropriate in prison populations (Ullrich et al., 2008). Moreover, self-report measures may avoid underreporting of symptoms which may be seen as undesirable in prison settings, that is, as a sign of “weakness” (Center for Substance Abuse Treatment, 2005; Velotti, Elison, & Garofalo, 2014), by guaranteeing confidentiality. Using self-report assessment in a large mixed inmate sample, Morgan et al. (2010) found dimensional rates of clinical syndromes similar to those reported in psychiatric inpatients and even higher rates of bipolar disorders (specifically, manic symptoms), posttraumatic stress disorder, and delusional symptoms.

In an effort to bolster an integrated international perspective to deal with the mental health of prisoners (Bogaerts, 2010; Ogloff, Roesch, & Eaves, 2000), whereas the majority of studies comes from the United States, the United Kingdom, and Republic of Ireland (Fazel & Danesh, 2002; Fazel & Seewald, 2012), only three studies have investigated the prevalence of psychiatric disorders among Italian incarcerated offenders so far (Carra, Giacobone, Pozzi, Alecci, & Barale, 2004; Piselli et al., 2009; Zoccali et al., 2008). They replicated findings from other countries regarding the higher prevalence of mood disorders and substance misuse, also reporting high rates of anxiety

disorders—which were not included in the above meta-analytic studies (Fazel & Danesh, 2002; Fazel & Seewald, 2012)—but lower levels of psychotic disorders, compared with other studies (Carra et al., 2004; Zoccali et al., 2008). However, these studies were only based in single correctional facilities, limiting the generalizability of their findings. Furthermore, only in one case the issue of comorbidity was addressed, finding that 20.9% of inmates presented a comorbid mental and substance use disorder (Piselli et al., 2009). However, none of these studies has looked at possible associations that comorbidity have with specific psychological symptoms.

In an attempt to advance research in this field, the aim of the current study was to explore the prevalence, co-occurrence, and correlates of self-reported clinical syndromes in a multi-site study involving a large Italian sample of inmates. Specifically, we tested the hypotheses that (a) the presence of none, one, or more than one clinical syndrome would reflect a continuum of severity, as indicated by significant differences in personality disorder traits and psychological symptoms; (b) the severity of dissociative symptoms and negative emotionality would show significant increases between inmates with none, one, or more than one clinical syndrome, above and beyond the influence of personality disorder traits, psychological distress, and other identified covariates (e.g., demographic).

## Method

### *Participants and Procedures*

The study population was defined as all people convicted of violent crimes admitted to any of 15 jails across the country, ranging from medium to large size facilities. Consecutive subjects were conveniently recruited in the period of March 2013 through July 2015, seeking their written informed consent. Potential participants were excluded if they had received medications in the past 3 months. Assessments took place in the presence of a researcher and sometimes required more than one session to avoid impairment of level of attention and willingness to cooperate. The study was observational, as no intervention was made either by, or at the behest of, the research team. The study received formal approvals from the ethical review board of the Department of Dynamic and Clinical Psychology of Sapienza University of Rome and from the Italian Ministry of Justice.

### *Measures*

An extensive battery of instruments was used to collect information, as listed in the following paragraph, reporting for each scale relevant internal consistency measures ( $\alpha$ s) as assessed in our study.

*Millon Clinical Multiaxial Inventory–III (MCMI–III)*. The Italian version of the MCMI–III (Millon, 2006, 2008) was used to assess personality disorders and major clinical syndromes in line with the *DSM–IV–TR* (APA, 2000). This is a 175-item true/false

self-report measure of 14 personality patterns and 10 clinical syndromes for use with adults 18 years of age and older. Personality patterns include all personality disorders listed in the *DSM-IV-TR* (remained unaltered in the new *Diagnostic and Statistical Manual of Mental Disorders* [5th ed.; *DSM-5*; APA, 2013]), plus four personality disorders included in previous editions of the manual, and thus include scores on paranoid, schizoid, schizotypal, histrionic, narcissistic, antisocial, borderline, avoidant, obsessive-compulsive, dependent, depressive, masochistic, passive-aggressive, and sadistic personality disorder traits. Clinical syndromes are also modeled after the *DSM-IV-TR* Axis I (APA, 2000) nosology, including dimensional scores of the following: anxiety disorder, somatoform disorder, bipolar disorder, dysthymic disorder, alcohol dependence, drug dependence, posttraumatic stress disorder, thought disorder, major depression, and delusional disorder. On all scales, scores of 75 or higher are considered indicative of the possible presence of clinically relevant symptoms. The MCMI-III has shown sound psychometric properties in both its original (Millon, 2006) and Italian (Millon, 2008) versions. In the present study, coefficient alphas ranged from .71 to .88 for all scales.

*Dissociative Experiences Scale—II (DES-II)*. The construct of dissociation was measured using the Italian version of the DES-II (Carlson & Putnam, 1993; Garofalo et al., 2015). This is a self-report scale measuring 28 dissociative phenomena that can occur in daily life related to the depersonalization, derealization, amnesia, and absorption domains. Respondents are asked to indicate on an 11-point scale (ranging from 0%, meaning *never*, to 100%, meaning *at least once per week*) to what extent they experience these phenomena, without being under the influence of alcohol or drugs. The total DES-II score is the mean of all 28 items scores, and represents a valid and reliable index of dissociative symptoms (Carlson & Putnam, 1993). The validity of the DES-II to measure dissociative experiences in inmate populations from different countries has been shown in prior studies (Becker-Blease & Freyd, 2007; Moskowitz et al., 2005; Poythress, Skeem, & Lilienfeld, 2006; Zavattini et al., 2015). In the present study, internal consistency was very good ( $\alpha = .93$ ).

*Differential Emotions Scale—IV (DES-IV)*. The DES-IV (Izard, Libero, Putnam, & Haynes, 1993) was used to assess discrete emotional dimensions. This measure includes 12 emotion scales that assess interest, enjoyment, surprise, sadness, anger, disgust, contempt, fear, guilt, shame, shyness, and inwardly directed hostility. Each emotion is assessed with three questions on a 5-point scale (36 items in total), asking respondents to indicate how often they experience those feelings (ranging from 0 = *rarely or never*, to 5 = *very often*). From the DES-IV's items, two composite scales are also derived for positive (a sum of interest, enjoyment, and surprise;  $\alpha = .70$ ) and negative emotionality (a sum of anger, contempt, disgust, fear, guilt, and inner-directed hostility;  $\alpha = .91$ ) that were used in the current study.

*Brief Symptom Inventory (BSI)*. The BSI (Derogatis & Melisaratos, 1983) was used to assess the participants' psychological symptom status. This is a 53-item self-report symptom

inventory with three global indices of distress: the global severity index (GSI), which is the mean score of all 53 items; the positive symptoms distress index (PSDI), which is the mean of non-zero-rated items; and the positive symptom total (PST), which is a count of non-zero items. Each item asks about symptoms of psychological distress occurred over the past month and is rated on a 5-point Likert-type scale (ranging from 0 = *not at all* to 4 = *extremely*). The BSI has demonstrated good psychometric properties (Derogatis & Melisaratos, 1983) and, in the present study, showed excellent internal consistency ( $\alpha = .96$ ).

### Statistical Analysis

Analyses were carried out using Stata for Windows Version 13.1. All statistical tests used the 5% level of significance, and all  $p$  values were two-tailed. Individual responses were weighted for missing data using pro-rating method. If more than 20% of responses for a single subject were missing, the individual was excluded from the analyses of that particular scale.

First, we provided descriptive statistics by clinical syndromes, highlighting any differences between the three groups (none, one, more than one clinical syndrome), through ANOVA, Pearson's  $\chi^2$ , and Fisher exact tests, as appropriate. Means,  $SD$ s, and percentages were used. Post hoc tests were conducted with Tukey's multiple comparisons correction. We then used hierarchical multiple regressions to analyze the effect of clinical syndromes on dissociative experiences and negative and positive emotionality. We controlled for several potential confounders, including age, personality disorders, and psychological symptoms, as measured by BSI subscales.

## Results

### Descriptive Statistics

In total, 493 individuals were eligible and gave consent for assessment. However, we could not collect information on clinical syndromes for 55 subjects, and they were excluded from the analyses. Thus, the associations between dissociative experiences and differential emotions and clinical syndromes were evaluated for 438 subjects (males:  $n = 398$ , 91%). The majority of the sample (57%;  $n = 252$ ) had at least one clinical syndrome, of whom 169 subjects (38% of the total sample) suffered from more than one. A detailed description of rates of each syndrome—based on a score higher than 75 on the corresponding scales of the MCMI-III—is presented in Table 1. Mean age was 39.9 years ( $SD = 11.8$  years), and 41% of subjects was in a relationship before incarceration. In terms of educational level, 51% completed only compulsory period, while 49% had higher attainments. Regarding substance misuse, 31% reported at least a weekly use, while monthly users made up 17% of the sample. We did not find any statistically significant gender differences, though this was the case for age ( $p = .02$ ). Indeed, subjects with more than one clinical syndrome were younger, as compared with people with no clinical syndromes ( $M = 38.08$ ,  $SD = 11.79$  years vs.  $M = 41.51$ ,  $SD = 12.26$  years).

**Table 1.** Prevalence of Self-Reported Clinical Syndromes ( $N = 438$ ).

Clinical syndromes	<i>n</i>	%
Anxiety disorder	202	46
Somatoform disorder	26	6
Bipolar disorder	19	4
Dysthymic disorder	84	19
Alcohol dependence	65	15
Drug dependence	98	22
Posttraumatic stress disorder	37	8
Thought disorder	18	4
Major depression	37	8
Delusional disorder	48	11

Note. For each clinical syndrome, *n* indicates the number of participants who scored higher than 75 on the corresponding scale of the Millon Clinical Multiaxial Inventory-III. The total percentage exceeds 100% as each participant could report more than one syndrome.

### Univariate Analyses

As shown in Table 2, all MCMI-III personality disorder scales apart from narcissistic were significantly associated ( $p < .001$ ) with the presence of Axis I clinical syndromes, with a clear trend for clinically relevant levels of multiple personality disorders in subjects with more than one syndrome (with the exception of histrionic and obsessive-compulsive personality patterns, which showed an opposite trend). Scores on the GSI, PSDI, and PST scales of the BSI, by the presence of one or more MCMI-III Axis I clinical syndromes, are shown in Table 3. All were significantly associated with clinical syndromes, with a clear severity trend based on the number of MCMI-III syndromes detected. Table 3 also shows distribution of DES-II total score and DES-IV positive and negative emotionality scores by the presence of one or more MCMI-III Axis I clinical syndromes. Dissociative experiences on DES-II and negative emotionality on DES-IV were both significantly associated with clinical syndromes, with a general severity trend based on the presence of more syndromes. However, this was not the case for positive emotionality, whose scores were not associated with MCMI-III Axis I clinical syndromes. Note that the mean levels of dissociation in each group did not reach the cutoff used to screen for dissociative disorders (i.e., 30; Carlson et al., 1993).

### Multivariate Analyses

Controlling for identified covariates, we used linear regressions to analyze the effect of clinical syndromes on dissociative experiences and negative emotionality (Table 4). Dissociative experiences, as measured by the DES-II scale, were associated only with the presence of more than one clinical syndrome, beyond the effect of younger age and the GSI and PST scales of the BSI. The overall model explained approximately 42%

**Table 2.** Distribution of Personality Patterns in Relation to the Presence of Clinical Syndromes ( $N = 438$ ).

Personality patterns	Axis I clinical syndromes				<i>p</i>
	Total <i>n</i> = 438	None <i>n</i> = 186 (42%)	One <i>n</i> = 83 (19%)	More than one <i>n</i> = 169 (38%)	
Paranoid	60 (14%)	4 (2%)	11 (13%)	45 (27%)	<.001 <sup>a</sup>
Schizoid	46 (10%)	8 (4%)	7 (8%)	31 (18%)	<.001 <sup>a</sup>
Schizotypal	25 (6%)	0	3 (4%)	22 (13%)	<.001 <sup>a</sup>
Histrionic	27 (6%)	17 (9%)	9 (11%)	1 (1%)	<.001 <sup>a</sup>
Borderline	34 (8%)	0	5 (6%)	29 (17%)	<.001 <sup>a</sup>
Antisocial	71 (16%)	9 (5%)	13 (16%)	49 (29%)	<.001 <sup>b</sup>
Narcissistic	174 (40%)	75 (40%)	31 (37%)	68 (40%)	<i>ns</i> <sup>b</sup>
Avoidant	67 (16%)	12 (7%)	16 (19%)	39 (23%)	<.001 <sup>b</sup>
Dependent	66 (15%)	6 (3%)	14 (17%)	46 (27%)	<.001 <sup>a</sup>
Obsessive-Compulsive	28 (6%)	17 (9%)	8 (10%)	3 (2%)	<.003 <sup>a</sup>
Depressive	112 (26%)	9 (5%)	23 (28%)	80 (48%)	<.001 <sup>b</sup>
Masochistic	61 (14%)	9 (5%)	11 (13%)	41 (24%)	<.001 <sup>b</sup>
Passive-aggressive	130 (30%)	15 (8%)	31 (37%)	84 (50%)	<.001 <sup>b</sup>
Sadistic	30 (7%)	3 (2%)	5 (6%)	22 (13%)	<.001 <sup>a</sup>

Note. Values are  $N$  (%). The presence of personality patterns and clinical syndromes was assessed on scores higher than 75 on the corresponding MCMI-III scale. Co-occurrence of multiple personality patterns is plausible. MCMI-III = Millon Clinical Multiaxial Inventory-III.

<sup>a</sup>Fisher exact test.

<sup>b</sup>Pearson's  $\chi^2$ .

of the variance in dissociation scores ( $R^2_{adjusted} = .42, p < .001$ ). As regards positive emotionality, these were less likely to be reported by subjects with more than one clinical syndrome, beyond the influence of the PST scale of the BSI. The overall model explained approximately 4% of the variance in positive emotionality ( $R^2_{adjusted} = .04, p = .007$ ). Finally, negative emotionality was significantly associated with the presence of a single clinical syndrome, regardless the influence of the PST and PSDI scores of the BSI. The overall model explained approximately 52% of the variance in negative emotionality scores ( $R^2_{adjusted} = .52, p < .001$ ).

## Discussion

The present study advances current knowledge providing some support for the importance of considering the complexity—and not just the presence—of clinical syndromes among incarcerated offenders, to obtain a more nuanced view of their psychological functioning. In this study, the complexity of psychopathology was operationalized as the presence of one *versus* more than one self-reported clinical syndromes. Therefore, it was examined whether the co-occurrence of different clinical syndromes would be

**Table 3.** Association Between Psychological Distress and Presence of Clinical Syndromes (N = 438).

	Total		Axis I clinical syndromes			$p^a$ ( $\eta_p^2$ )	Post hoc contrasts
	n = 438	None n = 186 (42%)	One n = 83 (19%)	More than 1 n = 169 (38%)			
BSI global severity index	0.73 (0.64) 0.00-3.77	0.36 (0.39) 0.00-3.77	0.68 (0.54) 0.00-3.00	1.16 (0.66) 0.04-2.92	<.001 (.32)	I > No*** More than 1 > No*** More than 1 > I***	
BSI positive symptom total	19.74 (13.61) 0.00-53.00	12.02 (9.67) 0.00-50.00	19.92 (11.89) 0.00-50.00	28.15 (13.15) 0.00-53.00	<.001 (.28)	I > No*** More than 1 > I*** More than 1 > No***	
BSI positive symptom distress index	1.68 (0.63) 1.00-4.00	1.38 (0.46) 1.00-4.00	1.67 (0.58) 1.00-3.53	1.99 (0.66) 1.00-4.00	<.001 (.19)	I > No*** More than 1 > I*** More than 1 > No***	
DES-II dissociative experiences	16.52 (15.44) 0.00-83.21	9.36 (7.82) 0.00-47.86	14.57 (11.81) 0.00-49.64	25.19 (16.45) 0.00-83.21	<.001 (.25)	I > No*** More than 1 > I*** More than 1 > No***	
DES-IV positive emotionality	25.50 (5.29) 9.00-41.00	25.34 (5.05) 9.00-41.00	26.13 (6.04) 9.00-39.00	25.32 (5.14) 9.00-36.00	ns (.004)		
DES-IV negative emotionality	61.89 (16.10) 27.00-132.00	53.66 (12.77) 27.00-123.00	64.82 (16.68) 27.00-132.00	70.21 (14.53) 27.00-103.00	<.001 (.22)	I > No*** More than 1 > I*** More than 1 > No***	

Note. Values are M (SD), min-max range, weighted for missing responses.  $\eta_p^2$  = partial eta Squared (values greater than .14 indicate large effect size). Post hoc contrasts were carried out using Tukey's multiple comparisons correction. BSI = Brief Symptom Inventory; DES-II = Dissociative Experiences Scale-II; DES-IV = Differential Emotions Scale.

<sup>a</sup>Based on one-way ANOVA.

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

**Table 4.** Multiple Linear Regression Models Predicting Dissociative Experiences and Positive and Negative Emotionality ( $N = 438$ ).

DV	DES-II dissociative experiences	B (95% CI)	SE	sr <sup>2</sup>
IVs	Clinical syndromes <sup>a</sup>			
	One	1.52 [-1.62, 4.67]	1.60	.0014
	More than one	6.25*** [3.06, 9.45]	1.62	.0223
	Brief Symptom Inventory			
	GSI	17.74*** [10.77, 24.70]	3.54	.0377
	PST	-0.28* [-0.55, -0.01]	0.14	.0064
	PSDI	-2.66 [-6.55, 1.23]	1.98	.0027
	Age	-0.17*** [-0.27, -0.08]	0.05	.0197
Personality disorders <sup>b</sup>	1.82 [-1.34, 4.99]	1.61	.0019	
DV	DES-IV positive emotionality	B (95% CI)	SE	sr <sup>2</sup>
IVs	Clinical syndromes <sup>a</sup>			
	One	-0.09 [-1.58, 1.41]	0.76	.0000
	More than one	-1.78* [-3.32, -0.25]	0.78	.0145
	Brief Symptom Inventory			
	GSI	-1.21 [-4.55, 2.13]	1.70	.0014
	PST	0.13* [0.005, 0.26]	0.06	.0115
	PSDI	0.99 [-0.90, 2.88]	0.96	.0030
	Age	0.03 [-0.02, 0.07]	0.02	.0036
Personality disorders <sup>b</sup>	0.27 [-1.25, 1.78]	0.77	.0003	
DV	DES-IV negative emotionality	B (95% CI)	SE	sr <sup>2</sup>
IVs	Clinical syndromes <sup>a</sup>			
	One	3.78* [0.45, 7.10]	1.69	.0072
	More than one	-1.27 [-2.19, 4.74]	1.76	.0008
	Brief Symptom Inventory			
	GSI	-2.99 [-10.52, 4.55]	3.83	.0009
	PST	0.83*** [0.54, 1.12]	0.15	.0460
	PSDI	5.87*** [1.70, 10.03]	2.12	.0110
	Age	-0.01 [-0.11, 0.10]	0.05	.0000
Personality disorders <sup>b</sup>	2.22 [-1.14, 5.57]	1.71	.0024	

Note. DV = dependent variable; DES-II = Dissociative Experiences Scale-II; CI = confidence interval; sr<sup>2</sup> = squared semi-partial correlation coefficient (i.e., index of effect size indicating the amount of unique variance explained by a single predictor); IVs = independent variables; DES-IV = Differential Emotions Scale; GSI = global severity index; PST = positive symptom total; PSDI = positive symptom distress index.

<sup>a</sup>No clinical syndrome.

<sup>b</sup>No personality disorder.

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

associated with greater impairment in psychological functioning, with an emphasis on dissociative experiences and negative emotionality. Furthermore, it was investigated whether the presence of one *versus* more than one clinical syndrome would predict

greater levels of dissociative symptoms and negative emotionality and lower levels of positive emotionality. Results largely supported the hypothesis that inmates with more clinical syndromes in comorbidity (as assessed with the MCMI-III) have different profiles than inmates with one MCMI-III-assessed clinical syndrome in terms of self-reported dissociative experiences and negative emotionality.

In line with previous findings obtained with clinical measures (Fazel & Danesh, 2002; Fazel & Seewald, 2012), clinically relevant symptoms of mood disorders (depression, dysthymic, and bipolar disorder) were reported by 31% of the sample, followed by psychotic disorders (15%), posttraumatic stress disorder (8%), and somatoform disorder (6%). Furthermore, 37% of the sample reported clinically relevant symptoms of substance disorders. Finally, almost half of the sample (46%) reported clinically relevant symptoms of anxiety disorders. Interestingly, although this represents a sensibly greater rate compared with prior international studies, it is in line with prior studies conducted in Italian prisons and jails (Carra et al., 2004; Piselli et al., 2009; Zoccali et al., 2008). More than half of our sample reported to suffer from at least one clinical syndrome. Interestingly, the majority of inmates with at least one clinical syndrome actually reported to suffer from more than one syndrome. Although this result should be considered with caution, given the self-reported nature of the assessment, it is consistent with the growing body of evidence that comorbidity between clinical syndromes represent more a rule than an exception (Krueger & Markon, 2006). This figure lies in the middle of the range reported in the studies meta-analyzed by Fazel and Seewald (2012). Future studies should attempt to clarify if such heterogeneity might be due to different assessment methods used, or to the nature of the samples, or if other variables account for the variability in comorbidity rates.

The high rate of comorbidity in our sample calls for further research about the factors underpinning the co-occurrence of different clinical syndromes. Using sophisticated modelling approaches, Krueger and Markon (2006) had provided some compelling evidence that comorbidity might be better understood adopting a specific liability model. Specifically, based on their seminal meta-analytic study, they concluded that comorbidity could be more aptly conceptualized as a function of underlying liability factors. Moreover, they argued that the extensive comorbidity among clinical syndromes likely reflects the presence of a smaller number of liability factors that can predispose to multiple kinds of clinical syndrome (Krueger & Markon, 2006). These liabilities (i.e., “an indirectly observed or latent propensity to develop directly observed or manifest disorders”; Krueger & Markon, 2006, p. 118) were conceptualized as an internalizing and an externalizing dimensional constructs—correlated with each other—and with the internalizing construct bifurcating into two lower order factors, namely, distress (which constitutes a liability factor for mood disorders) and fear (which constitutes a liability factor for anxiety disorders). This framework seems to fit fairly well with our hypothesis, according to which comorbidity among multiple clinical syndromes would be reflective of an increased severity of overall psychopathology. Indeed, it would be reasonable to expect that a greater severity in putative liability factors could pave the way for the emergence of several—as opposed to one—clinical syndromes.

Our hypothesis that the co-occurrence of self-reported clinical syndrome would be a possible operationalization of the severity of psychopathology (Dimaggio et al., 2013) was supported by our findings that scores on the severity indices of the BSI, as well as on personality disorder scales, showed significant increases not only when comparing inmates without clinical syndromes with those with one clinical syndrome but also when comparing inmates with one clinical syndrome with those with more than one clinical syndrome. Regarding our main hypotheses, we also found support for the expectations that dissociative symptoms and negative emotionality would increase progressing from the lower end of severity (i.e., absence of clinical syndromes) to the upper end (conceptualized here as the presence of more than one clinical syndromes). In line with the expectations, the lowest level of negative emotionality was found in the group of inmates without clinical syndromes, the highest level of negative emotionality was reported by inmates with more than one clinical syndromes, with the middle group (inmates with one clinical syndrome) significantly differing from both other groups. The same trend characterized levels of dissociative experiences. Taken together, these findings appear to suggest that at more severe degrees of suffering from clinical syndromes correspond a (quantitatively) distinct psychological functioning, in the domains of affectivity and dissociation, which is indeed referred as a maladaptive emotion regulation strategy (Grabe, Rainermann, Spitzer, Gansicke, & Freyberger, 2000). Therefore, it is reasonable to argue that, at more severe levels, psychopathology is associated with an elevated presence (or intensity) of negative emotions. In this context, dissociation could represent a maladaptive way to cope with negative emotions, detaching the self from the experience of feelings such as sadness, fear, shame, and other painful emotional states. Although it can be functional in the short term, dissociation could in turn contribute to the maintenance or exacerbation of the clinical syndromes, by depriving the person from the possibility to reflect about feelings and integrate them in a coherent representation of the self (Grabe et al., 2000). Of note, although substantially higher than what is typically found in non-clinical and non-forensic samples, the average levels of dissociation in the three groups of inmates, based on the presence of clinical syndromes, never exceeded the cutoff used for the screening of possible dissociative disorders (i.e., 30; Carlson et al., 1993). However, as found in recent studies (Zavattini et al., 2015), mean levels of dissociations in the inmate group with at least one clinical syndrome (as opposed to those without any clinical syndrome) seem to indicate that they might be characterized by a pathological experience of dissociative symptoms, as if they had “crossed the line” from an adaptive toward a maladaptive way to cope with emotional distress. Furthermore, levels of positive emotionality did not differ significantly across group, possibly suggesting that the potential psychological resource of experiencing positive emotions could be relatively intact regardless the presence of clinical syndromes.

Finally, we examined whether the presence of one or more clinical syndromes would predict greater levels of dissociation and negative emotionality, as well as lower levels of positive emotionality. After controlling for indexes of psychological distress (i.e., the BSI scales, which significantly predicted dissociation and negative emotionality, but not positive emotionality, in line with the above findings), different predictors emerged

for dissociation and emotionality. Specifically, having more than one clinical syndrome (but not only one) was significantly associated with greater levels of dissociative experiences, suggesting that—when controlling for each other—having more than one clinical syndrome is a stronger predictor of dissociation. On the contrary, negative emotionality was predicted only by the presence of one clinical syndrome. This picture seems to indicate that the presence of one clinical syndrome was related to a significant increase in negative emotionality, whereas the comorbidity between at least two clinical syndromes was associated with a significant increase in dissociative experience. We could speculate that one clinical syndrome is sufficient to see a substantial increase in the experience of negative emotions, but only the presence of two or more clinical syndromes in comorbidity is associated with a substantial increase in dissociative experiences. In turn, this would imply that different psychopathological mechanisms might be at work in explaining these clinically relevant negative outcomes (dissociation *vs.* negative emotionality) in their association with major clinical syndromes. Therefore, different approaches should be adopted to prevent and treat their presentation in clinical forensic settings. However, future research is needed to corroborate this speculation with incremental empirical evidence. Finally, it should be noted that although levels of positive emotionality did not distinguish inmates with no, one, or more clinical syndromes, only the latter negatively predicted positive emotionality in our multivariate analysis. As such, a drop in positive emotions could be predicted by the presence of more than one clinical syndrome in comorbidity. Taken together, these findings provide indirect evidence that—at the increase of severity of psychopathology—inmates may first suffer from an increase in negative emotionality, and only a higher degree of severity (i.e., in the presence of comorbidity) would correspond to a broader significant impairment in psychological well-being, with elevated dissociative symptoms and reduced experience of positive emotions (perhaps exacerbated by the detachment from feelings provoked by dissociation).

Some limitations of the present study should be taken into account. First, we relied on self-report measures that might have inflated associations among variables due to the spurious effect of common method variance. Of note, another limitation of using self-report measures to assess psychological constructs (especially in prison populations) is that they might be biased by participants' lack of psychological insight or a willingness to deceive. Second, we only considered clinical syndromes from a categorical perspective. However, the severity of clinical syndromes could also be operationalized from a dimensional standpoint. In other words, our findings do not tell us information about the effect of the relative severity of each clinical syndromes (e.g., more or less depressive symptoms in the context of a depressive syndrome). Third, the cross-sectional and correlational design of our study does not allow us to make inferences about the direction of the effects examined in regression analyses. Fourth, although gender differences did not emerge on our key study variables, future studies with a more balanced number of male and female inmates are warranted to investigate whether gender could moderate any of the relationships being examined. Finally, future studies should compare inmate and psychiatric samples to investigate whether

the patterns of associations occurred in this study are specific to inmate populations or generalize across different (clinical) populations.

Despite its limitations, the present study makes a contribution to the clinical forensic literature suggesting that (a) the severity of the clinical condition should be taken into account when screening inmates at risk for clinical syndromes, (b) inmates presenting more than one clinical syndrome in comorbidity could be characterized by a substantial impairment in psychological functioning (including maladaptive personality traits, negative emotionality, dissociation, and general psychological distress) that differentiate them not only from those inmates without any clinical syndromes but also from those with one clinical syndrome, (c) dissociation and negative emotionality likely represent relevant features associated with the presence of one or more clinical syndrome—perhaps underlain by different psychopathological mechanisms—and should therefore receive the appropriate emphasis when implementing psychological treatments for forensic patients at risk for psychiatric disorders.

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