

PSYCHOPATHOLOGICAL FEATURES AND DROP-OUT PREDICTORS IN A SAMPLE OF  
INDIVIDUALS WITH SUBSTANCE USE DISORDER  
UNDER RESIDENTIAL COMMUNITY TREATMENT

Alessio Gori, Eleonora Topino, Ilaria Bagnoli, Giuseppe Iraci-Sareri, & Giuseppe Craparo

## Abstract

**Objective:** Several studies have been conducted to investigate the relationship between addiction and crimes, but little is known about the treatment of individuals with substance use disorder (SUD) with criminal records. This study aimed to assess the treatment progress of a group of individuals with SUD who underwent treatment within a residential community, and to analyze their personality profiles to identify drop-out predictors.

**Method:** We evaluated 49 subjects using the Psychopathic Personality Inventory-Revised (PPI-R), the Psychological Treatment Inventory (PTI), the Barratt Impulsiveness Scale-11 (BIS-11), and the Toronto Alexithymia Scale (TAS-20) and carrying out various statistical analyses, including the t-test, Cohen's d, analysis of variance (ANOVA), and discriminant analysis.

**Results:** Results are discussed within the context of previous studies on this topic. Our results showed that variables such impulsiveness, cold-heartedness, alexithymia, and psychopathic traits influenced the premature treatment abandonment of individuals with SUD and criminal records.

**Conclusions:** This study provides a further piece for the understanding of subjects with SUD and criminal records, suggesting the importance of a psychodynamic integrated approach, and showing the impact of some psychopathological features on treatment drop-out.

**Key words:** process-outcome research, psychological treatment, psychotherapy, addiction, assessment

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## Introduction

There have been a large number of studies conducted on the link between drug addiction and crime. A meta-analysis of 30 studies showed that individuals with substance use disorder (SUD) are between 2.8 and 3.8 times more likely to commit crimes than non-drug users (Bennett, Holloway, & Farrington, 2008). Indeed, people with SUD get involved in the criminal justice system for diverse types of crimes, and many of these offenses are related to the use of drugs (UNODC, 2013). The three drugs that are most frequently associated with criminal conduct are crack, heroin, and cocaine. People abusing these drugs are more likely to commit crimes (6, 3, and 2.5 times greater, respectively) than the users of other drugs (Bennett, Holloway, & Farrington, 2008). Furthermore, the relationship between criminal activity and drug use varies according to the type of substance. Property crimes, prostitution, shoplifting, and theft are the crimes most frequently associated with users of crack, heroin, and cocaine (Mc Bride, 1981; Hunt, Lipton, & Spunt, 1984; Kuhns, Heide, & Silverman, 1992; Graham & Wish, 1994; Yacoubian et al., 2001; Holloway & Bennett, 2004).

The link between addiction and felony is complex and multifaceted. An individual with a substance use disorder may commit a crime as a direct result of the effects of drug intoxication, but these individuals may also commit crimes as a result of withdrawal symptoms, especially if he or she exhibits specific personality traits, such as antisocial or narcissistic ones (Echeburúa & Fernández-Montalvo, 2007). In light of this, the clinical literature has set forth multiple theories that try to explain the nature of the relationship between the use of drugs and criminal behavior. Some theoretical models proposed a direct causal relationship, where one of the variables causes the other. According to the Economic Compulsive Model (Goldstein, 1985), heavy drug users engage in criminal conduct to raise funds to purchase drugs.

Other hypotheses argue an indirect causal connection. Here, the theory of “common cause” indicates that different kinds of variables (sociological, psychological, or environmental factors) foster both substance dependence and crime, which are therefore linked by common causal roots (White, 1990; White, Brick, & Hansell, 1993).

Finally, the third group of theories includes the

## OPEN ACCESS

**How to cite this article:** Gori A, Topino E, Bagnoli I, Iraci-Sareri G, Craparo G (2020). Psychopathological features and drop-out predictors in a sample of individuals with substance use disorder under residential community treatment. *Clinical Neuropsychiatry*, 17 (1), 11-23.

<https://doi.org/10.36131/clinicalpsych20200102>

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**Funding:** No financial support was received for this study.

**Competing interests:** No author or any immediate family member has current financial relationships with commercial organizations that might present the appearance of a potential conflict of interest with the material presented.

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“systemic theories.” Here, the relation between crime and drug use is considered an underlying aspect of a deviant lifestyle/ deviant subculture (Goode, 1997; White & Gorman, 2000).

Individuals within the criminal justice system have higher rates of drug use disorders compared to the general population (UNODC, 2013); both the prevalence and frequency of offenses are higher among individuals with SUD compared to non-abusers (Holloway & Bennett, 2004). However, the long-term imprisonment of people with SUD is expensive. Adequate treatment and the care of individuals with SUD would help to reduce both drug use and recidivism to crime for those who have committed offenses (UNODC, 2010; UNODC & WHO, 2018). In fact, entry into the prison system seems to worsen the psychopathology of individuals with SUD (Bondenson, 2009).

According to some theories (e.g., Leshner, 1997), addiction can be seen as a chronic and relapsing brain disease or a neurological disorder. Consequently, related actions are manifestations of the disease. In this view, individuals with SUD are believed to be constrained in their choice of research and abuse. Other theories (e.g., Heyman, 2009) which include awareness of the constraints imposed by dependency, show how some individuals tend to stop when the costs are too high. At the very least, these theories posit that individuals delay their use when the contextual conditions are not favorable (Morse, 2011). According to this perspective, dependence and criminal conduct are not forcibly associated. More likely, other environment and subjective variables also influence this relationship. Indeed, to be distinct differences between individuals with and without criminal records were reported. Specifically, individuals with SUD and criminal behaviors exhibit significantly more antisocial traits, while individuals with SUD but no criminal records scored considerably higher on the phobic, dependent, and self-destructive personality disorder scales (Fernández-Montalvo et al., 2013). Some studies have reported a significant association between SUD and psychopathic traits (Taylor & Lang, 2006; Kimonis et al., 2012; Muratori et al., 2018). This, however, appears to be more pronounced in subjects with criminal histories (Gori et al., 2017). Furthermore, individuals with SUD with criminal histories have more externalizing symptoms, have a propensity for risk-taking behaviors, and are more inclined to perceive the external world as hostile and to consider others as responsible for their own problems and difficulties (Gori et al., 2017). Research shows that individuals with SUD who broke the law scored higher on psychoticism (40%) and neuroticism (64%) as compared to a non-drug user control group (Aggarwal et al., 2015).

Numerous studies (Gori et al., 2014, 2017) have shown that psychopathic traits are present among individuals with SUD who commit crimes. In particular, these impulsive-antisocial traits include impulsivity, irresponsibility, weak behavioral control, and criminal versatility (Hare, 2003). These traits are positively correlated with drug use (Lage, 2013). Interpersonal-affective traits, which indicate deceitfulness, superficial charm, manipulativeness, deficient empathy, and lack of remorse (Hare, 2003) show a negative relationship to substance abuse symptoms (Schulz, Murphy, & Verona, 2016).

According to this theoretical framework, the purposes of this study were to:

1. assess treatment outcomes in individuals with SUD and crime records, by repeated administration of various tests over time and at termination;

2. investigate and describe the psychopathological features in a sample of individuals with SUD with criminal records involved in treatment;
3. identify variables linked to the drop-out rate in order to prevent abandonment from the treatment.

## Methods

### *Participants and procedures*

Forty-nine subjects participated in this research [43 males (87.5%), six females (12.5%)] with an average age of 36.83 years (SD = 8.25, age-range 21–54). Among these subjects, 48 were of Italian descent and one of African descent. Most of the subjects were residents in the Tuscany (50%) and Lazio (37%) regions of Italy. Concerning marital/conjugal status, most of the subjects were single (76.6%), 6.4% said they were married, another 6.4% said they were divorced, 4.3% separated, and other 6.4% cohabitants. Regarding educational qualifications, 44.7% declared that they had a lower secondary school diploma, and another 44.7% reported having graduated high school; 8.5% said they attended only primary school, while 2.1% said they had a degree (see **table 1**).

With regards to the diagnostic characteristics of the analyzed subjects, it was considered convenient (for methodological reasons) to group the diagnostic categories, based on the personality organization levels of the Kernberg's model (Kernberg, 1993; Caligor, Kernberg, & Clarkin, 2007). These groups included, 1) Mood Disorders (which mainly includes disorders with a “high borderline personality organization”, i.e. conditions that show a fair working and social adaptation, with moderate ability to have a certain degree of intimacy in object relations and a benign cycle of intimate involvements, albeit presenting identity diffusion); 2) Personality Disorders (with a “low borderline personality organization”, i.e. conditions that show an inability to maintain work and sentimental relationships, with primitive defensive mechanisms and poor self-integration, as well as an identity diffusion); and 3) Psychotic Disorders (that is, symptomatic psychoses with a “psychotic personality organization”, i.e. conditions characterized by a loss of the reality testing, with a lack of differentiation between the internal and external experiences, as well as between the self and the object representations). In this way, the fusion of two perspectives—psychopathological and psychodynamic—facilitates a full understanding of deviant behaviors, as already shown by previous studies (Craparo et al., 2018). The first group included subjects diagnosed with bipolar disorder, cyclothymic disorder, and dysthymic disorder. The second group included two subjects with antisocial personality disorder, 15 subjects with borderline personality disorder, four subjects with personality disorder not otherwise specified, and three subjects with schizoid personality disorder. The third group included one subject with paranoid type of schizophrenia, three subjects with delusional disorder (persecutory type), two subjects with schizophrenia, two subjects with psychotic disorder not otherwise specified, and four subjects with schizoaffective disorder (see **figure 1**).

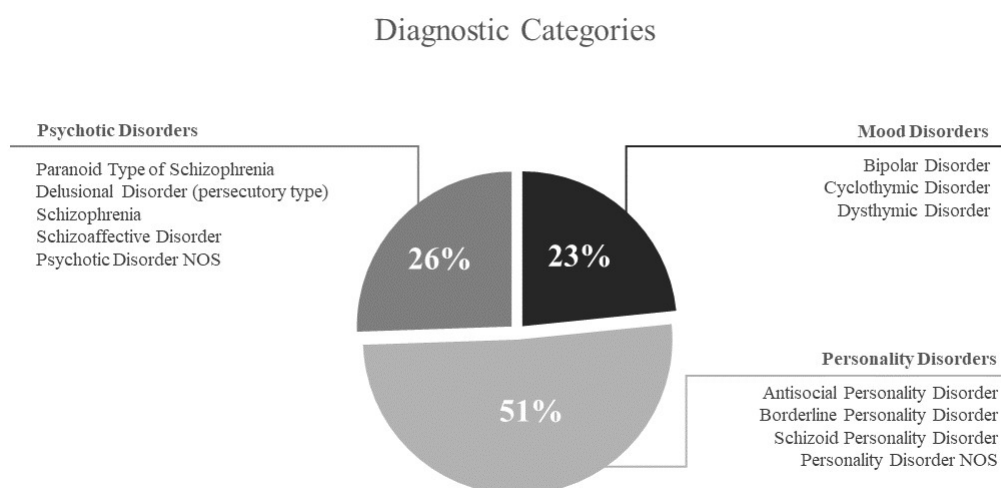
Moreover, all subjects had SUD. Most of the participants said they preferred cocaine (29.8%) and heroin (25.5%). Additionally, 23.4% of the sample reported having a previous history of poly-drug SUD.

There were 49 participants who underwent residential treatment in a therapeutic community, with an average

**Table 1.** Sociodemographic Characteristic of the sample

Sociodemographic Characteristics		
Age	M= 36.83, SD= 8.25	
<b>Gender</b>		
	<i>n</i>	%
Male	43	87.5
Female	6	12.5
<b>Nationality</b>		
Italian	48	98
African	1	2
<b>Marital Status</b>		
Single	38	76.6
Married	3	6.4
Divorced	3	6.4
Separated	2	4.3
Cohabitant	3	6.4
<b>Study degree</b>		
Elementary school	4	8.5
Middle School diploma	22	44.7
High School diploma	22	44.7
University degree	1	2.1

**Figure 1.** Diagnostic Categories



duration of 593.13 days (DS= 316.301; range 68–1317). These individuals were subjected to methadone therapy associated with specific pharmacological treatments based on their diagnosis. Subjects with Mood disorders were prescribed anxiolytics, antidepressants, and mood stabilizers; subjects with Psychotic disorders were prescribed mood stabilizers and neuroleptics; and subjects with Personality disorders were prescribed anxiolytics and mood stabilizers. Subjects with borderline Personality disorders were an exception to this latter trend. These individuals followed a more complex therapy consisting of anxiolytics, antidepressants, neuroleptics, and mood stabilizers.

All subjects had histories of committing crimes, and 83% of the participants were detained at least once. Most of the sample (65.3%) committed multiple crimes (see **table 2**). Concerning their current legal situation, 21.3% of the sample were not incarcerated; 12.8% were under house arrest; 42.6% were being tested for social services; 8.5% were receiving in-home detention; and 14.9% were participants in another legal regime (not specified) (see

**table 2**). Most of the subjects in the sample had been detained for less than a year (24.5%) over their total lifetimes (see **table 2**).

The measures, together with a demographic questionnaire (i.e., age, sex, marital status) were administered to participants. The participants were selected from the therapeutic communities of the Gruppo Incontro Società Cooperativa Sociale in Pistoia. All assessment measures were administered by the qualified staff of the Gruppo Incontro: all researchers were psychologist authorized to use the tests, and the diagnoses were established by the psychiatrists at the Center according to DSM-IV-TR criteria. The study was approved by the Ethics committee of the Italian National Health Service (INHS) of the Local Health Union (USL 3 section of Pistoia), and all participants gave free and informed consent to participation. This research was made possible thanks to the contribution of the Tuscany Region and thanks to the collaboration of the Gruppo Incontro Società Cooperativa Sociale in Pistoia.

**Table 2.** Legal features of the sample

Legal Situation		
Type of crime	<i>n</i>	%
<i>Shoplifting, Property damage</i>	1	2.0
<i>Drug</i>	3	6.1
<i>Robbery, Handling, Snatching</i>	1	2.0
<i>Burglary</i>	5	10.2
<i>Assault, Scuffle</i>	2	4.1
<i>Other</i>	3	6.1
<i>Multiple crimes</i>	32	65.3
<i>Missing</i>	2	4.1
Current Custodial Status		
<i>Freedom</i>	10	21.3
<i>House arrest</i>	6	12.8
<i>Tested for social services</i>	21	42.6
<i>Home detention</i>	4	8.5
<i>Other</i>	8	14.9
Duration of Detention		
<i>Less than one year</i>	12	24.5
<i>One year</i>	1	2.0
<i>Two years</i>	3	6.1
<i>Three years</i>	2	4.1
<i>Three to five years</i>	7	14.3
<i>Five to ten years</i>	6	12.2
<i>More than ten years</i>	7	14.3
<i>Missing</i>	11	22.4

## Measures

### 1) Psychopathic Personality Inventory-Revised (PPI-R).

The PPI-R (Lilienfeld & Widows, 2005) is a self-report measure of psychopathic traits in adults. The PPI-R was developed from the original version of the Psychopathic Personality Inventory (Lilienfeld & Andrews, 1996). The revised version includes 154 items presented on a 4-point Likert scale (from 1=“false” to 4=“true”). It yields a total psychopathic index (PPI-R, total score) as well as scores on eight subscales, which are grouped into three factors: 1) The *Fearless Dominance* (FD) factor is associated with fearless, assertiveness, interpersonally dominant demeanor and thrill-seeking and includes Social Influence, Fearlessness, and Stress Immunity subscales; 2) The *Self-Centered Impulsivity* (SCI) factor is related to anger, aggressiveness, impulsivity, externalizing behaviors (including substance use), suicidal ideation, and acts and consists of the Machiavellian Egocentricity, Rebellious Nonconformity, Blame Externalization, and Carefree Nonplanfulness subscales; 3) finally, although a two-factor model has proved valid (Benning et al., 2003), some authors (e.g., Neumann, Malterer, & Newman, 2008) observe that consider *Cold-heartedness* (CH; which assesses callousness and lack of empathy and guilt) as a third separated factor is more effective. *Machiavellian Egocentricity* (ME), the first of the eight subscales, indicates an absence of empathy, the tendency to manipulate others, lie, alter the rules to achieve one's own goals, and a sense of detachment. The *Rebellious Nonconformity* (RN) subscale assessed susceptibility to boredom, a tendency to rebel, negative attitudes against authority and resistance to social norms, and to culturally

acceptable behaviors. The *Blame Externalization* (BE) subscale measures the tendency to blame others or bad luck for one's problems, the vision of the external world as hostile, and the perception of oneself as victims. The *Carefree Non-Planfulness* (CN) refers to a lack of planning and difficulty to act before thinking, not considering the consequences of one's actions. The *Social Influence* (SOI) subscale indicates the ability to charm and influence others, with a sense of security, a lack of social anxiety, and verbal ease. The *Fearlessness* (F) subscale assessed the eagerness for risk-seeking behaviors with a lack of both anticipatory anxiety and fear for one's physical safety. The *Stress Immunity* (STI) subscale measures the ability to keep calm and detached in the presence of anasiogenic stimuli and a lack of tension under pressure. Finally, CH refers to an inability to keep relationships with others and to a lack of both affectionate, social emotions, and regard for others' feelings. The PPI-R also includes three validity scales: Deviant Responding, Virtuous Responding, and Inconsistent Responding which measure aberrant responding/malingering, positive impression management, and careless or random responding, respectively. The Italian version showed good psychometric characteristics (La Marca, Berto, & Rovetto, 2008).

### 2) Psychological Treatment Inventory (PTI)

The PTI (Gori, Giannini, & Schuldberg, 2008; 2013) is a measure designed for personality assessment, composed by client and clinician versions, which are respectively self-report and hetero-evaluation scales. The PTI client version, which was the only version used in this study, was composed of 268 items presented on a 5-point Likert scale (1 = not at all, 2 = a little, 3 = enough,



4 = a lot; and 5 = very much). The PTI was designed to include items in various domains central to planning psychological treatment and evaluating its outcome. Each construct was grouped into 4 areas:

- 1) The Validity scales area included six subscales (Lie, Compliance, Ambiguity Intolerance, Low Attention, Incoherence, and Negative Self Presentation);
- 2) The Psychological Resources Area was composed of two clusters:
  - a. Psychological Resources cluster was articulated into five scales (Self Efficacy, Self Esteem, Perceived Social Support, Creative Tendencies, and Self-Regulation);
  - b. Quality of Life cluster was composed of five subscales (Life Satisfaction, Work Interference, Familiar Problems, Social Introversion, and Distress);
- 3) The Clinical Area included two clusters (Symptoms and Psychological Types). Symptoms were articulated into ten Internalized Symptoms Scales and three Externalized Symptoms Scales. Psychological Types were determined by 12 single-item scales.
- 4) The Psychological Treatment Area was composed of four clusters:
  - a. Attachment Styles (four scales: Secure, Preoccupied, Avoidant, Disorganized);
  - b. Predominant Defense Styles (four scales: Mature, Anxious neurotic, Avoidant neurotic, Immature);
  - c. Negative Treatment Indicators (five scales: Alexithymia, Frustration Intolerance, Negative Self-Image, Change Resistance, Manipulation);
  - d. Psychological Mindedness (four scales: Empathy, Insight Propensity, Treatment Expectation, Working Alliance).

The PTI has shown good psychometric properties (Giannini et al., 2010; Gori, Giannini, & Schuldberg, 2013).

### 3) Barratt Impulsiveness Scale-11 (BIS-11)

The BIS-11 (Patton, Stanford, & Barratt, 1995) is a 30-item self-report questionnaire used to assess general impulsivity, considering the multifactorial nature of the construct. It yields a total score and six first-order factors, which were grouped into three second-order factors: 1) *Attentional Impulsiveness* measures ability to focus attention or concentrate and includes attention and cognitive instability factors; 2) *Motor Impulsiveness* refers to a tendency to engage in acts without thinking and consists of motor and perseverance factors; 3) *Non-planning Impulsiveness* assesses the likelihood of making quick decisions without thinking about the possible consequences and is composed of cognitive complexity and self-control factors. Concerning the six subscales, *Attention* measures the ability to focus on current activities, *Cognitive Instability* verifies the presence of intrusive thoughts, *Motor* indicates the tendency to act quickly and impulsively, *Perseverance* concerns the tendency to have a stable lifestyle, *Cognitive Complexity* indicates the enjoyment in mentally challenging and stimulating activities, *Self-Control* measures the ability to control one's thoughts and plan some life aspects. Each item on the measure is rated on a four-point scale ranging from 1 (Rarely/Never) to 4 (Almost Always/Always), and the total score is achieved by adding the first or second-order factors. In the present study, the Italian version of BIS-11 (Fossati et al., 2001) was used.

### 4) Toronto Alexithymia Scale (TAS-20).

The TAS-20 (Bagby, Parker, & Taylor, 1994) is a 20-

item questionnaire, scored on a 1 to 5 Likert scale, which assesses the level of alexithymia. It includes three factors: (1) difficulty in identifying feelings and distinguishing between feelings and bodily sensations in emotional activation, (2) difficulty with the verbal expression of emotions, and (3) externally oriented thinking. The total score is calculated by summing all the items and a high score indicates a higher level of alexithymia. As stated by Taylor and collaborators (1997), scores higher than 61 are considered indicators of an alexithymic profile. The original version of the TAS-20 has adequate psychometric properties. The reliability of the total scale is equal to .81, and the reliabilities of the three factors are .78, .75, and .66, respectively (Bagby, Parker, & Taylor, 1994). The validity of TAS-20 is also adequate (Bagby, Taylor, & Parker, 1994). This study employed the Italian version of TAS-20 (Bressi et al., 1996).

### Data analysis

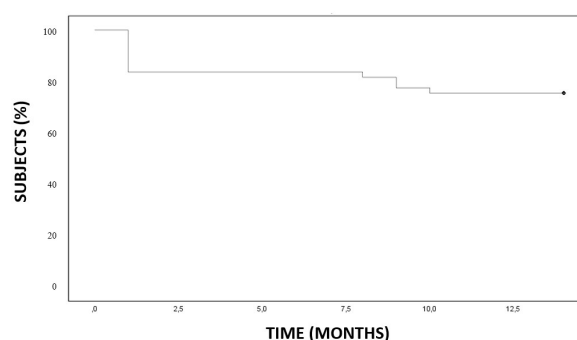
Descriptive statistics for the sample were calculated. To verify the variations between Time 1, Time 2, and Time 3, various statistical techniques were used, including the t-test, Cohen's d, and ANOVA. To assess differences in differential diagnosis, an ANOVA was carried out with the diagnostic categories as the independent variable (groups) and the scales of the various instruments as dependent variables. An ANOVA was also used to assess differences related to the conclusion of the treatment, with the conclusion/continuation of the treatment as the independent variable (groups) and the scales of the various instruments as dependent variables. A series of discriminant analyses were performed to identify the impact and contribution of the variables on the discriminating function (i.e., the most useful variables for classifying purposes, concerning the two groups Interruption and In-Treatment).

### Results

49 subjects participated in the assessment at Time 1; 34 of them were again involved in the assessment at Time 2 (after eight months of treatment); 18 individuals underwent three administrations: Time 1, Time 2 (after eight months) and Time 3 (after 12-14 months). Given the difficulty of finding such a specific sample, administrations were performed at different times, trying to respect the time constraints indicated above.

By the end of the research, 12 subjects (24%) completed their treatment, 25 subjects (52%) remained on treatment, and 12 (24%) prematurely stopped the residential treatment and abandoned their communities (drop-out; see figure 2).

Figure 2. Kaplan–Meier plot regarding patients drop-out



No significant differences emerged in the scales scores at the three different times of assessment. Regarding the analyses between groups related to the diagnosis, differences emerged about the tendency to lie and were more pronounced in subjects within the Mood disorder and Personality disorder groups ( $p = .001$ ). The Mood disorder group appeared to have

greater difficulty tolerating states of ambiguity ( $p = .033$ ) and declared more-frequent family problems ( $p = .032$ ) than the other two groups. The Personality disorders group appears to have lower levels of self-esteem ( $p = .011$ ) than the other two groups, while the Psychotic disorder group appears to perceive higher levels of social support ( $p = .009$ ).

**Table 3.** ANOVA among the groups in relation to Diagnostic Categories and to the state of treatment (PTI scale) – part I

PTI Scales	Diagnostic Categories						State of Treatment						F	p		
	Mood Disorder		Personality Disorder		Psychotic Disorder		Conclusion		Drop-out		In-Treatment					
	N	M (SD)	N	M (SD)	N	M (SD)	N	M (SD)	N	M (SD)	N	M (SD)				
<b>Validity Scales</b>																
Lie*	11	7.64 (1.29)	24	6.75 (1.54)	12	5.25 (1.42)	8.06	.001	12	6.25 (2.22)	12	7.17 (1.40)	25	6.92 (1.71)	.88	.42
Compliance	11	1.27 (1.19)	24	1.54 (.98)	12	1.67 (.78)	.48	.621	12	1.83 (1.19)	12	1.67 (.98)	25	2.20 (1.19)	1.01	.37
Ambiguity Intolerance*	11	3.63 (1.43)	24	2.67 (1.13)	12	2.42 (.90)	3.68	.033	12	2.83 (.72)	12	3 (1.54)	25	3.12 (1.42)	.19	.83
Low Attention	11	4 (.89)	24	3.25 (1.26)	12	3 (1.28)	2.24	.119	12	3.42 (1.24)	12	3.17 (1.19)	25	3.24 (1.13)	.15	.86
Negative Self Presentation	11	3.73 (1.35)	24	3.96 (1.04)	12	3.42 (1.38)	.814	.450	12	4 (.85)	12	3.17 (1.75)	25	3.48 (1.48)	1.05	.36
<b>Resources Area</b>																
Self-Efficacy	11	19.73 (.85)	24	17.50 (3.93)	12	20.67 (5.55)	2.40	.103	12	19.08 (4.50)	12	16.17 (4.41)	25	20.28 (5.13)	2.96	.062
Self-Esteem***	11	13.27 (3.5)	24	11.04 (2.14)	12	13.83 (3.19)	4.97	.011	12	12.17 (3.07)	12	10.58 (2.87)	25	13.76 (2.67)	5.33	.008
Social Support***	11	17.18 (5.34)	24	15.88 (3.09)	12	20.58 (3.06)	5.29	.009	12	15.92 (4.50)	12	15.08 (4.01)	25	19.88 (3.73)	7.49	.002
Creative Tendencies**	11	17.18 (5.19)	24	17.17 (3.34)	12	19.33 (3.31)	1.42	.253	12	17.58 (3.15)	12	14.58 (4.70)	25	19.44 (5.51)	4.09	.023
Self-Regulation	11	19.82 (4.58)	24	19.50 (5.26)	12	23.17 (5.81)	2.07	.139	12	18 (6.09)	12	17.67 (3.87)	25	20.52 (4.63)	1.88	.163
Life Satisfaction	11	16 (5.33)	24	16.88 (5.64)	12	18.17 (6.69)	.40	.670	12	14.58 (5.58)	12	16 (7.07)	25	17.88 (6.20)	1.19	.313
Work Interference	11	9.64 (3.67)	24	10.29 (3.92)	12	11.58 (4.10)	.76	.473	12	10.17 (4.06)	12	10.42 (3.82)	25	8.80 (3.34)	1.04	.361
Familial Problems*	11	14.18 (6.52)	24	9.58 (4.28)	12	12.08 (3.73)	3.73	.032	12	10.58 (4.96)	12	10.67 (5.79)	25	11.48 (5.28)	.16	.854
Social Introversion	11	9.73 (4.61)	24	10.46 (4.15)	12	9.83 (2.69)	.17	.841	12	11.08 (4.14)	12	9.83 (4.99)	25	9.08 (3.09)	1.08	.347
Distress	11	11 (3.85)	24	11 (4.60)	12	14.25 (2.93)	2.85	.068	12	11.92 (4.78)	12	12.25 (5.28)	25	11.76 (3.94)	.05	.953
<b>Clinical Area</b>																
Depressive Aspects	11	9.27 (5.64)	24	10.25 (4.65)	12	12.92 (5.20)	1.71	.193	12	11.25 (6.18)	12	11 (6.12)	25	10.40 (3.62)	.14	.873
General Anxiety	11	9.82 (5.79)	24	10.42 (5.10)	12	11.33 (2.42)	.30	.742	12	11.17 (6.74)	12	9.25 (3.98)	25	10.32 (4.11)	.47	.626
Obsessiveness	11	10.27 (3.55)	24	9.58 (3.65)	12	11.75 (3.96)	1.37	.265	12	9.92 (4.12)	12	11.25 (4.77)	25	10.68 (3.22)	.36	.699
Somatization	11	8.09 (3.96)	24	9.17 (4.57)	12	9.17 (4.57)	1.76	.184	12	9.08 (4.17)	12	9 (5.10)	25	9.36 (2.91)	.04	.958
Phobic Traits	11	8.82 (5.49)	24	10.67 (4.26)	12	10.75 (3.55)	.76	.472	12	11.75 (5.97)	12	9.83 (4.47)	25	9.72 (4.28)	.79	.460
PTSD	11	10.75 (3.55)	24	13.67 (6.77)	12	17.83 (6.12)	2.15	.129	12	13 (8.62)	12	10.67 (4.08)	25	12.60 (6.40)	.46	.633
Risk of eating disorder*	11	14.45 (10.08)	24	13.08 (5.87)	12	21.33 (6.07)	5.57	.007	12	15.17 (9.74)	12	15.67 (6.53)	25	16.88 (9.11)	.18	.834
Paranoid ideation*	11	11.73 (1.43)	24	12.88 (1.13)	12	17.17 (.90)	5.01	.011	12	14.58 (4.74)	12	14.42 (5.66)	25	13 (4.59)	.58	.566
Bizarre Thought	11	10 (4.73)	24	11.25 (6.39)	12	13.08 (5.35)	.84	.441	12	10.67 (4.40)	12	11.83 (7.65)	25	11.24 (5.27)	.12	.884
Sexual discomfort*	11	6 (2.37)	24	6.17 (2.91)	12	10 (4.02)	6.92	.002	12	6.50 (2.97)	12	6.83 (3.66)	25	6.72 (3.49)	.03	.970

\*Significant differences among Diagnostic Categories; \*\*Significant differences among different states of treatment; \*\*\*Significant differences in both Diagnostic Categories and State of treatment



impulsiveness and its traits, the Personality disorders group scored higher than the other two groups on the Self-control scale (Non-planning Impulsiveness category) ( $p = .001$ ), Non-planning Impulsiveness ( $p = .001$ ) and on the total BIS-11 scale ( $p = .004$ ) (see

table 4).

The TAS-20 measured alexithymia and its traits. The Personality disorder group and the Psychotic disorder group obtained higher scores on the externally-oriented thinking subscale ( $p = .019$ ) compared to the

**Table 4.** ANOVA among the groups in relation to Diagnostic Categories and to the state of treatment (PPI-R, BIS-11 and TAS20 Scales)

Scales	Diagnostic Categories			State of Treatment			F	p
	Mood Disorder (N=12)	Personality Disorder (N=25)	Psychotic Disorder (N=12)	Conclusion (N=12)	Drop-out (N=12)	In-Treatment (N=25)		
Virtuous Responding	31.64 (3.93)	31.33 (5.98)	32.08 (4.60)	31 (5.85)	32 (4.86)	29.92 (5.67)	.60	.554
Inconsistent Responding	15.73 (4.15)	18.38 (4.64)	19 (4.973)	17.58 (5.63)	17.25 (4.41)	16.40 (4.24)	.31	.736
Machiavellian Egocentricity	40.45 (7.47)	42.33 (8.56)	42 (5.66)	42.75 (8.07)	45 (5.54)	41.84 (7.62)	.76	.473
Rebellious Nonconformity	36.36 (7.92)	37.54 (7.44)	39.83 (8.72)	35.92 (7.95)	37.75 (5.67)	38.56 (8.01)	.50	.608
Blame Externalization	33.45 (7.69)	37.96 (8.55)	39.17 (7.91)	38.08 (7.63)	35.83 (6.38)	37.88 (8.60)	.33	.722
Carefree Nonplanfulness	36.27 (5.37)	40.71 (9.12)	43.58 (9.29)	41.75 (11.86)	41.50 (7.09)	39.04 (6.55)	.60	.551
Social Influence	43.8 (6.59)	43.88 (8.37)	46.33 (5.43)	43.50 (7.60)	45.75 (6.48)	47.80 (6.94)	1.57	.219
Fearlessness	38.45 (8.42)	38.46 (6.54)	38.42 (5.73)	37 (6.66)	41.33 (5.47)	38.36 (7.24)	1.34	.273
Stress Immunity	32.09 (5.01)	31.62 (7.87)	33.33 (3.34)	31.17 (7.66)	33.17 (5.13)	31.52 (6.23)	.36	.700
Cold-heartedness	33.91 (3.51)	36.88 (5.62)	32.08 (10.17)	36.00 (7.72)	38.75 (15.41)	31.88 (6.89)	2.17	.126
The Self-Centered Impulsivity	146.55 (23.24)	158.54 (21.56)	164.58 (15.97)	158.50 (23.74)	160.08 (11.51)	157.32 (21.65)	.076	.927
Fearless Dominance	114.36 (12.82)	113.96 (17.18)	118.08 (10.02)	111.67 (14.95)	120.25 (9.55)	117.68 (14.34)	1.31	.280
TOT. PPI-R	294.82 (31.01)	309.38 (25.02)	314.75 (12.19)	306.17 (22.12)	319.08 (21.69)	306.88 (26.90)	1.16	.323
Attention	9.56 (2.98)	10.96 (2.85)	11.08 (2.47)	11.75 (2.70)	11.33 (2.31)	10.08 (2.87)	1.86	.168
Motor	13.18 (2.79)	15.42 (2.80)	13.42 (3.29)	14.25 (3.55)	15.75 (3.02)	14.56 (3.28)	.74	.485
Self-control***	12 (2.90)	16.21 (2.40)	12.92 (2.50)	16.08 (2.43)	15.92 (3.15)	13.68 (2.81)	4.18	.021
Cognitive Complexity	13.09 (2.55)	14.21 (2.78)	13.42 (1.44)	14.42 (1.83)	14.08 (1.78)	12.88 (2.68)	2.23	.120
Perseverance	9.45 (1.13)	8.33 (1.90)	9 (2.73)	8.67 (2.02)	9.42 (1.08)	8.88 (2.49)	.41	.665
Cognitive Instability	5 (1.67)	6.13 (1.68)	5.67 (1.07)	6.17 (2.25)	6.08 (1.68)	6.16 (1.72)	.01	.992
Attentional Impulsiveness	14.55 (3.67)	17.08 (3.28)	16.75 (2.45)	17.92 (4.19)	17.42 (2.02)	16.24 (3.78)	1.05	.359
Motor Impulsiveness	22.64 (3.04)	23.75 (4.05)	22.42 (3.65)	22.92 (4.76)	25.17 (3.76)	23.44 (4.10)	.99	.379
Non-planning Impulsiveness***	25.09 (4.64)	30.42 (4.26)	26.33 (2.77)	30.50 (3.34)	30 (4.02)	26.56 (4.96)	4.34	.019
TOT. BIS-11*	62.27 (7.93)	71.25 (8.02)	65.50 (4.74)	71.33 (9.47)	72.58 (7.29)	66.24 (9.93)	2.39	.103
Difficulty identifying feelings	14.73 (6.36)	16.96 (7.85)	19.50 (7.72)	16.75 (8.87)	17.92 (6.20)	16.84 (7.32)	.10	.905
Difficulty describing feelings	12 (4.31)	14.83 (5.18)	13.25 (3.60)	14.92 (6.39)	15.50 (2.50)	13.28 (3.96)	1.22	.304
Externally- Oriented Thinking	16.27 (5.20)	21.17 (3.66)	19.75 (5.50)	21.75 (4.07)	19.92 (4.98)	18.08 (5.67)	2.12	.132
TOT. TAS20	43 (13.00)	52.96 (14.19)	52.50 (10.49)	53.42 (16.52)	53.33 (9.67)	48.20 (11.45)	1.05	.358

\*Significant differences among Diagnostic Categories; \*\*Significant differences among different states of treatment; \*\*\*Significant differences in both Diagnostic Categories and State of treatment



Mood disorder group (see **table 4**).

At the conclusion of treatment, the In-Treatment group showed higher levels of psychological resources (referring to self-esteem and perceived social support), and lower levels of impulsivity, than the other two groups (see **table 3**- part I and **table 4**).

The following variables—Self-control, Non-Planning Impulsiveness, the total of the BIS-11, CH, the total of the PPI-R, and the total of the TAS-20—represented adequate markers for interpreting discriminant functions. So, considering these discriminant function coefficients (CDF), the discriminant function obtained is:

$$f = 0.591 [CDF1] + 0.566 [CDF2] + 0.533 [CDF3] + 0.512 [CDF4] + 0.371 [CDF5] + 0.362 [CDF6]$$

where the values of  $f$  are the discriminant scores, CDF1 is Self-control, CDF2 is Non-Planning Impulsiveness, CDF3 is the total of the BIS-11, CDF4 is Cold Heartedness, CDF5 is total of the PPI-R and CDF6 is the total of the TAS-20. With these variables, the function variables correctly classified the cases (subjects) into one of two hypothesized groups—Drop-Out or In-Treatment—with an accuracy of 59.5% within the cross-validation condition. (see **table 5**).

(Esbec & Echeburúa, 2016; Widom & White, 1997; Da Silva Roggi et al., 2015). The effects of substance abuse differ between individuals and depend on biological, situational, and psychological factors (Walters, 2014).

However, our results provided interesting data when we compared the three diagnostic groups: Mood Disorders, Personality Disorders, and Psychotic Disorders.

From the results obtained, an initial cluster seemed to emerge. This cluster corresponded to the Mood Disorders group, and these individuals tended to emphasize their own problems and exhibited a more specific symptomatology. This cluster seemed to be less-impulsive and had a greater predisposition to remain in treatment, compared to the two groups. These individuals were likely more inclined to assume responsibility for their actions, as also shown by their lower scores on the Externally Oriented Thinking scale. This suggests that these individuals possessed more of an internal locus of control compared to the other two groups. Indeed, according to the personality organization model (Kernberg, 1993; Caligor, Kernberg, & Clarkin, 2007), they exhibited higher levels of borderline personality organization, which include more adaptation, better capacity for intimate

**Table 5.** Classification Results by Discriminant Analysis <sup>1,2</sup>

		Treatment	Prediction of Group Membership		
			Drop-Out	In-Treatment	Total
Original	Units	Drop-Out	9	3	12
		In-Treatment	6	19	25
		Cases number	27	38	65
	%	Drop-Out	75	25	100
		In-Treatment	24	76	100
		% Cases	41.5	58.5	100
Cross-Validated	Units	Drop-Out	6	6	12
		In-Treatment	9	16	25
	%	Drop-Out	50	50	100
		In-Treatment	36	64	100

<sup>1</sup>. 75.7% of the original groups were correctly classified.

<sup>2</sup>. 59.5% of the cross-validated groups were correctly classified.

## Discussion

The present study sought to assess residential treatment outcomes in a therapeutic community by repeated test administration (over time and at termination), investigation of psychopathological features in a sample of individuals with substance use disorders and criminal records, and the identification of the variables related to drop-out to prevent premature treatment abandonment, relapses, and risky behaviors.

Concerning the first purpose, no significant differences emerged among the variables under investigation. These results are in agreement with the scientific literature according to which the complexity of these pathologies requires treatments with a long-term perspective, safe and protective living environments, flexibility of clinicians and programs, and integration of mental health and substance abuse therapies (Drake et al., 1993). Indeed, several studies have highlighted the importance of a biopsychosocial approach to complex treatments for addiction diseases linked to criminal behaviors. This approach stresses a close linkage among lifestyles, behavior patterns, traumatic events, and vulnerability factors, distinctive of this condition

involvement, better superego integration, and sufficient nonconflictual development of some ego functions, even though there was obvious identity diffusion. These characteristics are also typical of mafia members, supporting the evidence described above. Adhering to a criminal and sociopathic framework, mafia members maintain very close ties with both the family and the group to which they belong. All the while, they tend to exhibit identity instability and an internal emotional world characterized by a narcissistic vulnerability (Schimmenti et al., 2014; Craprarò et al., 2018).

A second cluster corresponded to the Personality Disorders group. These individuals exhibited greater resistance to change, lower levels of self-esteem, and less social support than the other groups. They were also more impulsive and, as shown by their characteristically high scores on the Externally Oriented Thinking scale, had more of an external locus of control than the first cluster. This cluster exhibited specific characteristics such as instability, difficulty delaying needs satisfaction, and a tendency to externalize blame. This is in line with the Kernberg's considerations, which underline how patients with a Low Borderline Organization show diffusion, manifestations of primitive defensive

operations, and severe distortions in their interpersonal relations. These qualities manifest as anger, emotional lability, and self-destructive impulsive behaviors (Kernberg, 1993; Caligor, Kernberg, & Clarkin, 2007) such as substance abuse. Several studies (e.g., Ball & Cecero, 2001; Brune, Ghiassi, & Ribbert, 2010) have shown that, in many cases, patients with personality disorders have experienced different forms of traumatic experiences (for example abandonment, instability, mistrust, abuse) and this is reflected in the present study by problems related to a familiar issue, poor social support and low self-esteem. According to this perspective, a deficiency in self-control can be linked to difficulty and dysfunctional coping strategies in dealing with negative emotions (Lacey & Evans, 1986; Kennedy & Grubin, 1990; Craparo, 2014; Di Pierro, Benzi, & Madeddu, 2015; Napryeyenko et al., 2019). This results in a substance abuse as an attempt to self-medicate the feelings derived from traumatic experiences (Caretto et al., 2018; Kuss et al., 2017; Spada & Marino, 2017; Pace et al., 2013; Caretti & La Barbera, 2005). To complicate this picture, the absence of self-control is also closely associated with crime and violence, especially antisocial personality disorder and borderline personality disorder (Edwards et al., 2003; Yarvis 1991; Longshore, 1998; Longshore, Turner, & Stein, 1996).

Finally, according to the hypothesized diagnostic distinctions, a third cluster emerged, with a more variegated (and probably more severe) symptomatology, and more pronounced paranoid ideation. Individuals in this group exhibited greater levels of anxiety in relationships and, as demonstrated by group member's high scores on the Externally Oriented Thinking scale, a more external locus of control than the first cluster. Members of this cluster showed a failure to differentiate between representations of the self and the object, a loss in reality testing (Kernberg, 1993) and non-adherence with treatment (Soyka, 2000).

These data confirm the complex framework of individuals with SUD and criminal records, which was characterized by a constellation of emotional, interpersonal, and behavioral difficulties (Gori et al., 2017). So, these results about the clinical groups allow a greater understanding of the specific situations and can facilitate useful reflections to develop diversified therapy methods, in order to improve insight (Gori et al., 2015), and to be able to offer a type of treatment that is both more effective and increasingly tailored to individual needs.

Our results also suggest important predictors of drop-out: psychopathic traits, CH, Non-planning Impulsiveness, and alexithymia. These results are in line with the results of the study by Staton-Tindall and colleagues (2007), which highlighted the significant relationship between CH and low treatment engagement, specifically for males. The data shows that even impulsivity is associated with a greater drop-out risk, confirming previous research (Gori et al., 2016). Those who abuse substances and exhibit higher levels of impulsivity in action and choices do not seem to benefit from addiction treatment programs to the same extent as their less-impulsive counterparts (Charney et al., 2007; Stevens et al., 2014). Specifically, the Self-control subscale seems to be particularly relevant. Indeed, several studies show how subjects which practice and improved this dimension can improve adherence to treatment, abstain longer and undergo fewer relapses (Muraven, 2010; Hobuen et al., 2012; Houben et al., 2011; Garavan & Hester, 2007).

Other important reflections concern the role of

psychopathic traits on therapy outcome. Traditionally, individuals with these traits are considered unsuitable for treatment due to poor empirical support of their treatability. Therapeutic actions or rehabilitation programs that are commonly administered in prisons are often useless and counterproductive (Hughes et al., 1998; Ogloff, Wong, & Greenwood, 1990; Rice, Harris, & Cormier, 1992; Seto & Barbaree 1999; Barbaree, 2005; Anderson & Kiehl, 2014).

Nevertheless, several studies (Olver, Lewis, & Wong, 2013; Caldwell et al., 2006) have shown how the treatment of individuals with psychopathic characteristics is more effective when is based mainly on the features linked to their criminal behaviors. This leads to a decrease in the rate of recurrent offenses (Polasheck, 2014). In particular, a study by Seager and colleagues (2006) indicated that individuals who refused treatment or dropped out had six times the rate of repeat sexual and violent offences compared to those who completed the treatment. Hence, the clinical approach to treat psychopathic features should not be focused on mere rehabilitation; rather, it should be aimed at reducing the rate of repeat offences.

Clinical research indicates that individuals with high psychopathic trait scores are charged with violent crimes twice as frequently as non-psychopathic offenders (Hare & Jutai, 1983). Moreover, these individuals are more likely to be motivated to commit violent acts because of CH or unemotional traits (Walters, 2006; Williamson, Hare, & Wong, 1987).

Psychopathic traits and alexithymia have been largely studied previously (Kroner & Forth, 1995; Louth, Hare, & Linden, 1998), and several studies have shown particular deficits in emotional processing of both alexithymic and psychopathic subjects. These include difficulties interpreting facial expressions (Dolan & Fullam, 2006), understanding emotional tone in language (Herve, Hayes, & Hare, 2003), and describing one's own feelings (Luminet et al., 2004); therefore the lack of emotional processing may mediate the relationship between psychopathic characteristics and aggression, including illegal behaviors (Porter & Woodworth, 2006).

All these data are of additional importance in light of previous research that highlights how addiction treatment permanence is strongly associated with important reductions in the most common forms of crime (Hubbard et al., 1989; Ball & Ross, 1991; Hunt, Lipton, & Spunt, 1984; Flynn et al., 2002; Flynn et al., 2003): therefore, substantial changes in behavior have been noted, and these changes have considerable personal, social and clinical importance (Gossop et al., 2005). These features, if viewed in their global configuration, may help to develop a specific model to predict drop-outs and relapses in these specific patients. Further investigations are considered necessary to validate the role of these variables in predicting the treatment outcomes (Gori et al., 2010).

This was a preliminary study; thus, several limitations warrant consideration. Data collection from this cohort was challenging. We did not use structured interviews to detect traits inherent to psychopathy. Finally, our analyses were the result of examination of a relatively small cohort. Therefore, our results cannot serve as a basis for a final therapeutic or predictive model and may not be generalizable to individuals with SUD as a whole. To provide more reliable data, future studies should examine a larger sample. However, despite these limitations, this study provides a further piece for the understanding of subjects with SUD and criminal records, suggesting the importance of an

integrative approach for addictive behaviors, including a psychodynamic oriented framework, and showing the impact of impulsiveness, cold-heartedness, alexithymia, and psychopathic traits on treatment drop-out.

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- This research was partially supported by the Tuscan Region (Italy) and by Gruppo Incontro Social Cooperative of Pistoia (Italy).