

Patient Profiles in Dutch Forensic Psychiatry Based on Risk Factors, Pathology, and Offense

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Abstract

Forensic psychiatry embodies a highly heterogeneous population differing widely in terms of diagnoses, crimes committed, and risk factors. All of these are vitally important for treatment indications and should be accounted for in research. However, there is limited empirical knowledge of patient profiles. This study constructed *patient profiles* on the basis of the three domains mentioned above. Participants were found guilty of having committed crimes due to psychiatric disorders and were admitted to Forensic Psychiatric Center (FPC) 2landen or FPC De Kijvelanden in the Netherlands. Retrospective data were retrieved from patient files. Diagnoses were assessed according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*) criteria and risk factors according to the Historical Clinical Future–30 (HKT-30) instrument. Latent class analysis was conducted to define typologies; external variables were included for validation. Four different classes or “patient risk profiles,” with varying psychopathologies, risk factors, and crimes, were identified. Results were consistent with previous studies, and external validation with the Psychopathy Checklist–Revised (PCL-R) two-factor model and the four facets of the PCL-R agreed with results found. Results display specific risk factors for specific psychopathology/offense combinations.

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The patient population in forensic psychiatry is very heterogeneous and differs in terms of psychopathologies, types of offense, and risk factors (Van Nieuwenhuizen et al., 2011). The Risk Need Responsivity (RNR) model of offender rehabilitation is a multidimensional and dynamic theoretical approach to forensic treatment objectives and risk of recidivism. The RNR model comprises three principles. The “Risk” principle implies that treatment intensity should match the risk level of recidivism: A high-risk offender requires a securer setting and a more intense and longer lasting treatment. The “Need” principle implies that the treatment approach should focus on a patient’s specific dynamic reversible risk factors or criminogenic needs related to the risk of recidivism. The “Responsivity” principle implies that the intervention should be adapted to the offender’s learning style and abilities (Bonta & Andrews, 2007).

To translate scientific research and group therapy modules into the principles of the RNR model, it is helpful to categorize the heterogeneous group of forensic patients into specific clinical patient profiles for the purpose of indicating appropriate treatment (Yiend, Freestone, Vazauques-Montes, Holland, & Burns, 2013) and estimating risk of future recidivism.

Several studies have focused on patient profiles. Nanayakkara, O’Driscoll, and Allnut (2012) studied risk levels of civil and forensic patients in a forensic institution and in the community, using the Historical Clinical Risk–20 items (HCR-20; Webster, Douglas, Eaves, & Hart, 1997). Patients in both groups had been diagnosed with schizophrenia, substance abuse, and other disorders such as bipolar disorder or depressive disorder. All patients had been referred to forensic mental health services. Criminogenic needs were higher for the civil patient group than for the forensic group.

Yiend et al. (2013) developed patient profiles using histrionic and narcissistic personality disorders and the Psychopathy Checklist–Revised (PCL-R; Hare, 1991) Factor 1 and Factor 2 scores of patients in high-security prisons or high-security psychiatric hospitals. They composed three profiles: a delinquent profile with high PCL-R factor two scores but few personality disorders, a primary psychopathy profile with high PCL-R factor one scores and a narcissistic personality disorder, and an expressive psychopathic profile with high PCL-R factor one scores and a histrionic personality disorder. According to the HCR-20 and the Violence Risk Scale (VRS; Wong & Gordon, 2006), individuals in the delinquent profile were at the highest risk of recidivism. These results are consistent with the study by Bogaerts, Polak, Spreen, and Zwets (2012), who concluded that secondary psychopaths show more problematic behavior and reactive aggression than primary psychopaths, who show fewer risk factors but committed homicide more often.

Bogaerts and Spreen (2011) developed patient profiles by examining 234 inpatient forensic offenders with a primary psychotic disorder and 348 inpatient forensic offenders with a primary personality disorder. Patient profiles were based on risk and protective factors extracted from the Dutch risk assessment tool, the Historical Clinical

Future-30 (HKT-30; Taskforce Risk Assessment Forensic Psychiatry, 2002). Hierarchical cluster analysis and Latent Class Analysis (LCA) were used to examine the profiles.

Within the group of psychotic offenders, Bogaerts and Spreen identified three profiles. Two of these were characterized by the presence of schizophrenia, the presence of serious problems in the social and interpersonal domain, and the absence of personality disorders, impulsivity, and hostility. An important difference between these two profiles was related to the presence of historical determinants such as past criminal offenses, help-seeking behavior, conduct disorders, and school problems. The third profile was characterized by schizophrenia in combination with persistent dysfunctional problems and antisocial personality factors.

Within the personality-disordered group, Bogaerts and Spreen again identified three profiles. The first profile was characterized by high-risk factors such as past treatment, past substance use, psychotic symptoms, empathic skills, social skills, and daily activities. The second profile was similar except that the patients were neither diagnosed with psychotic symptoms nor displayed many psychotic symptoms compared with the first profile. The third profile was based on lower overall risk factors and the absence of a psychotic disorder diagnosis.

Van Nieuwenhuizen et al. (2011) developed forensic patient profiles with LCA based on *Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association [APA], 2000)* Axis I and Axis II diagnoses and type of offense among a representative group of 180 forensic patients from 13 forensic psychiatric centers in the Netherlands. Three profiles showed strong similarities with the profiles found by Bogaerts and Spreen (2011): psychotic patients with multiple problems, typical psychotic patients, and antisocial patients. In addition, they identified a fourth and fifth profile: patients with addiction issues and patients with sexual problems and delinquent behavior.

A shortcoming of all these studies is that the above patient profiles were developed on a limited set of factors relating to the domains of psychopathology, and/or type of offense, and/or risk and protective factors. In none of these studies were these three domains combined to develop integrative profiles, which would have a significant value for the diagnostic process, treatment indications, and recidivism risk assessment (Bonta & Andrews, 2007). As the interdependence of psychopathology, type of offense, and risk and protective factors is so common in forensic psychiatry, I will explain the importance of such an integrative model in the following paragraphs.

It has often been shown that specific psychopathology may reinforce specific criminal behavior. A paraphilic disorder such as pedophilia is often related to child sexual abuse (Bogaerts, Vanheule, & DeClercq, 2005; Bogaerts, Vervaeke, & Goethals, 2004; Buschman et al., 2010). Rapists who are more violent in nature tend to have more psychopathic and antisocial features (Firestone, Bradford, Greenber, & Serran, 2000). Violent behavior appears to be a small but significant risk in psychotic disorders such as schizophrenia (Peterson, Skeem, Hart, Vidal, & Keith, 2010). Psychopathy (Hildebrand, Hesper, Spreen, & Nijman, 2005; Leistico, Salekin, DeCoster, & Rogers, 2008) and personality disorders, especially antisocial (Bonta, Law, & Hanson, 1998)

and narcissistic disorders, are predictors of both general and violent offending behavior (O'Driscoll, Larney, Indig, & Basson, 2012).

Type of offense, second, is also a predictor of future recidivism (Coid, Hickey, Kahtan, Zhang, & Yang, 2007). Various studies have related types of offenses to specific risk factors. Sexual offenders, for example, show a lack of empathic understanding (Hall & Hall, 2007), deviant thoughts, poor affect regulation (Scoones, Willis, & Grace, 2012), and problem-solving deficits (Lockmuller, Beech, & Fischer, 2008). Violent offenders show a history of substance use, hostility, and impulsivity (Craig, Browne, Beech, & Stringer, 2006).

Risk and protective factors, finally, are strongly related to recidivism (Andrews & Bonta, 2010; De Vogel, De Ruiter, & Bouman, 2007; Palermo, 2009; Rennie & Dolan, 2010; Ward & Gannon, 2006). A widely studied set of eight risk factors lists strong predictors of recidivism (Andrews & Bonta, 2010; Andrews et al., 2012). These include a history of antisocial behavior, an antisocial personality pattern (impulsivity, hostility, and lack of empathy), antisocial cognitions, antisocial associations, a dysfunctional family/marital situation, work and school problems, a lack of daily activities, and substance abuse. Historical risk factors include previous lifestyles or transitions leading to changes in a person's life course (e.g., job loss; Laub, Sampson, & Sweeten, 2006), which have been shown to be predictive of future violence and help to understand problematic behavior (Cernkovich & Giordano, 2001). Dynamic risk factors or criminogenic needs are often the subject of treatment (Bonta & Andrews, 2007) with a view to reducing the risk of recidivism.

The aim of this study was to develop patient profiles based on psychopathology, type of offense, and risk and protective factors (historical and dynamic risk factors), derived from patient files. As comorbidity is high in forensic populations, both Axis I and Axis II disorders of the *DSM-IV-TR* were included (APA, 2000). Differentiating between clinical patient characteristics, we hypothesized we would find patient profiles, possibly similar to the profiles found by Van Nieuwenhuizen et al. (2011) and Bogaerts and Spreen (2011). Because studies have shown that different risk factor levels are related to the PCL-R factor scores (Bogaerts et al., 2012; Yiend et al., 2013), we compared the profiles that emerged on both Factors 1 and 2 of the PCL-R (Hare, 1991) and the four-facet model of the PCL-R (Hare & Neumann, 2005) to examine whether our results showed similarities with previous studies.

Method

Procedure

This study was approved by the scientific research committee of the Forensic Psychiatric Center (FPC) where this study was conducted. Retrospective data were obtained from Electronic Patient Files (EPF) of 328 male patients residing FPC2landen or FPC De Kijvelanden in the Netherlands between 2003 and 2011. An annual risk assessment is conducted for all patients, and we selected risk assessments from approximately the first 2 years of treatment. First or second risk assessments were

selected on the basis of their time after admission (between 6 and 23 months), and we assessed behavior observed in the preceding year. All data involved primary treatment information and were anonymized for this study.

Participants

All patients were admitted to a forensic psychiatric center by court order. They had all committed an offense with a minimum penalty of 4 years and an Axis I or Axis II *DSM-IV-TR* diagnosis (APA, 2000). They faced detention under a hospital order (TBS), meaning a court-imposed treatment measure. After exclusion of incomplete EPFs or untimely risk assessments, 244 patients were included in this study. Mean age was 38.23 ($SD = 10.57$, range = 20-69) at the moment of risk assessment, conducted approximately 14.70 ($SD = 3.64$, range = 6-23) months after admission. Table 2 displays intelligence quotients, index offenses, and Axis I and Axis II *DSM-IV-TR* diagnoses (APA, 2000).

Measurements

Risk factors. The HKT-30 is a risk assessment tool derived from the HCR-20 (Webster et al., 1997) and developed for the Dutch forensic situation (Taskforce Risk Assessment Forensic Psychiatry, 2002; Harte & Breukink, 2010). The HKT-30 assesses both static and dynamic risk factors. For all patients, the HKT-30 tool is completed annually by trained raters with observations, file reports, and/or staff interviews. The HKT-30 total score has a moderate to good predictive value for violent recidivism (De Vries & Spreen, 2012; Hildebrand et al., 2005; Spreen et al., 2009). The HKT-30 instrument consists of 11 static historical items, 13 dynamic clinical items, and six dynamic future items, considering situations after clinical admission all displayed in Table 1. All items were scored on a 5-point scale indicating the degree of the item's severity, a score of four indicating severe problematic behavior (e.g., physical aggression or severe loss of impulse control) and a score of zero representing no problematic behavior at all or even well-adjusted behavior (e.g., good relational and social skills and good patient-network support). Internal consistency (IC), assessed with Cronbach's alpha, was rather good for the total scale, $IC = .79$, the clinical scale, $IC = .76$, and the future scale, $IC = .76$, and sufficient for the historical items; $IC = .68$. Interrater reliability was calculated with the Pearson correlation coefficient for a subsample ($n = 22-36$). Overall scores for the clinical and future scales were good ($r = .66-.87$), but the interrater reliability of the items hostility, treatment attitude, and coping skills was moderate ($r = .51-.58$) and that of the future item skills was too low ($r = .29$).

Psychopathology. *DSM-IV-TR* (APA, 2000) Axis I and Axis II diagnoses were assessed by trained psychiatrists and/or clinical psychologists. Primary Axis I diagnoses were divided into six groups: psychotic disorders, substance use disorders (SUDs), pedophilia, pervasive developmental disorders, a residual category including less common disorders (such as dysthymic disorder, paraphilia other than pedophilia, or bipolar

Table 1. Historical Risk Future–30 items (HKT-30).

Historical	Clinical	Future
H01 Legal history	K01 Problem awareness	F01 agreement on future conditions
H02 Violation of term	K02 Psychotic symptoms	F02 Material indicators
H03 Conduct problems before the age of 12	K03 Current substance use	F03 Daily activities
H04 Victim of violence in youth	K04 Impulsivity	F04 Skills
H05 Past care	K05 Empathy	F05 Social network
H06 History of school and work	K06 Hostility	F06 Stressing circumstances
H07 Past substance use	K07 Social and relational skills	
H08 Psychotic disorders	K08 Self-reliance	
H09 Personality disorders	K09 Acculturation issues	
H10 Psychopathy	K10 Treatment attitude	
H11 Sexual deviance	K11 Crime responsibility	
	K12 Sexual preoccupation	
	K13 Coping skills	

disorder), and “no diagnosis on Axis I.” Personality disorders were classified by the *personality disorder* item of the HKT-30 items. The personality disorder item is comparable with Tyrer and Johnson’s (1996) classification system of the severity of personality disorders (Bogaerts et al., 2013). A score of zero on this item indicates “no signs of a personality disorder”; score of one: “pathological features”; score of two: “one or more personality disorders but no cluster B”; score of three: “one or more personality disorders, with one cluster B.” A score of four, finally, indicates “two or more personality disorders with two cluster B or one cluster A and B personality disorder” (Taskforce Risk Assessment Forensic Psychiatry, 2002).

Offenses. Index offenses were gathered from the EPFs and categorized into seven offense types: property offenses, violent property offenses, maltreatment, homicide, arson, sexual offenses other than child sexual abuse, child sexual abuse, and other. The homicide category includes manslaughter, murder, and attempted murder.

Psychopathy. The PCL-R (Hare, 1991) is a 20-item clinical rating scale for assessing psychopathy. For all patients, an assessment based on historical information was conducted by trained clinicians, and a semi-structured clinical interview was held if possible. Items were scored on a 3-point scale: zero meaning that the item did not apply, one that the item applied partly, and two that the item applied fully. PCL-R interrater reliability was good for the total score (intraclass correlation [ICC] = .85), the factor one score (ICC = .80), the factor two score (ICC = .83), and also for the four-facet scores (ICC = .74-.79; Hildebrand et al., 2005). Classes were compared on the PCL-R total score, both the PCL-R two-factor (Hare et al., 1990) and four-facet scores (Hare

Table 2. Patient Characteristics Based on Primary Axis I and Axis II Diagnoses, Index Crime, and IQ.

	%
Primary Axis I diagnosis	
Psychotic disorders	31.2
Substance use disorder	34
Pedophilia	7.8
Pervasive disorder	6.1
Other	15.2
Attention disorder	1.6
Mood disorder	2.8
Sexual abuse of a child	1.8
Physical or sexual abuse of an adult	2
Parafilia (other than pedophilia)	1.6
other	5.4
None	5.7
Primary Axis II diagnosis	
Cluster A	1.6
Cluster B	44.3
Cluster C	2.5
Not otherwise specified (NOS)	35.2
Other	3.3
None	11.9
Index crime	
Property offenses	1.6
Property offenses with violence	8.6
Maltreatment	19.3
Homicide	32.4
Arson	7.8
Sexual offenses (other than child sexual abuse)	13.9
Child sexual abuse	14.8
Others	1.6
IQ^a	
Mentally retarded	2.5
Borderline retarded	9.4
Low average	24.2
Average	39.8
High average	8.6
Superior	1.6
Very superior	.4
Unknown	12.6

^aAssessed with the Wechsler Adult Intelligence Scale, RAVEN progressive matrices, Groninger Intelligence Test, or file reports.

& Neumann, 2005). The PCL-R two-factor model distinguishes an “affective and interpersonal factor” (Factor 1) and a behavioral or “socially deviant” factor (Factor 2; Hare & Neumann, 2005; Yiend et al., 2013). The four facets of the two-factor model comprise a more concrete representation of the psychopathy construct with good fit indices (Tucker–Lewis index [TLI] = 94, root mean square error of approximation [RMSEA] = .07, standardized root mean square residual [SRMR] = .05; Hare & Neumann, 2005). The four-facet model describes an antisocial facet, an interpersonal facet, an affective facet, and a lifestyle facet. Internal consistency, assessed with Cronbach’s alpha, was good for the PCL-R total scale and two-factor solution (IC = .85), Factors 1 (IC = .79) and 2 (IC = .83); it was acceptable for the four-facet solution Factors 1 (IC = .73), 2 (IC = .72), 3 (IC = .79), and 4 (IC = .76). Interrater reliability was assessed with the Pearson correlation coefficient on a subsample of the PCL-R. Interrater reliability was good for Factor 1; $n = 50$, $r = .90$, Factor 2, $n = 39$, $r = .95$; the interpersonal facet, $n = 52$, $r = .84$; the affective facet, $n = 50$, $r = .90$; the lifestyle facet, $n = 46$, $r = .90$; and the antisocial facet, $n = 46$, $r = .94$. Mean score on the PCL-R was $M = 20.59$ ($SD = 7.89$, range = 3–38), and the cutoff value for clinical use was 30.

Statistical Analysis

Data were analyzed using the SPSS 19 and transferred into Latent Gold 4.5, to conduct LCA. LCA is a statistical method for defining typologies based on selected features (Vermunt, 2004). LCA produces a probabilistic classification of all cases to identify subgroups and will assign cases to the most likely class with a deterministic classification (Mulder, Vermunt, Brand, Bullens, & van Marle, 2012). Classes are predicted by indicators and active covariates, and latent gold can estimate several models at the same time, to determine the goodness of fit and select the best fitting model (Vermunt & Magidson, 2005a). An advantage of LCA is that it can be used to cluster cases into homogeneous groups (Mulder et al., 2012). Variables that are not used to determine class membership but are used in describing the classes or for making comparisons between classes can be included as inactive covariates. The Bayesian information criterion (BIC) and the Akaike information criterion (AIC) indicate the model fit, with a lower BIC and AIC value indicating a better model fit. The BIC value is considered most reliable (Vermunt & Magidson, 2005b). When the best fit has been selected, the Bootstrap p value is estimated to provide a more precise estimation and improved power: $p > .05$ indicates a good fit. The Entropy R^2 and Reduction of errors show how well the model predicts class memberships based on observed variables; the closer to a value of one, the better the model predicts class membership (Vermunt & Magidson, 2005b). Explorative LCA analyses were conducted to construct the best fitting model with predictive items for the model. The -2 log likelihood ($-2LL$) tests whether the chosen model provides a significant improvement compared with a model with fewer classes (Vermunt & Magidson, 2005b). Latent gold 4.5 data were loaded back into SPSS 19 after analyses to compare the classes we found. An ANOVA was conducted to compare the classes on excluded HKT-30 items, the PCL-R total score, two-factor scores, and four-facet scores, which were included as inactive covariates. To assess

whether differences in dynamic risk factor scores were due to the period of assessment after admission, an ANOVA was conducted for the period between admission and date of assessment. Scheffe and Tukey post hoc tests were used to assess which classes differed for all ANOVAs.

Results

Model Fitting

Explorative LCA indicated a final model with the HKT-30 items displayed in Table 4 as active indicators, primary Axis I diagnosis and severity of personality disorder as active covariates, and index offense as inactive covariate. The historical and clinical items with low explained variances ($R^2 = .01-.17$) were excluded from the final model; these were *substance use in the past year*, *victim of violence before the age of 12*, *conduct problems before the age of 12*, *self-care skills*, *psychotic symptoms in the past year*, *past psychotic symptoms*, *sexual deviation*, and *culture-related issues*. These last three items were also excluded from the HKT-Revised, which was validated during this study (Spreen, Brand, Ter Horst, & Bogaerts, 2014). The future item *agreement on conditions* was also excluded; this concerns conditions after treatment and also showed a lower explained variance ($R^2 = .17$); for the current treatment, this was accounted for in the item *treatment attitude*. The future items *daily activities* and *material indicators* were also excluded as these concern situations outside the FPCs, as *material indicators* concern housing after treatment.

The duration of a TBS order in the Netherlands was approximately 9 years at the time of this study (Van Nieuwenhuizen et al., 2011). Most patients had a prison sentence before they were admitted to the forensic institution. As the assessments were conducted during the start of treatment, proper housing or daily activities outside the FPC were not yet accounted for and would not, therefore, discriminate between classes.

The estimation of classes from a three- to six-class solution yielded the lowest BIC value for the four-class model (see Table 3). Although the AIC value for the five-class solution was lower, the four-class solution was considered the best, given that the BIC value is considered to be more reliable (Vermunt & Magidson, 2005). Model fit was good after bootstrapping ($p = .14$; see Table 3). Bootstrap $-2LL$ implied a better fit of the four-class solution compared with the three-class model ($p < .00$). The separate indicators contribute significantly to class discrimination ($p < .05$; Vermunt & Magidson, 2005), and the Entropy R^2 and Reduction of errors (Lambda) implied the model predicts class membership well.

The Four-Class Solution to Construct Forensic Patient Profiles

The four-class solution (see Figure 1) displays higher scores on historical items for Classes 1 (antisocial) and 2 (mixed profile) and lower scores for Classes 3 (maladaptive disordered) and 4 (psychotic first offender). Class 2 shows the highest scores on

Table 3. Fit Statistics.

No. of classes	BIC (L ²)	AIC (L ²)	Npar	L ²	df	p ^a	Class error	Entropy	Reduction of errors (λ)
3	8,282.4	8,716.0	120	8,964.0	124	.18	.05	.87	.91
4	8,243.5	8,582.7	147	8,776.7	97	.14	.06	.88	.91
5	8,283.2	8,528.0	174	8,668.0	70	.10	.06	.90	.92
6	8,357.4	8,507.8	201	8,593.8	43	.04	.06	.90	.91

Note. Fit statistics are explained in the “Method” section. BIC = Bayesian information criterion; AIC = Akaike information criterion; Npar = number of parameters. Bold values represent the best fitting model.

^ap after bootstrapping.

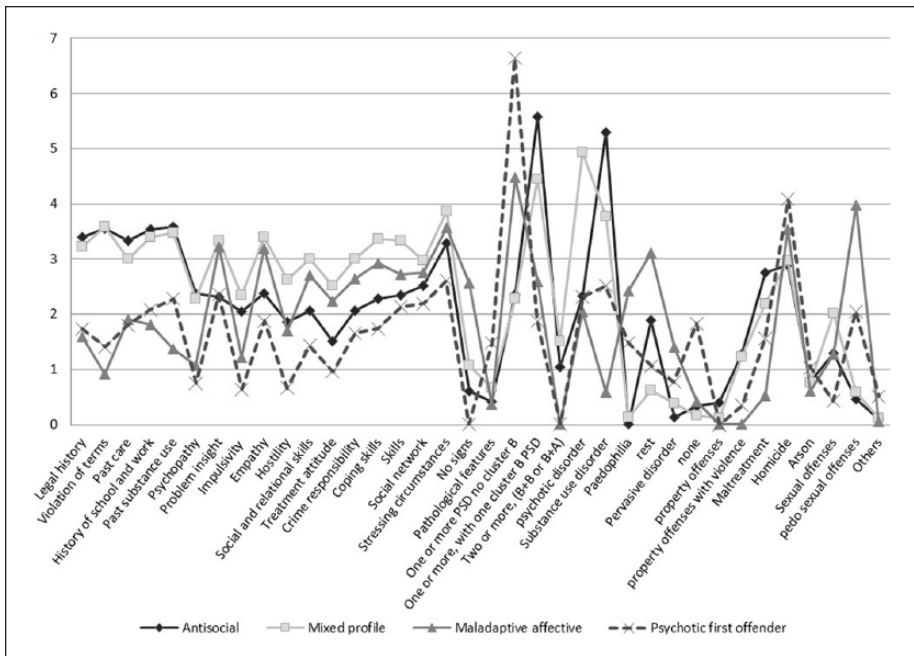


Figure 1. Four-class solution.

dynamic risk factors, followed by Class 3. Classes 1 and 4 show lower scores on the dynamic risk factors (see Table 4).

Patients in Class 1, or “the antisocial class,” were mostly diagnosed with a Cluster B personality disorder (56% one Cluster B, 10% one or more personality disorders Cluster B + B or B + A), 50.6% of whom were diagnosed with an antisocial personality disorder. Fifty-three percent of patients were also diagnosed with an SUD. They had been convicted for the crimes of homicide (29%), maltreatment (28%), sexual

Table 4. Group Means.

Variables	Class 1 (31%)	Class 2 (33%)	Class 3 (21%)	Class 4 (16%)
	M (SE)	M (SE)	M (SE)	M (SE)
Legal history	3.39 (.1)	3.22 (.1)	1.59 (.2)	1.74 (.2)
Violation of terms	3.55 (.1)	3.59 (.1)	0.92 (.2)	1.41 (.3)
Past care	3.34 (.1)	3.01 (.1)	1.90 (.2)	1.80 (.3)
School and work history	3.54 (.1)	3.40 (.1)	1.82 (.2)	2.08 (.2)
Past substance use	3.58 (.1)	3.47 (.1)	1.38 (.3)	2.28 (.3)
Psychopathy	2.38 (.2)	2.28 (.2)	1.07 (.2)	0.75 (.2)
Problem awareness	2.32 (.1)	3.34 (.1)	3.22 (.1)	2.36 (.1)
Impulsivity	2.04 (.2)	2.35 (.1)	1.22 (.2)	0.64 (.1)
Empathy	2.38 (.1)	3.39 (.1)	3.20 (.1)	1.88 (.2)
Hostility	1.86 (.1)	2.63 (.1)	1.71 (.2)	0.66 (.1)
Social and relational skills	2.06 (.1)	3.0 (.1)	2.70 (.1)	1.43 (.1)
Treatment attitude	1.51 (.1)	2.52 (.1)	2.23 (.2)	0.96 (.2)
Crime responsibility	2.07 (.1)	3.01 (.1)	2.65 (.2)	1.66 (.2)
Coping skills	2.28 (.1)	3.36 (.1)	2.93 (.1)	1.74 (.2)
Skills	2.34 (.1)	3.33 (.1)	2.72 (.1)	2.14 (.2)
Social network	2.52 (.1)	2.98 (.1)	2.75 (.1)	2.19 (.2)
Stressing circumstances	3.28 (.1)	3.86 (.1)	3.57 (.1)	2.61 (.1)

offenses (13%), or property offenses with violence (13%). The historical risk factors are especially high (see Table 4), whereas dynamic risk factors are lower (see Table 4). Forty-one percent of the patients showed a secondary Axis I SUD.

Patients in Class 2, or “mixed profile with multiple problems,” were mostly diagnosed with a Cluster B personality disorder (45% one Cluster B, 15% Cluster B + B or B + A), and a comorbid psychotic disorder (49%) or comorbid SUDs (38% primary, 56% secondary Axis I diagnosis). They had committed several crimes: homicide (30%), maltreatment (22%), sexual offenses (20%), and property offenses with violence (12%). This mixed class shows high historical and dynamic risk factors (see Table 4).

Class 3, or “the maladaptive affective disordered class,” includes patients with a pervasive disorder (14% primary, 10% secondary diagnosis), a rest disorder (31%; 4% affective disorder, 6% paraphilia [other than pedophilia], 2% dysthymic disorder, 6% sexual abuse of a child or adult, 4% maltreatment of an adult, 2% behavior disorder from childhood, and 6% other), or pedophilia (24% primary, 9% secondary diagnosis), followed by a psychotic disorder (21%). Patients in this class showed the lowest rate of SUDs (6% primary and 25% secondary Axis I diagnosis). They were less often diagnosed with a Cluster B diagnosis, but more often with a Cluster A, C, or personality disorder not otherwise specified (NOS; 45%). Twenty-six percent did not display any pathological signs of a personality disorder. Most patients had committed child sexual abuse (40%) or homicide (35%). None of the patients

with a pervasive developmental disorder was diagnosed with a Cluster B personality disorder. Furthermore, historical risk factors were low, while they displayed high dynamic risk factors; *problem awareness, empathy, social and relational skills, coping skills, crime responsibility, and stressing circumstances* were especially high (see Table 4).

Class 4, or “the psychotic first offender,” includes patients with a psychotic disorder (23% primary and 5% secondary Axis I diagnosis), SUD (25% primary and 31% secondary Axis I diagnosis), a rest (11%) diagnosis (3% dysthymic disorder, 3% pathological gambling, 3% maltreatment of an adult, 3% sexual abuse of an adult), and pedophilia (15%). However, there were low rates of Cluster B diagnoses (19% one or more, with one Cluster B). Most patients had a personality disorder NOS or a Cluster A or C diagnosis (66%). Most patients had committed homicide (41%), child sexual abuse (21%), and maltreatment (16%). Historical factors, such as legal history and psychopathy, were low as were dynamic, clinical, and future risk factors, particularly hostility and impulsivity (see Table 4).

External Validation

Table 5 displays ANOVAs with post hoc analysis results. Classes differed significantly on Hare’s PCL-R two-factor model; for Factor 1, $F(3, 225) = 11.18, p = .00$, and for Factor 2, $F(3, 189) = 64.89, p = .00$. After correction of the uneven item numbers, the Factor 2 score was significantly higher than the Factor 1 score for the antisocial profile, $t(66) = -5.05, p < .00$. The affective facet was significantly higher for the maladaptive affective disordered profile (maladaptive profile) compared with the other three facets, lifestyle: $t(43) = 11.43, p = .00$; antisocial: $t(36) = 9.86, p = .00$; interpersonal: $t(45) = 12.55, p = .00$.

The variable *months* (moment of risk assessment after admission) did not differ between profiles, $F(3, 240) = 2.15, p = .10$. However, *psychotic symptoms in the past year*, $F(3, 239) = 6.97, p = .00$, did differ, with the mixed profile scoring significantly higher than the other profiles (Table 5). A higher percentage of patients in the mixed profile showed psychotic symptoms (11% vs. 5% to 8%) or psychosis with a violent and paranoid content (13% vs. 1% to 5%).

Substance use in the past year was higher for the antisocial and mixed profiles, $F(3, 240) = 10.34, p = .00$. Twenty-seven percent to 29% of patients in both the mixed and antisocial profiles, respectively, had used a substance in the past year, compared with 3% to 10% in the maladaptive and psychotic first offender profiles. However, about 55% to 56% of patients in the two first profiles had neither used any substances in that period nor were preoccupied with substance use.

Patients in the maladaptive profile scored higher on *sexual preoccupation*, $F(3, 238) = 3.32, p = .021$. The mean score implies a suspicion of sexual preoccupation or no sexual preoccupation. However, 13% focused on sexual stimuli, and 8% of the patients were sexually preoccupied and showed deviant behavior or had violent thoughts.

Table 5. ANOVA External Variables.

Co-variable	Class 1			Class 2			Class 3			Class 4			Tukey test
	n	M	SD	n	M	SD	n	M	SD	n	M	SD	
Sexual deviation	76	0.51	1.10	79	0.65	1.29	49	1.96	1.63	38	0.74	1.37	3 > 1,2,4
Conduct problems < 12	78	1.97	1.35	71	1.73	1.35	44	1.25	1.26	35	0.74	1.09	1 > 3, 4; 2 > 4
Victim of violence	76	2.38	1.52	74	2.01	1.58	48	1.46	1.50	37	1.97	1.61	1 > 3
Psychotic symptoms*	78	.42	0.96	78	1.13	1.50	49	.41	0.89	38	.37	0.97	2 > 1,3,4
Sexual preoccupation*	77	.27	0.62	79	0.52	0.96	48	0.73	1.11	38	.32	0.62	3 > 1
Substance use*	78	1.13	1.44	79	1.08	1.39	49	.08	0.45	38	.40	0.97	1, 2 > 3, 4
Months	78	14.90	3.99	79	13.92	3.35	49	15.31	3.63	38	15.37	3.44	ns
PCL-R total score*	65	24.19	6.16	50	24.16	7.04	36	15.72	5.91	32	13.19	6.13	1, 2 > 3,4;
Facet 1 (Interpersonal)*	74	3.14	2.20	76	3.38	2.49	46	2.37	2.30	36	1.69	1.90	1, 2 > 4
Facet 2 (Affective)*	74	6.04	1.80	74	6.76	1.35	46	6.33	1.56	34	4.47	1.80	1, 2, 3 > 4
Facet 3 (Lifestyle)*	70	7.0	1.96	70	6.83	2.45	44	2.89	1.99	36	3.53	2.67	1, 2 > 3, 4
Facet 4 (Antisocial)*	71	6.79	2.20	60	6.40	2.31	37	2.11	2.15	34	2.44	1.97	1, 2 > 3, 4
Factor 1 (two-factor model)	74	9.18	3.44	75	10.19	3.38	46	8.70	3.31	34	6.21	3.16	1, 2, 3 > 4
Factor 2 (two-factor model)	67	12.54	2.95	56	11.96	3.82	36	4.86	3.28	34	5.62	3.56	1, 2 > 3, 4

Note. *n* differs due to missing values on items. *ns* = non-significant; PCL-R = Psychopathy Checklist-Revised.

**p* < .01, two-tailed.

Discussion

The goal of this study was to identify forensic patient classes on relevant characteristics (types of offense, psychopathologies, and risk factors) in a highly heterogeneous Dutch forensic population residing in two forensic psychiatric clinics. The different profiles could benefit future studies on the development of more specific group therapies and studies on treatment effectiveness and prognosis. With LCA, we distinguished four classes that differed in risk factors, psychopathologies, and types of offense. The model fit for the four-class solution can be considered good, after bootstrapping. For validation, classes were compared on other clinically relevant factors, such as psychopathy levels and recent substance abuse. The differences found between classes were not affected by the time of assessment.

The first class, “the antisocial class,” is characterized by strong personality traits (Cluster B), SUD, different types of offenses, high levels of historical risk factors, and lower levels of dynamic risk factors. The combination of a personality disorder and SUD is related to higher impulsivity, more convictions (Fridell, Hesse, Jaeger, & Kühllhorn, 2008), and more psychiatric symptoms (Trull, Sher, Minks-Brown, Durbin, & Burr, 2000; Zadeh & Damavandi, 2010). Although security measures and regular inspections in forensic institutions limit the use of drugs, the problematic historical behavior could have been worsened by the substance use, explaining the lower dynamic risk factors compared with Clusters 2 and 3. The previous “antisocial lifestyle,” including previous offenses, violation of terms, and a problematic school and work history, is in accordance with the higher Factor 2 PCL-R score, which is related to more reactive aggression (Bogaerts et al., 2012) and the antisocial PCL-R facet score. This also accounts for the diversity in crimes (Davison & Janca, 2012) and Cluster B personality disorder (Hildebrand & De Ruiter, 2012) in relation to the overall PCL-R score.

In sum, this group is characterized by high historical problems, fewer dynamic risk factors, diverse types of offenses, reactive aggression, Cluster B personality disorders, and comorbid SUDs. This could indicate group therapies incorporating comorbidity between Cluster B disorders and SUDs and related risk factors as well as individual schemas relating to reactive aggression.

The second class is referred to as “mixed profile with multiple problems.” Patients are characterized by Cluster B personality disorders, comorbid psychotic disorders, and/or SUD, and display high historical risk factors similar to the antisocial class. In contrast with the antisocial class, however, the dynamic risk factors are also high in this class, which is consistent with the high PCL-R scores on all PCL-R factors. There are similarities with *the mixed cluster* by Bogaerts and Spreen (2011) and *the patient with multiple problems* by Van Nieuwenhuizen et al. (2011). The co-occurrence of psychotic disorders with Cluster B personality disorders appears to worsen the problematic behavior, in contrast with Class 4, which also includes patients with psychotic problems, and Class 1, which includes patients with personality disorders.

Results in this class are consistent with previous studies. High levels of substance use (Boutron, Bonnet, & Mak, 1996; Haqqi, 2010), previous hospitalization, and

previous convictions are often found to be risk factors in psychotic disorders (Belli & Ural, 2012). The dynamic risk factors of *problem awareness, empathy, and coping skills* are consistent with problematic behavior found in the comorbid antisocial personality and psychotic disorders (Fullam & Dolan, 2006).

In sum, this group is characterized by high overall risk factors, high comorbidity between Cluster B and psychotic disorders, high PCL-R scores, and a diversity of crimes. Future studies would need to assess the effect of these highly problematic factors on treatment prognosis and effectiveness: Does treatment in this profile take longer than in the other profiles? It is even more important to study treatment responsiveness for this group, as studies claim that high psychopathy levels negatively influence treatment responsiveness (Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003).

The third class is the “maladaptive affective disordered class.” Patients in this class suffered mostly from pedophilia or pervasive developmental disorders and/or personality disorders NOS. Most offenses concerned homicide or child sexual abuse, and patients displayed low historical risk factors but higher dynamic risk factors: *social skills, empathy, crime responsibility, and problem awareness*. This is consistent with risk factors found in pedophilia (Neutze, Grundmann, Scherner, & Beier, 2012) and pervasive developmental disorders (Murphy, 2010). This class shows similarities with *the patient with sexual problems and sexual crimes* by Van Nieuwenhuizen et al. (2011) and with a cluster found by Woessner (2010), which includes child sexual offenders with paraphilia and fewer personality disorders or SUDs, who show highly adaptive behavior and would require much control and the training of many coping skills. The high affective PCL-R facet score is consistent with the results found and implies poor social and emotional functioning (Allan, Grace, Rutherford, & Hudson, 2007). The same is true for the higher sexual preoccupation found in this profile.

Previous studies found higher degrees of suppressed anger styles and adaptive behavior in patients with pervasive developmental disorders (Murphy, 2010), which may partly explain the lower historical risk factors. Problem behavior appears to have surfaced after the index crime occurred. The higher dynamic risk factors of *coping skills, lack of social support, and skills to hold one’s own outside the forensic institution* are consistent with the needs addressed in the Circles of Support and Accountability (COSA) project studies, implying that pedophile offenders require a highly supportive network (Hannem, 2013; Höing, Bogaerts, & Vogelvang, 2013). The level of victim violence is remarkably low, although this is an oft-mentioned risk factor in the development of sexual offenders (Lee, Jackson, Pattinson, & Ward, 2002; Mouridsen, 2012).

In sum, this class is characterized by high pedophilia and pervasive developmental disorders, low historical risk factors, higher dynamic risk factors, particularly *coping, problem awareness, social skills, and crime responsibility*, related to the higher affective facet score on the PCL-R. Treatment could focus on the acquisition of social skills and coping skills (Woessner, 2010), and a prognosis could focus on post-treatment external control of the patient group, similar to the COSA project (Hannem, 2013).

The fourth and last class, the “psychotic first offender,” is characterized by low overall risk factors compared with the other classes, homicide, and low levels of

psychopathy. Patients are more often diagnosed with psychotic disorders, SUDs, and/or a Cluster A, C, or personality disorder NOS. This class shows similarities with the *psychotic cluster* found by Bogaerts and Spreen (2011) and the *typical psychotic patient* found by Van Nieuwenhuizen et al. (2011). Compulsory admissions and risky behavior are more often found in patients suffering from psychotic disorders and Cluster B personality disorders or SUDs than in patients showing no comorbidity (Boutron et al., 1996; Curson, Duke, Harvey, Pantelis, & Barnes, 1999; Fullam & Dolan, 2006; Haqqi, 2010). The prevalence of patients who commit an offense as a direct result of a psychosis is small. Most patients with a mental illness have committed an offense as a result of hostility or emotional reactivity, consistent with risk factors found for patients in the mixed profile, explaining the low number of the *typical psychotic patient* (Peterson et al., 2010). However seldom it occurs, homicide is still considered the most significant complication of a psychosis (Bo, Abu-Akel, Kongerslev, Haahr, & Simonsen, 2011). Untreated psychotic symptoms are one of the most important risk factors for violent behavior in psychotic patients, consistent with the higher homicide rates. Considering the low numbers of historical conduct, this profile appears to include the "first offender." Although lower than the other classes, patients show somewhat limited problem awareness, empathy, and a problematic school and work history. Empathy is one of the previously identified risk factors for violent behavior in psychotic patients (Bo et al., 2011) and could be associated with a deficit in the processing of emotional stimuli, often found in patients with psychotic disorders (Fullam & Dolan, 2006).

In sum, this profile is characterized by the lowest risk factors overall, low comorbidity numbers, psychotic disorders, and low PCL-R scores. Treatment could focus on the reduction of psychotic symptoms and the enhancement of skills that are beneficiary for outflow, such as social skills and self-reliance skills. Further studies would have to show whether the treatment prognosis for patients with a psychotic disorder in this profile differs from patients with a psychotic disorder in the mixed profile.

Limitations

The sample size in this study is rather small; a number of at least 500 respondents would be preferable for performing LCA (Vermunt, 2004). The Bootstrap function was conducted, therefore, to estimate the proper p value. Psychopathology and type of offenses were translated into groups for a proper LCA, whereas some other studies differed within those groups, for example, types of schizophrenia (Belli & Ural, 2012). However, the offense and psychopathology variables would have been too large for analysis if we had not grouped these variables. Moreover, the goal was not to study one group of offenders but to study clinical profiles of Dutch forensic psychiatric patients. Although the results show similarities with the nationwide study conducted by Van Nieuwenhuizen et al. (2011), we will not generalize the results to the entire Dutch TBS population.

The risk assessments we selected were conducted between 2005 and 2012. In these years, risk assessments were widely studied and developed, leading to improvements in scoring methods. These may possibly have influenced assessment considerations made

over the years. It will be important, therefore, to reassess the results with newly developed risk assessment tools, such as the HKT-Revised (Spreen et al., 2014) in the future.

The future items *Material Indicators*, *Agreement on Conditions*, and *Daily Activities* were excluded as these consider post-treatment conditions, and forensic psychiatric treatment takes approximately 9 years (Van Nieuwenhuizen et al., 2011). However, forensic psychiatric clinics are now developing new treatment modules and earlier release modules to shorten treatment in the future, possibly leading to an earlier focus on these items in the future.

Historical risk factors for child abusers, furthermore, were rather small. It is possible that the HKT-30 and the following HKT-Revised do not assess the proper historical risk factors for this group, although the sexual deviance item also showed low scores. However, paraphilia itself is considered to be a serious risk factor for recidivism (Allan et al., 2007; Hanson & Harris, 2000).

Conclusion

By identifying four patient profiles, we succeeded in classifying the heterogeneous group of forensic psychiatric patients into recognizable homogeneous groups, which may be a help in studying optimum treatment modules. Three of the four profiles we discovered are in line with previous studies (Bogaerts & Spreen, 2011; Van Nieuwenhuizen et al., 2011), which confirms our clinically substantiated profiles. These three profiles are *the psychotic patient with multiple problems*, matching with our mixed profile; *the psychotic patient*, which is in line with our psychotic first offender; and *the patient with sexual problems and sexual crimes*, corresponding with the maladaptive affective disordered profile in this study.

The *antisocial patient* and *the patient suffering from addiction* (Van Nieuwenhuizen et al., 2011) were not found in this study. The *antisocial patient* shows similarities with the antisocial class. However, the *antisocial patient* by Van Nieuwenhuizen et al. (2011) typically committed life-threatening crimes, whereas patients in the antisocial class are generalists, as in *the patient suffering from addiction* by Van Nieuwenhuizen et al. (2011). *The patient suffering from addiction* is more often diagnosed with a personality disorder NOS. However, Van Nieuwenhuizen et al. (2011) did not differentiate between personality disorder NOS with severe Cluster B traits or Cluster A or C traits. It is possible that both profiles found by Van Nieuwenhuizen et al. (2011) were integrated into the antisocial class, whereas we studied severity of personality disorder.

Although the maladaptive affective disordered profile shows similarities with *the patient with sexual problems and sexual crimes*, there are some important differences to note. In the maladaptive affective disordered profile, we find not only patients with sexual disorders and sexual crimes but also a higher number of patients with pervasive developmental disorders and higher homicide numbers. However, consistent with the cluster found by Van Nieuwenhuizen et al. (2011), this class does appear to include more “specialist” offenders than “generalist” offenders, as were found in the antisocial and mixed profiles. Sexual misconduct, moreover, is often prevalent in offenders with pervasive developmental disorders (Kawakami et al., 2012; Mouridsen, 2012).

Implications

These results imply different risk factors for different groups and combinations of diagnoses and offense types. Psychotic patients in Class 4, for example, show fewer risk factors than patients with psychotic symptoms with a comorbid personality disorder in Class 2. Classes show high levels of comorbidity, but therapeutic guidelines do not provide treatment indications in cases of comorbidity (Dell'Osso & Pini, 2012). In line with the RNR model, treatment should focus on the patients' needs, and many treatment modules involve group therapies.

The findings in this study, the study by Van Nieuwenhuizen et al. (2011), and Bogaerts and Spreen (2011) imply that group treatment modules could enhance treatment guidelines, concerning comorbidity and the risk factor combinations found. Group therapy modules could then be refined, providing a better fit with both the need and the responsiveness principles highlighted by the RNR model (Bonta & Andrews, 2007). This could have the positive effect of better treatment outcomes in a shorter period. Even more profiles could be used to indicate treatment prognosis. Beekman, Van Os, Van Marle, and Van Harten (2012) claimed that diagnostic tools are often used without knowledge of treatment effectiveness and prognosis. If we include relevant treatment characteristics, treatment effectiveness and prognosis could be estimated at the start and during treatment.

Future Research

Future research should examine whether it is beneficial to refine treatment modules and, if so, how they should be refined, and present these to patient groups similar to the classes found in this study. For example, a treatment module for personality-disordered patients with a history of aggressive behavior could be refined by offering a separate treatment module for patients with schizophrenia and severe personality traits. A nationwide study, reassessing our results in a larger forensic psychiatric population, could help to corroborate the results found in this study. Future studies might examine how specific treatment outcomes can be predicted by the profiles.

The presence of a personality disorder is generally related to a worse treatment prognosis. However, does this account for both the antisocial and the mixed profiles, both of which show severe personality traits but different risk factor levels? Routine Outcome Monitoring (ROM) evaluates treatments as a whole, unlike randomized controlled trials, which only evaluate parts of treatments (Zitman, 2012). ROM gives us the opportunity to study treatment progress and patient functioning in different treatment programs at different moments of treatment (Van der Veeken, Bogaerts, & Lucieer, 2012). With a set of ROM tools measuring relevant forensic clinical characteristics, it is possible to study whether treatment progress differs among the four classes and to discover how these factors develop during treatment and what the influence of different treatment modules is. This could aid the further development or refinement of group therapy modules according to "what works" principles (Van Marle, 2012). Treatment progress information for different patient profiles could help to establish treatment indications and prognoses for individual patients made at the start of their treatment (Zitman, 2012). The development of new treatment modules and a better understanding of treatment prognosis could benefit both clinicians and patients.

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References

- Allan, M., Grace, R. C., Rutherford, B., & Hudson, S. M. (2007). Psychometric assessment of dynamic risk factors for child molesters. *Sexual Abuse: A Journal of Research and Treatment, 19*, 347-367. doi:10.1007/s11194-007-9052-5
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Andrews, D. A., & Bonta, J. (2010). *The psychology of criminal conduct* (5th ed.). New Providence, NJ: Matthew Bender.
- Andrews, D. A., Guzzo, L., Raynor, P., Rowe, R. C., Rettinger, L. J., Brews, A., & Wormith, J. S. (2012). Are the major risk/need factors predictive of both female and male reoffending? A test with the eight domains of the Level of Service/Case Management Inventory. *International Journal of Offender Therapy and Comparative Criminology, 56*, 113-133. doi:10.1177/0306624X10395716
- Beekman, A. T. F., Van Os, J., Van Marle, H. J. C., & Van Harten, P. N. (2012). Stagering en profileren van psychiatrische stoornissen [Staging and profiling of psychiatric disorders]. *Tijdschrift voor Psychiatrie, 54*, 915-920.
- Belli, H., & Ural, C. (2012). The association between schizophrenia and violent or homicidal behavior: The prevention and treatment of violent behavior in these patients. *West Indian Medical Journal, 61*, 538-543.
- Bo, S., Abu-Akel, A., Kongerslev, M., Haahr, U. H., & Simonsen, E. (2011). Risk factors for violence among patients with schizophrenia. *Clinical Psychology Review, 31*, 711-726. doi:10.1016/j.cpr.2011.03.002
- Bogaerts, S., Polak, M., Spreen, M., & Zwets, A. (2012). High and low aggressive narcissism and anti-social lifestyle in relationship to impulsivity, hostility, and empathy in a group of forensic patients in the Netherlands. *Journal of Forensic Psychology Practice, 12*, 147-162. doi:10.1080/15228932.2012.650144
- Bogaerts, S., & Spreen, M. (2011). *Persoonlijkheidspathologie, slachtofferschap vóór het 18e levensjaar, huiselijk geweld en delict informatie in een klinische groep terbeschikking-gestelden* [Personality pathology, victimization before the age of 18, domestic violence and crime information in a clinical group of inpatients]. Den Haag, The Netherlands: Onderzoek in opdracht van het Ministerie van Justitie en Veiligheid, WODC.
- Bogaerts, S., Spreen, M., Horváth, Z., Polak, M. S., & Cima-Knijff, M. J. (2013). Career criminality, childhood experiences and adult personality among forensic patients in the Netherlands. In J. B. Helfgott (Ed.), *Criminal psychology* (pp. 381-402). Westport, CT: Praeger.

- Bogaerts, S., Vanheule, S., & DeClercq, F. (2005). Recalled parental bonding, adult attachment style, and personality disorders in child molesters: A comparative study. *The Journal of Forensic Psychiatry & Psychology, 16*, 445-458.
- Bogaerts, S., Vervaeke, G., & Goethals, J. (2004). A comparison of relational attitude and personality disorders in the explanation of child molestation. *Sexual Abuse: A Journal of Research and Treatment, 16*, 37-47.
- Bonta, J., & Andrews, D. A. (2007). *Risk-need-responsivity model for offender assessment and treatment* (User Report No. 2007-06). Ottawa, Ontario: Public Safety Canada.
- Bonta, J., Law, M., & Hanson, K. (1998). The prediction of criminal and violent recidivism among mentally disordered offenders: A meta-analysis. *Psychological Bulletin, 123*, 123-142.
- Boutron, N., Bonnet, K., & Mak, T. (1996). Drug abuse: A significant variable in schizophrenia research. *Biological Psychiatry, 39*, 1053-1054. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8780842>
- Buschman, J., Bogaerts, S., Foulger, S., Wilcox, D., Sosnowski, D., & Cushman, B. (2010). Sexual history disclosure polygraph examinations with cybercrime offences: A first Dutch explorative study. *International Journal of Offender Therapy and Comparative Criminology, 54*, 395-411. doi:10.1177/0306624X09334942
- Cernkovich, S., & Giordano, P. (2001). Stability and change in antisocial behavior: The transition from adolescence to early adulthood. *Criminology, 39*, 371-410. doi:10.1111/j.1745-9125.2001.tb00927.x
- Coid, J., Hickey, N., Kahtan, N., Zhang, T., & Yang, M. (2007). Patients discharged from medium secure forensic psychiatry services: Reconvictions and risk factors. *British Journal of Psychiatry, 190*, 223-229.
- Craig, L. A., Browne, K. D., Beech, A., & Stringer, I. (2006). Differences in personality and risk characteristics in sex, violent and general offenders. *Criminal Behaviour and Mental Health, 16*, 183-194. doi:10.1002/cbm.618
- Curson, D. A., Duke, P. J., Harvey, C. A., Pantelis, C., & Barnes, T. R. (1999). Four behavioural syndromes of schizophrenia: A replication in a second inner-London epidemiological sample. *Schizophrenia Research, 37*, 165-176. doi:10.1016/S0920-9964(98)00151-0
- Davison, S., & Janca, A. (2012). Personality disorder and criminal behaviour: What is the nature of the relationship? *Current Opinion in Psychiatry, 25*, 39-45. doi:10.1097/YCO.0b013e32834d18f0
- Dell'Osso, L., & Pini, S. (2012). What did we learn from research on comorbidity in psychiatry? Advantages and limitations in the forthcoming DSM-V era. *Clinical Practice & Epidemiology in Mental Health, 8*, 180-184. doi:10.2174/1745017901208010180
- De Vogel, V., De Ruiter, C., & Bouman, Y. (2007). Meting van protectieve factoren en het belang ervan voor behandeling in de forensische setting [Measurement of protective factors and the importance within treatment in the forensic setting]. *Tijdschrift voor Psychotherapie, 33*, 102-119. doi:10.1007/BF03062262
- De Vries, K., & Spreen, M. (2012). De HKT-30 als instrument voor beslismomenten binnen een tbs-behandeling [Can the clinical items of the risk assessment instrument HKT-30 predict to what extent forensic patients will break agreements during the resocialisation phase of treatment?]. *Tijdschrift voor Psychiatrie, 54*, 429-438. Retrieved from <http://www.tijdschriftvoorpsychiatrie.nl/issues/453/articles/9380>
- Firestone, P., Bradford, J. M., Greenberg, D. M., & Serran, G. A. (2000). The relationship of deviant sexual arousal and psychopathy in incest offenders, extrafamilial child molesters, and rapists. *Journal of the American Academy of Psychiatry and the Law, 28*, 303-308.
- Fridell, M., Hesse, M., Jaeger, M. M., & Kühllhorn, E. (2008). Antisocial personality disorder as a predictor of criminal behaviour in a longitudinal study of a cohort of abusers of several

- classes of drugs: Relation to type of substance and type of crime. *Addictive Behaviors*, *33*, 799-811. doi:10.1016/j.addbeh.2008.01.001
- Fullam, R., & Dolan, M. (2006). The criminal and personality profile of patients with schizophrenia and comorbid psychopathic traits. *Personality and Individual Differences*, *40*, 1591-1602. doi:10.1016/j.paid.2006.01.003
- Hall, R. C., & Hall, R. C. (2007). A profile of pedophilia: Definition, characteristics of offenders, recidivism, treatment outcomes, and forensic issues. *Mayo Clinic Proceedings*, *82*, 457-471. doi:10.4065/82.4.457

- Lee, J. K. P., Jackson, H. J., Pattinson, P., & Ward, T. (2002). Developmental risk factors for sexual offending. *Child Abuse & Neglect*, *26*, 73-92. doi:10.1016/S0145-2134(01)00304-0
- Leistico, A.-M. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior*, *32*, 28-45. doi:10.1007/s10979-007-9096-6
- Lockmuller, M., Beech, A., & Fischer, D. (2008). Sexual offender with mental health problems: Epidemiology, assessment and treatment. In K. Soothill, P. Rogers, & M. Dolan (Eds.), *Handbook of forensic mental health* (pp. 446-479). Cullompton, UK: William.
- Mouridsen, S. E. (2012). Current status of research on autism spectrum disorders and offending. *Research in Autism Spectrum Disorders*, *6*, 79-86. doi:10.1016/j.rasd.2011.09.003
- Mulder, E., Vermunt, J., Brand, E., Bullens, R., & van Marle, H. (2012). Recidivism in subgroups of serious juvenile offenders: Different profiles, different risks? *Criminal Behaviour and Mental Health*, *22*, 122-135. doi:10.1002/cbm.1819
- Murphy, D. (2010). Understanding offenders with autism-spectrum disorders: What can forensic services do? Commentary on . . . Asperger syndrome and criminal behavior. *Advances in Psychiatric Treatment*, *16*, 44-46. doi:10.1192/apt.bp.109.006775
- Nanayakkara, V., O'Driscoll, C., & Allnut, S. (2012). HCR-20 risk profiles of patients referred to forensic mental health services in New South Wales. *Psychiatry, Psychology and Law*, *19*, 711-719. doi:10.1080/13218719.2011.615819
- Neutze, J., Grundmann, D., Scherner, G., & Beier, K. M. (2012). Undetected and detected child sexual abuse and child pornography offenders. *International Journal of Law and Psychiatry*, *35*, 168-175.
- O'Driscoll, C., Larney, S., Indig, D., & Basson, J. (2012). The impact of personality disorders, substance use and other mental illness on re-offending. *The Journal of Forensic Psychiatry & Psychology*, *23*, 382-391. doi:10.1080/14789949.2012.686623
- Palermo, G. B. (2009). Editorial: Delinquency: Risks and protective factors. *International Journal of Offender Therapy and Comparative Criminology*, *53*, 247-248. doi:10.1177/0306624X09335886
- Peterson, J. L., Skeem, J. L., Hart, E., Vidal, S., & Keith, F. (2010). Analyzing offense patterns as a function of mental illness to test the criminalization hypothesis. *Psychiatric Services*, *61*, 1217-1222. doi:10.1176/appi.ps.61.12.1217
- Rennie, C. E., & Dolan, M. C. (2010). The significance of protective factors in the assessment of risk. *Criminal Behaviour and Mental Health*, *20*, 8-22. doi:10.1002/cbm.750
- Scoones, C. D., Willis, G. M., & Grace, R. C. (2012). Beyond static and dynamic risk factors: The incremental validity of release planning for predicting sex offender recidivism. *Journal of Interpersonal Violence*, *27*, 222-238. doi:10.1177/0886260511416472
- Skeem, J. L., Poythress, N., Edens, J. F., Lilienfeld, S. O., & Cale, E. M. (2003). Psychopathic personality or personalities? Exploring potential variants of psychopathy and their implications for risk assessment. *Aggression and Violent Behavior*, *8*, 513-546. doi:10.1016/S1359-1789(02)00098-8
- Spreen, M., Brand, E., Ter Horst, P., & Bogaerts, S. (2014). Handleiding en Methodologische Verantwoording HKT-R, Historisch, Klinische en Toekomstige-Revisie [Manual and methodological justification HKT-R historical, clinical and future-Revised]. Groningen, The Netherlands: Dr. van Mesdag kliniek.
- Spreen, M., Ter Horst, P. R. M., Bogaerts, S., Lammers, S. M. M., Hochstenbach, J., Soe-Agnie, S. E., & Reubsact, R. J. (2009). Risicotaxatie aan de hand van de HCR-20 en de HKT-30: Een vergelijking tussen beide instrumenten [Risk assessment with the HCR-20 and the HKT-30: A comparison between both instruments]. In T. I. Oei & M. S. Groenhuijsen (Eds.), *Forensische psychiatrie en haar grensgebieden: Actualiteit, geschiedenis en toekomst* [Forensic psychiatry

- and het boundaries: Actuality, history and future] (pp. 459-476). Alphen aan den Rijn, The Netherlands: Kluwer.
- Trull, T. J., Sher, K. J., Minks-Brown, C., Durbin, J., & Burr, R. (2000). Borderline personality disorder and substance use disorders: A review and integration. *Clinical Psychology Review, 20*, 235-253. doi:10.1016/S0272-7358(99)00028-8
- Tyrer, P., & Johnson, T. (1996). Establishing the severity of personality disorder. *American Journal of Psychiatry, 153*, 1593-1597. doi:10.1176/ajp.153.12.1593
- Van der Veeken, F. C. A., Bogaerts, S., & Lucieer, J. (2012). Routine outcome monitoring in forensic psychiatry: FPC2landen and FPC de Kijvelanden. In T. I. Oei & M. S. Groenhuijsen (Eds.), *Progression in forensic psychiatry* (pp. 355-375). Alphen aan den Rijn, The Netherlands: Kluwer.
- Van Marle, H. J. C. (2012). De staging met profielen in de forensisch psychiatrische delictanalyse [Staging with profiles in offence analysis: Diagnostic steps in forensic psychiatry]. *Tijdschrift voor Psychiatrie, 54*, 973-978.
- Van Nieuwenhuizen, C. H., Bogaerts, S., De Ruijter, E. A. W., Bongers, I. L., Coppens, M., & Meijers, R. A. A. C. (2011). TBS-behandeling geprofileerd; een gestructureerde casussenanalyse [Profiling TBS-treatment: A structured cases analysis]. *Wetenschappelijk Onderzoek- en Documentatiecentrum (WODC) Ministerie van Veiligheid en Justitie*. Retrieved from <https://www.wodc.nl/onderzoeksdatabase/voorstudie-onderzoek-tbs.aspx?cp=44&cs=6779>
- Vermunt, J. K. (2004). Toepassingen van latente klassenanalyse in sociaal wetenschappelijk onderzoek. *Sociale Wetenschappen, 47*(1), 2-14. Retrieved from <http://members.home.nl/jeroenvermunt/sw2004.pdf>
- Vermunt, J. K., & Magidson, J. (2005a). *LG 4.0 user's guide. Basic and advanced*. Belmont, MA: Statistical Innovations.
- Vermunt, J. K., & Magidson, J. (2005b). *Technical guide for Latent Gold 4.0: Basic and advanced*. Belmont, MA: Statistical Innovations.
- Ward, T., & Gannon, T. A. (2006). Rehabilitation, etiology, and self-regulation: The comprehensive good lives model of treatment for sexual offenders. *Aggression and Violent Behavior, 11*, 77-94. doi:10.1016/j.avb.2005.06.001
- Webster, C. D., Douglas, K. S., Eaves, D., & Hart, S. D. (1997). *HCR-20: Assessing the Risk for Violence (Version 2)*. Vancouver, British Columbia, Canada: Simon Fraser University, Mental Health, Law and Policy Institute.
- Werkgroep Risicotaxatie Forensische Psychiatrie [Taskforce Risk Assessment Forensic Psychiatry]. (2002). *Handleiding HKT-30 versie 2. Risicotaxatie in de forensische psychiatrie*. Den Haag, The Netherlands: Ministerie van Justitie, Dienst Justitiële Inrichtingen.
- Woessner, G. (2010). Classifying sexual offenders: An empirical model for generating type-specific approaches to intervention. *International Journal of Offender Therapy and Comparative Criminology, 54*, 327-345. doi:10.1177/0306624X08331213
- Wong, S., & Gordon, A. (2006). The validity and reliability of the violence risk scale: A treatment friendly violence risk assessment tool. *Psychology Public Policy Law, 12*, 279-309. doi:10.1037/1076-8971.12.3.279
- Yiend, J., Freestone, M., Vazuques-Montes, M., Holland, J., & Burns, T. (2013). The clinical profile of high-risk mentally disordered offenders. *Social Psychiatry and Psychiatric Epidemiology, 48*, 1169-1176. doi:10.1007/s00127-013-0696-9
- Zadeh, M. D., & Damavandi, A. J. (2010). The incidence of personality disorders among substance dependents and non-addicted psychiatric clients. *Procedia—Social and Behavioral Sciences, 5*, 781-784. doi:10.1016/j.sbspro.2010.07.184
- Zitman, F. G. (2012). Stagering, profileren en routine outcome monitoring [Staging, profiling and routine outcome monitoring]. *Tijdschrift voor Psychiatrie, 54*, 979-984.