Personality pathology in a forensic setting : prevalence, assessment, and prognostic value for treatment

Spaans, M.A.

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Chapter Six

Prognostic factors for length of enforced forensic treatment with special focus on personality disorder

Abstract

The current study investigates the predictive value of personality disorder on treatment length, at first leave request and end of treatment, of offenders detained in high security psychiatric hospitals in the Netherlands. Data from digital databases of pre-trial assessment and treatment characteristics were merged for 536 male patients (mean age 34.0 years, SD = 10.5, range: 18.0-68.8) with a 76.5% personality disorder prevalence. Results of survival analyses, which also examined the predictive value of index offense, DSM-IV major mental disorder, substance abuse history, intellectual functioning, and psychiatric hospital as covariates, showed that personality disorder did not independently predict length of enforced treatment. A subgroup of patients with only personality disorder and no comorbid major mental disorder had a shorter treatment length. This study has isolated separate factors that can shorten or prolong treatment and can provide a focus for both policy and (clinical) decision makers in the enforced treatment process.[5]

Enforced treatment

Under Dutch criminal law a person who commits a serious offense for which he cannot be held responsible, on account of mental retardation or pathological impairment of his mental abilities, is not punishable and can be sentenced to enforced treatment (known as *terbeschikkingstelling* or TBS) in special forensic psychiatric high security treatment hospitals, called Forensic Psychiatric Centers (FPCs). In cases in which the offender is considered partially unaccountable the treatment is preceded by a prison sentence, meant as punishment. The aim of enforced treatment is to protect society against a high risk of recidivism: in the short term by incarcerating the offender and in the long term by offender treatment (Van Gemmert, Van Schijndel, Gordeau, & Casanova, 2013). These hospitals aim towards the forensic psychiatric patient's gradual and safe return into society, known as "resocialization" (Koenraadt, Mooij, & Van Mulbregt, 2007).

The median enforced treatment length for forensic psychiatric patients had gradually been increasing over the years, from 7.3 years for patients who entered the system in 1990 (Dienst Justitiële Inrichtingen, 2011) to its peak at 10.6 years for patients who entered the system in 1998 (Dienst Justitiële Inrichtingen, 2015). A recent study shows that the median enforced treatment length for patients who entered the system in 2006 has decreased somewhat to 8.0 years (Dienst Justitiële Inrichtingen, 2015). Extensive treatment length is generally considered counterproductive to an effective resocialization process as well as overly costly (Verwaaijen & Polak, 2010). Hospitals face constant deliberation between preparing the patient for his or her return to society and the risk of reoffending society may face in doing so. Additional insight is needed into the conditions under which patients can responsibly return to society, because of the enormous public impact of any relapse into serious criminal behavior.

According to Brand, Van Emmerich and Raes (2009), research on the entire process of enforced treatment – which includes collecting data from and relaying it back to hospitals – can contribute to improved diagnoses and meaningful research, but also fewer incidents and less recidivism. Research into factors that predict length of treatment can increase the evidence base and the understanding of conditions under which patients can start their resocialization at an earlier stage. The present study intends to elaborate on current knowledge of personality disorder (PD), which is highly prevalent in Dutch hospitals (De Ruiter & Greeven, 2000; Hildebrand & De Ruiter, 2004), as a possible influence on

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treatment length of forensic psychiatric patients in hospitals in the Netherlands. It will do so by combining elaborate data from various judicial organizations that assess and treat mentally ill offenders.

Leave of forensic psychiatric patients

A crucial part of the Dutch enforced forensic treatment is the leave process, during which the patient is granted authorized freedom to move outside the secure zone of the hospital. Authorized leave is meant to gradually prepare the patient for return to society, by examining if treatment advances made in the hospital hold up in the less protective outside environment and if the patient can handle an increase in freedom and responsibility (Nagtegaal, Van der Horst, & Schönberger, 2011; Bernstein, Nijman, Karos, Keulen-De Vos, De Vogel, & Lucker, 2012). It is not the forensic psychiatric patient but the hospital that can request leave on behalf of the patient, when the patient has shown sufficient progress during treatment. "Accompanied leave" is the first step and generally applied for after about two to three years of treatment (Waij, Spronk & Canton, 2010).

Since January 1st 2008 FPC's requests for leave are evaluated by the Advisory Board on Review of Leave from TBS (*Adviescollege Verloftoetsing TBS* or AVT) who, based on information from the hospital, such as standardized risk assessment instruments, consider the patient's possible risk to society during leave. Of the 1,868 decisions made by the Advisory Board in 2013, 1,640 (87.8%) leave requests were granted and only 136 (7.3%) were denied. For 92 (4.9%) requests, additional information was asked of the hospital before a decision could be made (AVT, 2014). According to Mevis (2011), an increasing fear of incidents with forensic psychiatric patients on leave has caused hospitals to prolong the first applications for leave of their patients, while at the same time the treatment directors of hospitals throughout the country are keen to speed up the leave process.

Influences on treatment length

A number of factors affect the speed with which accompanied leave is requested for a forensic psychiatric patient. According to Van Kuijck (2011) hospitals differ greatly in the speed with which they apply for first leave, leading to differing numbers of patients per hospital who have never been on leave. This could be due to the fact that hospitals often specialize in types of offenders or disorders, such as patients who are considered violent, have major mental illnesses or below average intellectual functioning. Research has also shown that psychiatric problems that experts consider risk factors or contra-indications for accompanied leave are, in order of apparent priority, alcohol-related disorders, drug-related disorders, psychotic disorders, the Diagnostic Statistical Manual's (DSM; American Psychiatric Association, 2000) Cluster B personality pathology, and cognitive impairment (AVT, 2011). Nagtegaal and colleagues (2011) found that forensic psychiatric patients who had been convicted of sex offenses were increasingly less likely to leave hospitals.

When a forensic psychiatric patient has successfully passed through all leave stages, the hospital considers a patient for (conditional) end of enforced treatment. A patient whose enforced treatment has ended can still be supervised by Probation Services for a minimum of one year and a maximum of nine years. Research has shown that the length of supervision has gradually increased over the years from 343 days in 2009 to 537 days in 2013, which is most likely due to the increase in opportunities for aftercare and extended supervision during these years (Dienst Justitiële Inrichtingen, 2014).

Current study

According to research by De Kogel and Nagtegaal (2006) most patients in forensic psychiatric hospitals in Canada, Sweden, England, and Wales suffer from severe psychiatric disorders such as schizophrenia and treatment is primarily pharmacological. In England, the treatment of personality disordered offenders has in recent years received more focus with the Dangerous and Severe Personality Disorder Program (DSPD) that was first piloted in 2001, and the ensuing Offender Personality Disorder Pathway (OPDP) program that was initiated in 2011. Both programs targeted treatment of offenders with a severe or complex PD, including high psychopathy scores, who pose a high risk of serious harm to others and of serious reoffending (Joseph & Benefield, 2012).

Dutch law takes into account the role PD can play in criminal behavior. Dutch forensic mental health experts consider the presence of a PD to diminish criminal responsibility and warrant enforced treatment (De Kogel & Nagtegaal, 2006; Spaans, Barendregt, Haan, Nijman, & De Beurs, 2011). However, longitudinal or prospective research on the relationship between PD and treatment length for forensic psychiatric patients in the Netherlands is limited.

A recent retrospective study on forensic psychiatric patients residing in one of the Netherlands' hospitals found that neither type of index offense nor psychiatric disorder influenced time to first accompanied leave (Ter Horst, Jessen, Bogaerts, & Spreen, 2015).

The current study investigated the predictive value of PD on treatment duration at first accompanied leave request and at end of enforced treatment of forensic psychiatric patients in forensic psychiatric high security treatment hospitals in the Netherlands by merging data from digital databases for the first time. To examine possible confounding, the effect of index offense, major mental disorder, substance abuse history, intellectual functioning and FPCs were also investigated. Taking into consideration the possible interaction effect on treatment length of comorbidity of multiple psychiatric disorders, relevant statistical analyses were repeated with a subgroup of patients that were diagnosed with only a PD and no other disorders.

Method

Sample origin

The Netherlands Institute of Forensic Psychiatry and Psychology (NIFP) is a national service of the Dutch Ministry of Justice. One of the NIFP's main tasks is to mediate between the prosecutor and independent pre-trial psychiatric and psychological experts who carry out assessments on criminal responsibility and the necessity of treatment. The NIFP's forensic mental health experts carry out around 6,250 assessments on adult suspects of crimes per year. Around 95% take place in a non-specialized forensic mental health setting (usually in a regular house of detention). The remaining 5% of forensic pre-trial evaluations are carried out in the Pieter Baan Center (PBC), the NIFP's forensic psychiatric observation clinic. These in-patient assessments take about seven weeks and cover the country's most severe crimes – that carry a possible prison sentence of four years or more – and/or the most complex suspected psychopathology.

In order to obtain the study sample for which additional data would be requested from partner organizations, court records of all 16,409 suspects of crimes assessed by the NIFP between January 1, 2003 and December 31, 2006 were investigated. Because of the low number of female defendants assessed by the NIFP during this time (7.9%), it was decided to include only male subjects in the study. Of 680 verdicts of enforced treatment for an indefinite period of time for male adult suspects who were assessed by the NIFP before their enforced treatment began, only those cases were selected with complete digital NIFP records for presence or absence of a PD diagnosis, and whose enforced treatment had started as of September 1, 2014. This resulted in a final study sample of 536 convicted male offenders who had been ordered to undergo enforced treatment in a high security hospital.

Databases

In addition to the data available in the NIFP's Forensic Registration and Information System (FRIS) and PBC databases, data for these 536 cases was requested from a partner organization in the judicial chain: the Monitor Information TBS (MITS) database from the Custodial Institutions Agency (*Dienst Justitiële Inrichtingen;* DJI).

All diagnostic data from the FRIS database are classified according to the DSM-IV(-TR) (American Psychiatric Association, 1994; American Psychiatric Association, 2000), which were the most current versions of the DSM at the time the data was collected and the reason for the multi-axial approach to data analysis. PDs are listed as Clusters A, B, and C, and PD Not Otherwise Specified (NOS). Independent forensic mental health experts use various diagnostic instruments to establish the presence of major mental disorders, substance abuse history, PDs, and intellectual functioning. All classifications in the present study, including those for PDs, were clinician-based, supported by self-report questionnaire scores. Examples of validated self-report instruments that were used as possible indications of PDs are the Dutch version of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Hathaway & McKinley, 1989), the Edwards Personal Preference Schedule (EPPS; Edwards, 1959) and the Dutch Personality Questionnaire (NPV: Barelds, Luteijn, Van Dijk, & Starren, 2007). The inpatient assessment setting uses semi-structured diagnostic interviews where possible, such as the Structured Interview for DSM-IV Personality (SIDP-IV; Pfohl, Blum, & Zimmerman, 2006).

Safeguards of anonymity

All data was received anonymously, meaning that no names were ever exchanged between the organizations. Data was matched based on the registration numbers that correspond to court cases. Also, to guarantee anonymity of the hospitals represented in this study, each hospital's name was replaced with a number only known to the authors of this study.

Variables

General characteristics were date and country of birth, date of admission to the hospital, name of the hospital, type of index offence (property and fraud, property and violence, (attempted) violence, (attempted) sex offense, (attempted) murder or manslaughter, and fire setting), diagnostic information from pre-trial NIFP assessment such DSM-IV major mental disorders (such as disorders usually first diagnosed in infancy, childhood, or adolescence, affective disorder, paraphilia, and psychotic symptoms), PDs (Clusters A, B, and C and PD NOS), level of intellectual functioning (below average, average, and above average), and substance abuse history divided into alcohol, cannabis, or other/poly-substance abuse, conclusion on criminal responsibility, and advice on enforced treatment. Information from the

hospitals included the start date of enforced treatment, the dates on which the accompanied leave was first requested and the date on which enforced treatment was officially terminated, if applicable.

Statistical analysis

Treatment length was operationalized at two separate events: at first accompanied leave request and at end of enforced treatment. This was done by calculating the time (in years) between the start date of enforced treatment and the date on which accompanied leave or termination of treatment was first requested by the hospital. Cohen's *d* coefficient was calculated for the differences in treatment length at both first accompanied leave request and at end of enforced treatment between each category of the independent variable and the reference category.

Cox regression survival analyses were carried out to explore the predictive effect of PD, index offense, major mental disorder, substance abuse history, and intellectual functioning on time to first accompanied leave request and at the end of enforced treatment. First, the predictive value of each of the individual predictor variables was analyzed separately (Model 1). Next, separate baseline hazard functions were fitted within different strata (i.e., hospitals with high versus low average time to first accompanied leave request and to end of treatment, respectively) while still modeling the effects of the predictors as a single set of common effects across strata (Model 2). In the case of more than one significant result in Model 2, a stratified Cox regression model (Model 3) including all significant predictors at $p < .10$ according to Model 2 was executed. Linear regression analyses were carried out on a small subset of patients who received a diagnosis of PD alone.

All analyses were carried out with Statistical Package for the Social Sciences (SPSS) versions 17 and 22. In Cox regression analyses, SPSS creates its own dummy categories. The first category within each independent variable was assigned as the reference category using the Indicator contrast, except for intellectual functioning for which average intellectual functioning was selected as the reference category.

Results

Sample characteristics

The data sample consisted of 536 men convicted of one or more crimes that carry a possible prison sentence of four years or more. Of these assessments, 428 (79.9%) were carried out during the participant's stay in a regular house of detention and the remaining 108 (20.1%) were carried out during a seven-week admission to the Pieter Baan Center. The mean age at the time of all 536 assessments was 34.0 years (SD = 10.5, range: 18.0-68.8 years).

The date of the official start of the enforced treatment – the date of early release from prison for those who were deemed diminished responsible and the date on which the court sentence was finalized for those found fully not responsible – ranged from May 2003 to February 2013. The average length of time between the NIFP assessment and the start of enforced treatment was 1.4 years (SD = 1.2 years, range: 0.1-7.5 years). The majority of the treatments started in 2006 (n = 132; 24.6%), 2005 (n = 118; 22.08%), and 2007 (n = 115; 21.5%). It is important to note that new regulations in 2010 prohibited prisoners from starting enforced treatment after having carried out only a third of their prison sentence and increased the minimum of time spent in prison to two thirds of the sentence.

PDs were present in 410 defendants (76.5% of the total sample), according to the NIFP. Table 1 shows

the prevalence of the categories of PD in the study sample and of the independent variables index offense, major mental disorder, substance abuse history, intellectual functioning, and the hospital that first requested accompanied leave or from which the enforced treatment was terminated. Comorbidity of major mental disorder and PD was present in 249 defendants (46.5% of the total sample).

Table 1 also shows average treatment length for each category at time of first accompanied leave request (n = 446) and at end of treatment (n = 81), as well as the value for Cohen's d for the difference with the reference category within each independent variable. Given the differences in treatment length between FPCs (range for first accompanied leave request: 2.77–3.81 years; range for end of treatment: 3–8 years) carrying out further statistical analyses that were stratified for hospitals with high versus low average time to first accompanied leave request and to end of treatment, respectively, was considered warranted. The index offenses that led to NIFP assessments are categorized according to the seriousness index of Van Kordelaar (2003). The higher the category number, the more serious the offense. Van Kordelaar makes no distinction between an attempted offense and an executed offense – it is the general nature of the crime that indicates seriousness. Not all categories of the seriousness index were represented in the current study.

Table 1. *Prevalence of independent variables and average treatment length*

			Treatment length (in years) at					
	Prevalence n **= 536**		**Accompanied leave** n **= 446**			**End of treatment** n **= 81**		
Personality disorder	*n*	*%*	*n*	*M (SD)*	*Cohen's d*	*n*	*M (SD)*	*Cohen's d*
No personality disorder	126	23.5	102	3.58 (1.39)	(ref. cat.)	19	6.15 (1.84)	(ref. cat.)
Personality disorder Cluster A	13	2.4	12	3.34 (1.43)	-.17	5	6.99 (1.42)	.51
Personality disorder Cluster B	224	41.8	190	3.50 (1.68)	-.05	30	6.19 (1.74)	.02
Personality disorder Cluster C	19	3.5	17	3.27 (1.15)	-.24	1	7.05 (-)	-
Personality disorder NOS	154	28.7	125	3.34 (1.64)	-.16	26	6.54 (1.72)	.22
Index offense	*n*	*%*	*n*	*M (SD)*	*Cohen's d*	*n*	*M (SD)*	*Cohen's d*
Property and fraud	36	6.7	28	3.88 (2.04)	(ref. cat.)	6	6.10 (1.69)	(ref. cat.)
(Attempted) violence	93	17.4	76	3.38 (1.53)	-.28	18	5.97 (1.94)	-.07
Property and violence	31	5.8	25	3.32 (1.53)	-.31	8	6.35 (1.71)	.15
(Attempted) sex offense	122	22.8	102	3.90 (1.71)	.01	6	7.46 (1.52)	.85

			Treatment length (in years) at					
	Prevalence *n* = 536		Accompanied leave *n* = 446			End of treatment *n* = 81		
(Attempted) murder/manslaughter	201	37.5	172	3.22 (1.33)	-.38	32	6.60 (1.30)	.33
Fire setting	49	9.1	39	3.35 (1.75)	-.28	10	5.55 (2.40)	-.26
Other / unknown	4	0.7	4	2.70 (1.54)	-	1	-	-
Axis I diagnoses	*n*	%	*n*	*M (SD)*	*Cohen's d*	*n*	*M (SD)*	*Cohen's d*
No Axis I disorder	154	28.7	126	3.19 (1.46)	(ref. cat.)	25	6.16 (1.64)	(ref. cat.)
Disorders usually first diagnosed in infancy, childhood, or adolescence	67	12.5	56	3.66 (1.78)	.29	11	6.14 (1.68)	-.01
Affective disorder	38	7.1	32	3.29 (1.19)	.08	8	7.27 (.94)	.83
Paraphilia	60	11.2	51	3.58 (1.53)	.26	4	7.32 (1.58)	.72
Psychotic symptoms	143	26.7	118	3.71 (1.65)	.33	21	6.72 (1.92)	.31
Other	44	8.2	36	3.35 (1.65)	.10	6	5.80 (1.76)	-.21
Unknown (not assessed)	30	5.6	27	3.32 (1.62)	-	6	-	-
Substance use	*n*	%	*n*	*M (SD)*	*Cohen's d*	*n*	*M (SD)*	*Cohen's d*
No (diagnosis) substance use	178	33.2	141	3.46 (1.54)	(ref. cat.)	29	6.34 (1.65)	(ref. cat.)
Alcohol	96	17.9	79	3.21 (1.56)	-.16	14	5.41 (1.53)	-.58
Cannabis	65	12.1	52	3.59 (1.59)	.08	11	6.51 (1.38)	.11
Other/Poly	150	28.0	132	3.53 (1.64)	.04	18	6.35 (1.95)	.01
Unknown (not assessed)	47	8.8	42	3.52 (1.54)	-	9	-	-
Intellectual functioning(IF)	*n*	%	*n*	*M (SD)*	*Cohen's d*	*n*	*M (SD)*	*Cohen's d*
Below average IF (<90)	222	41.4	182	3.58 (1.60)	-.12	27		-.02
Average IF (90-110)	205	38.2	168	3.39 (1.50)	(ref. cat.)	30	6.46 (1.36)	(ref. cat.)

			Treatment length (in years) at					
	Prevalence *n* = 536		Accompanied leave *n* = 446			End of treatment *n* = 81		
Above average IF (>110)	42	7.8	40	3.05 (1.48)	.23	9	5.98 (2.04)	.28
Unknown (not assessed)	67	12.5	56	3.56 (1.77)	-	15	-	-
FPC	*n*	%	*n*	*M (SD)*	*Cohen's d*	*n*	*M (SD)*	*Cohen's d*
Administrative department	-	-	0	(-)	-	1	3.00 (-)	-
FPC 1	-	-	42	3.62 (1.60)	-	8	6.12 (1.94)	-
FPC 2	-	-	49	3.81 (1.62)	-	3	5.73 (1.54)	-
FPC 3	-	-	47	2.94 (1.39)	-	10	6.44 (1.69)	-
FPC 4	-	-	70	3.77 (1.56)	-	15	6.68 (1.10)	-
FPC	*n*	%	*n*	*M (SD)*	*Cohen's d*	*n*	*M (SD)*	*Cohen's d*
FPC 5	-	-	36	2.98 (1.57)	-	6	6.91 (1.21)	-
FPC 6	-	-	27	3.77 (1.89)	-	7	6.39 (1.77)	-
FPC 7	-	-	1	3.60 (-)	-	2	3.00 (1.42)	-
FPC 8	-	-	21	3.57 (1.01)	-	-	-	-
FPC 9	-	-	11	3.77 (1.43)	-	5	7.54 (1.62)	-
FPC 11	-	-	70	3.69 (1.55)	-	11	7.12 (1.27)	-
FPC 12	-	-	14	3.81 (2.25)	-	1	5.49 (-)	-
FPC 13	-	-	53	2.77 (1.34)	-	11	5.36 (2.02)	-
FPC 14	-	-	5	2.98 (1.02)	-	1	8.00 (-)	-

Note. NOS = Not Otherwise Specified. Ref.cat. = reference category.

Accompanied leave

As of September 1, 2014, hospitals had applied for at least one accompanied leave for 446 of the 536 patients (83,2%). Length of treatment at time of first application for accompanied leave was calculated with the start date of treatment and the date of first application and varied from 0.73-9.97 years with a mean of 3.46 years (SD = 1.58 years). In order to assess the independent effect of the various categories of PD on treatment length at first accompanied leave application for all 536 participants, Cox regression analyses were carried out in three phases.

First, a univariate Cox regression analysis was carried out with PD as predictor and treatment length at first accompanied leave application as outcome for all 536 participants. To determine whether index offense, major mental disorder, substance abuse history, and intellectual functioning might also influence treatment length at first accompanied leave application, univariate Cox regression analysis was carried out on these variables separately as well (Model 1). Hazard ratios and 95% confidence intervals for all independent variables are shown in Table 2.

Results of the Cox regression analyses were not significant for PD. Due to the high prevalence of PD NOS in the study sample (n = 154; 28.7%), the Cox regression analyses were repeated without this category, with the absence of PD still as the reference category. These analyses also showed no significant results. Results of the Cox regression analyses were also not significant for major mental disorder and substance abuse history as predictors. Results for index offense showed significant results for an index offense of (attempted) murder/manslaughter, HR = 1.57, 95% CI [1.05, 2.34], p = .028, suggesting that the time until first accompanied leave application was shorter for this index offense than for the reference category of property and fraud. Results of the Cox regression analysis for intellectual functioning showed significant results for above average intellectual functioning, HR = 1.60, 95% CI [1.14, 2.27], p = .007, suggesting that the time until first accompanied leave application was shorter for above average intellectual functioning than for the reference category of average intellectual functioning.

Subsequent Cox regression analyses for time to first accompanied leave request of the individual predictor variables with hospital as stratum (Model 2) also showed no significant results for PD, major mental disorder, and substance abuse history. The same was true for analysis without the PD NOS category. There was no longer a significant effect for above average intellectual functioning.

The significant effect on time to first accompanied leave application remained for an index offense of (attempted) murder/manslaughter, with a shorter time to first accompanied leave application compared to the reference category of property and fraud, HR = 1.91, 95% CI [1.27, 2.88], p = .002. There was also a significant effect for an index offense of (attempted) violence on time to first accompanied leave application, with a shorter time to first accompanied leave application compared to the reference category of property and fraud, HR = 1.71, 95% CI [1.10, 2.67], p = .018.

Table 2. *Results of Cox regression analyses of time to first accompanied leave request in three phases (n=536)*

	Model 1 Univariate		Model 2 Univariate with stratified FPC	
Personality disorder	*HR*	*95% CI*	*HR*	*95% CI*
No personality disorder (ref.cat.)	-	-	-	-
Personality disorder Cluster A	1.35	[.74, 2.45]	1.12	[.61, 2.04]
Personality disorder Cluster B	1.16	[.91, 1.47]	.96	[.75, 1.22]
Personality disorder Cluster C	1.47	[.88, 2.46]	1.17	[.70, 1.97]
Personality disorder NOS	1.12	[.86, 1.45]	.92	[.70, 1.20]
Index offense	*HR*	*95% CI*	*HR*	*95% CI*
Property and fraud (ref.cat.)	-	-	-	-
(Attempted) violence	1.26	[.82, 1.95]	1.71**	[1.10, 2.67]
Property and violence	1.29	[.75, 2.21]	1.54	[.89, 2.68]
(Attempted) sex offense	1.16	[.76, 1.76]	1.29	[.84, 1.97]
(Attempted) murder/manslaughter	1.57**	[1.05, 2.34]	1.91**	[1.27, 2.88]
Fire setting	1.19	[.73, 1.94]	1.41	[.86, 2.31]
Major mental disorders	*HR*	*95% CI*	*HR*	*95% CI*
No major mental disorder (ref.cat.)	-	-	-	-
Disorders usually first diagnosed in infancy, childhood, or adolescence	.90	[.66, 1.23]	.79	[.57, 1.09]
Affective disorder	1.01	[.69, 1.49]	1.01	[.69, 1.49]
Paraphilia	.95	[.69, 1.32]	.88	[.63, 1.22]
Psychotic symptoms	.81	[.63, 1.05]	1.03	[.80, 1.34]
Other	.96	[.66, 1.38]	.98	[.68, 1.42]
Substance use	*HR*	*95% CI*	*HR*	*95% CI*
No substance use (ref.cat.)	-	-	-	-
Alcohol	1.14	[.87, 1.50]	1.07	[.81, 1.41]
Cannabis	.93	[.67, 1.27]	1.06	[.83, 1.34]
Other/Poly	1.21	[.95, 1.54]	.94	[.68, 1.29]
Intellectual functioning (IF)	*HR*	*95% CI*	*HR*	*95% CI*
Below average IF (<90)	.96	[.78, 1.19]	.87	[.70, 1.07]
Average IF (90-110; ref.cat.)	-	-	-	-
Above average IF (>110)	1.60**	[1.14, 2.27]	1.18	[.83, 1.68]

*Note. NOS = Not Otherwise Specified. HR = Hazard Ratio. CI = Confidence Interval. Ref.cat. = reference category. IF = Intellectual functioning. ** = Significant at p < .05. * = .05 > p < .10.*

Explorative analysis: Pure PD

It was considered a possibility that the enforced treatment could be aimed at multiple psychiatric disorders at the same time, such as PD, a major mental disorder, *and* substance abuse. For that reason, those forensic psychiatric patients were selected that had a diagnosis of PD only, which was the case for 62 of the 410 patients with a PD. Of these 62 patients (15.1%), one patient (1.6%) had a Cluster A PD, 31 patients (50%) had a Cluster B PD, four patients (6.5%) had a Cluster C PD, and 26 patients (41.9%) received the classification of PD NOS. A Cox regression analysis with all categories of PD indicated a shorter time to first accompanied leave application for this group than for the group with comorbidity, HR = 1.39, 95% CI [1.05, 1.84], p = .021. Excluding the PD NOS category from this analysis led to a non significant result.

The possibility was considered that, when applying for leave for the first time, decision-makers take into account the prison sentence carried out before enforced treatment by patients found partially criminally responsible. To first determine whether patients with PD only were more likely to be found partially responsible, and therefore had already served a period of time in custody, their degree of criminal responsibility according to the NIFP was divided into three categories out of the five that were used at the time of data collection: not responsible, partially responsible and fully responsible. Inspection of frequencies showed that 56 of these patients (90.3%) were found partially responsible. Next, a linear regression analysis was carried out to determine whether the time between the NIFP assessment and the start of enforced treatment – as a proxy for time spent in prison before treatment – influenced the time until leave was first requested for the PD only patients. Results were not significant, indicating no significant relationship between the two variables, $R2 = .01$, $F(1, 60) = .62$, $p = .43$.

End of enforced treatment

In the data provided by DJI in January of 2014, the enforced treatment had been ended by the judge (for reasons other than deportation/extradition, legal error, a new verdict, or death of the patient) for 81 individuals (15.1% of the total sample). The advice of the hospital to end the enforced treatment was followed in 44 cases (54.3%) and the advice of the hospital to continue treatment was opposed in 25 cases (30.9%). Twelve patients (14.8%) were transferred to a psychiatric hospital. Total length of treatment was calculated with the official start and end dates of treatment and varied from 2.00-10.12 years with a mean of 6.35 years (SD = 1.72 years). The earliest release date was February 2007.

In order to assess the independent effect of the various categories of PD, index offense, major mental disorder, substance abuse history, and intellectual functioning on total treatment length at time of release for all 536 participants, Cox regression analyses according to Models 1 and 2 were repeated for total length of treatment. Hazard ratios and 95% confidence intervals for all independent variables are shown in Table 3.

In Model 1 a predictors at $p < .10$ for shorter total treatment length was found for Cluster A PD, HR = 2.43, 95% CI [.90, 6.51], $p = .078$. The same analysis without the category of PD NOS yielded an effect at $p < .10$ for Cluster A PD, HR = 2.50, 95% CI [.93, 6.70], $p = .069$. Results for index offense showed significantly longer treatment length for an index offense of (attempted) sex offense, HR = .26, 95% CI [.08, .80], $p = .018$, and for disorder paraphilia, HR = .33, 95% CI [.11, .94], $p = .038$. Results for substance abuse and intellectual functioning were not significant.

According to results of the Cox regression analyses in Model 2 with hospital as strata and all predictors at $p < .10$ according to Model 1, substance abuse history and intellectual functioning remained not significant while the effect at $p < .10$ of PD was no longer observed in both analyses with and without PD NOS. The significantly longer total treatment length remained for an index offense of (attempted)

sex offense, HR = .21, 95% CI [.06, .71], p = .012. The significant effect of paraphilia on total treawtment length found in Model 1 was just below p < .10 in Model 2, HR = .40, 95% CI [.14, 1.16], p = .092.
Finally, a stratified Cox regression model including all predictors at p < .10 according to Model 2 (i.e., index offense and major mental disorder) was executed. This third model showed a significant effect across strata for the index offense of (attempted) sex offense on total treatment length, HR = .11, 95% CI [.02, .58], p = .010. The effect of paraphilia was no longer significant after index offense was also included into the model.

Explorative analysis: Pure PD

Again, a Cox regression analysis was carried out within the group of 410 patients with PD of whom 62 patients only had a PD diagnosis and no other psychiatric comorbidity (see above for classifications). Results with time to enforced treatment ending as outcome showed a significantly shorter total treatment length for patients with only PD than for those with comorbidity of disorders, HR = 1.99, 95% CI [1.14, 3.49], p = .016. Excluding the PD NOS category from this analysis again led to a non significant result.
Again, taking into account the possible influence on decision-makers of the time elapsed between the NIFP assessment and the start of enforced treatment – as a proxy for time spent in prison before treatment – on total treatment length for the PD only patients, a linear regression analysis was carried out with total treatment length as dependent variable. Results were significant, $R2$ = .38, $F(1, 60)$ = 37.4, p < .00; β = -.62, p < .001, indicating a negative relationship between the time spent in prison before treatment and total treatment length.

Table 3. *Results of Cox regression analyses for end of enforced treatment in three phases*

	Model 1 Univariate		Model 2 Univariate with stratified FPC		Model 3 Index offense, major mental disorder and stratified FPC	
Personality disorder	*HR*	*95% CI*	*HR*	*95% CI*	*HR*	*95% CI*
No personality disorder (ref.cat.)	-	-	-	-	-	-
Personality disorder Cluster A	2.43*	[.90, 6.51]	2.16	[.80, 5.85]	-	-
Personality disorder Cluster B	.85	[.48, 1.50]	.78	[.44, 1.39]	-	-
Personality disorder Cluster C	.40	[.05, 3.01]	.78	[.10, 5.88]	-	-
Personality disorder NOS	1.14	[.63, 2.05]	.78	[.43, 1.44]	-	-
Index offense	*HR*	*95% CI*	*HR*	*95% CI*	*HR*	*95% CI*
Property and fraud (ref.cat.)	-	-	-	-	-	-
(Attempted) violence	1.08	[.43, 2.73]	.75	[.30, 1.90]	.93	[.35, 2.49]
Property and violence	1.76	[.61, 5.09	.85	[.29, 2.51]	.80	[.26, 2.49]
(Attempted) sex offense	.26**	[.08, .80]	.21**	[.06, .71]	.11**	[.02, .58]
(Attempted) murder/ manslaughter	.98	[.41, 2.35]	.89	[.37, 2.14]	.92	[.37, 2.28]
Fire setting	1.00	[.36, 2.75]	1.48	[.53, 4.13]	1.35	[.45, 4.09]

	Model 1 Univariate		Model 2 Univariate with stratified FPC		Model 3 Index offense, major mental disorder and stratified FPC	
Major mental disorder	*HR*	*95% CI*	*HR*	*95% CI*	*HR*	*95% CI*
No major mental disorder (ref.cat.)	-	-	-	-	-	-
Disorders usually first diagnosed in infancy, childhood, or adolescence	.91	[.45,1.86]	.82	[.39, 1.73]	1.08	[.50, 2.31]
Affective disorder	1.15	[.52, 2.55]	.74	[.33, 1.66]	.69	[.30, 1.58]
Paraphilia	.33**	[.11, .94]	.40*	[.14, 1.16]	2.73	[.50, 14.97]
Psychotic symptoms	.67	[.37, 1.20]	.73	[.40, 1.31]	.68	[.36, 1.28]
Other	.74	[.30, 1.80]	1.28	[.51, 3.18]	1.45	[.57, 3.70]
Substance use	*HR*	*95% CI*	*HR*	*95% CI*	*HR*	*95% CI*
No substance use (ref.cat.)	-	-	-	-	-	-
Alcohol	.86	[.46, 1.63]	1.57	[.80, 3.07]	-	-
Cannabis	.89	[.45, 1.79]	.86	[.42, 1.73]	-	-
Other/Poly	.65	[.36, 1.18]	.74	[.41, 1.35]	-	-
Intellectual functioning (IF)	*HR*	*95% CI*	*HR*	*95% CI*	*HR*	*95% CI*
Below average IF (<90)	.75	[.45, 1.27]	1.23	[.71, 2.14]	-	-
Average IF (90-110; ref.cat.)	-	-	-	-	-	-
Above average IF (>110)	1.68	[.80, 3.55]	.77	[.35, 1.71]	-	-

*Note. NOS = Not Otherwise Specified. HR = Hazard Ratio. CI = Confidence Interval. Ref.cat. = reference category. ** = Significant at p < .05. * = .05 > p <10.*

Discussion

The current study prospectively investigate the predictive value of personality disorder, present in 76.5% of a study sample of 536 forensic psychiatric patients from various forensic psychiatric high security treatment hospitals, on treatment length of enforced treatment at first accompanied leave request and at end of enforced treatment. To examine possible confounding, the effect of index offense, major mental disorder, substance abuse history, intellectual functioning, and hospitals were also investigated.

Statistical analysis of merged data from the NIFP and DJI databases showed no independent predictive value of PD for both treatment length at first accompanied leave request and total treatment length at the end of treatment. Multivariate analyses showed that an index offense of (attempted) violence and (attempted) murder/manslaughter both independently predicted shorter treatment length at first accompanied leave request across different strata for hospitals. When examining total treatment length at end of treatment, an index offense of (attempted) sex offense independently predicted a longer enforced treatment length, again across different strata for hospitals. These findings are in line with those of Nagtegaal and colleagues (2011) who found that forensic psychiatric patients who had been convicted of sex offenses were increasingly less likely to leave the hospitals. (Attempted) violence

is among the least severe offenses according to Van Kordelaar (2003). These offenders are apparently consequently considered by forensic mental health experts to present a lower risk of incidents during accompanied leave than other offenders in this study.
Post-hoc explorative analyses on a subgroup of patients with a diagnosis of *only* PD showed that this group had a shorter treatment length at both first accompanied leave request and end of enforced treatment than personality disordered patients who also had comorbid major mental disorder. Analysis of the influence of the time elapsed between the NIFP assessment and the start of enforced treatment – as a proxy for time spent in prison before treatment – on total treatment length for the PD only patients showed a negative relationship between the time spent in prison before treatment and total treatment length. It must be noted that both explorative analyses were carried out on a small subset of patients.

Strengths and limitations

The present study combined data from different sources available in the Dutch judicial system and over a range of hospitals. Combining diagnostic information that is available at the time of imposing enforced treatment to predict the actual length of treatment later on yields important data regarding what can be expected of treatment for different groups of forensic psychiatric patients. On the other hand, in some cases more that ten (treatment) years had passed since the NIFP's diagnosis. Due to lack of data on a national level, the current study was unable to incorporate patient characteristics from the treatment itself.
The use of digital databases introduced some limitations to the current study. Besides the possibility of human error occurring when data was manually entered into both databases, there is usually little room for nuance in a digital database. There were substantial differences in number of patients and treatment length between hospitals. To control for these effects, stratified analyses were performed in order to model the effects of the predictors as a single set of common effects across strata.
The NIFP database was not able to distinguish between the various DSM-IV(-TR) PDs, only between Cluster A, B, and C and NOS. Also, the NIFP database was only able to give one PD diagnosis per person, so the current study was not able to investigate possible comorbidity within PDs or differences in severity of (personality) disorders. Another limitation associated with the use of the NIFP's digital database is that there is no information regarding the assessment instruments used to reach or support expert diagnoses on PD, major mental disorder, substance abuse history, and intellectual functioning. With regard to the diagnosis of PD, outcomes have been shown to vary according to assessment methods, such as self-report vs. interview methods (Blackburn, Donnelly, Logan, & Renwick, 2004; Guy, Poythress, Douglas, Skeem & Edens, 2008; Whyte, Fox, & Coxell, 2006), and legal contexts such as pre- and post-conviction (Cima et al., 2003).
The prevalence of PD NOS in this study is high, at 28.7% of the study sample. This is a common finding (Baillie & Lampe, 1998; Berhuis, 2014; Pagan, Oltmanns, Whitmore, Turkheimer, 2005; Verheul & Widiger, 2004; Zimmerman, Rothschild, & Chelminski, 2005). It could be that forensic mental health experts did not find the diagnostic categories of the DSM-IV(-TR) adequate to cover the personality pathology they considered in their clinical assessment, or that the experts felt the patient met the general diagnostic criteria for a PD but not the criteria for one of the individual disorders (Verheul & Widiger, 2004). It could also be the case that forensic mental health experts used PD NOS when two or more specific diagnoses could have been made (Verheul & Widiger, 2004), or that they prefer a more dimensional approach towards the classification of PDs, rather than a categorical one (Zimmerman, Rothschild, & Chelminski, 2005). On the other hand, several authors have doubted the validity of the DSM-IV(-TR) to diagnose PDs

(Bernstein, Iscan, & Maser, 2007; Clark, Watson, & Reynolds, 1995; Morey et al., 2012; Mulder, Newton-Howes, & Tyrer, 2011; Widiger, Livesley, & Clark, 2009). The high prevalence of PD NOS could cloud results as a patient's symptoms can transcend several PD categories or even the three clusters. Therefore, the high prevalence of PD NOS was taken into account in the current study by repeating relevant statistical analyses without this category of patients.

There was no digital data available on diagnoses at the time of first accompanied leave request and at end of treatment, or any measurement of within-treatment change. It is not possible to draw conclusions on treatability, and to tell whether the disorder diagnosed by the NIFP and its concurrent risk of recidivism was successfully treated or whether other forensically relevant characteristics or risk factors were managed during treatment. Also, as post-treatment outcome data, such as on possible reoffending after release, was not incorporated in the current study, it is not clear whether the entire resocialization process associated with enforced treatment was successful, i.e. if all released patients have been abiding by the law.

Suggestions for future research

The current study has shown that the factors involved in the prediction of a successful resocialization process of disordered offenders are complex and intertwined. It can be considered a first attempt at distilling these factors from rough, unrefined digital data. Merging of existing data from various sources revealed inconsistencies in the level of detail of the digital data per person, resulting in limits to not only the comparability of the separate databases but also the generalizability of the current findings. In order to carry out further research, an increase in (detail of) digital registration of patient, treatment, and risk characteristics along the course of treatment and at its end is imperative. As mentioned earlier, Brand and colleagues (2009) advocate research on the entire process of enforced treatment by collecting data from and relaying it back to hospitals. Measurement feedback systems like Routine Outcome Monitoring (ROM) – measuring the patient's condition at fixed times and time periods aimed at evaluation and possible adjustment of treatment – are a way to gain insight into the effectiveness of the enforced treatment and risk reduction. Carlier's literature study (2010) on the effectiveness of ROM found a significant positive impact on diagnosis, monitoring of treatment and the physical and mental health status of patients. Because the majority of ROM is based on self-report instruments, which have been found to be less reliable in a forensic mental health setting (Spaans, Barendregt, Muller, De Beurs, Nijman, & Rinne, 2009; Spaans, Rinne, De Beurs, & Spinhoven, 2015), alternatives such as self-report instruments that include response bias indicators or clinician-administered instruments and are recommended.

Conclusion

To conclude, the present study combined national data on disordered offenders of serious crimes to longitudinally investigate the effect of personality disorder on first accompanied leave request and total length of enforced treatment across all treatment hospitals in the Netherlands. Characteristics that independently lead to shorter enforced treatment length at first accompanied leave request were an index offense of (attempted) murder/manslaughter and an index offense of (attempted) violence. Sex offenses lead to longer total treatment length. Although PD did not independently predict treatment length for the total sample, shorter treatment length was found in a subgroup of patients with only PD.