

Mentally disordered offenders

– a longitudinal study of forensic
psychiatric assessments and criminal
recidivism

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Abstract

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Background: During history, mentally disordered offenders have been in focus regarding responsibility for their crimes and imposition of punishment. The boundary stone of legal consequences for mentally ill offenders has been moved between ethical aspects and the possible link between crime and mental disorder. The current legislation, with a special sanction for mentally ill offenders, was revised 1992, introducing a narrower legal concept for forensic psychiatric treatment. **Objectives:** The overall aim was to describe how the variation in offenders with mental disorders, in different sanctions, was related to the outcome of criminality. Specific aims were to (1) compare the intention of the restricted criteria of mental illness in the Forensic Mental Care Act of 1992 with the actual outcome, (2) quantify early criminal recidivism in different forms of sanctions, and (3) to investigate possible predictive factors for long-term violent criminal recidivism.

Methods and Results: A population-based cohort of men with mental disorders, referred for a pre-trial forensic psychiatric investigation before, and after the change in law, 1992, were compared. Contrary to the expectation, there was more treatment sanctions in the group 1993-95 due to more psychotic disorders (1). The incidence rates of crimes during two years after sentencing were compared between the study subjects in forensic psychiatric treatment, prison and non-custodial sanctions. These rates of crimes and specifically violent crimes were lower during the entire treatment sanction, compared to the two other groups, also at the diagnoses, which were most related to criminality (2). During the long-term course (13-20 years) of violent recidivism, the role of index sanction disappeared, but differed between diagnostic groups, analyzed by Kaplan-Meier. A Cox regression analysis showed that the risk for violent recidivism was predicted by crime-related factors (3). **Discussion & Conclusion:** The increase in treatment sanctions after the new law may be associated with a fast reduction in hospital beds and lack of transposition of support facilities to the social service. As long as treatment sanctions was ongoing criminality was reduced, but for violent recidivism in the long run, previous crime-related characteristics were important factors.

Keywords: Personality disorders, Psychotic disorders, Substance abuse/dependency, Sanctions, Violent criminality, Criminal recidivism, Forensic psychiatric treatment, Long-term follow up.

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SAMMANFATTNING PÅ SVENSKA

Bakgrund: Psykiskt sjuka individer som begår allvarliga brott har under historiens gång särbehandlats av lagstiftningen. Skälen till detta har varit flera såsom etiska/human hänsyn, förmågan att ansvara för sina handlingar och farlighetsfrågan. De individer som döms till rättspsykiatrisk vård utgör en extremt liten andel av de individer som behandlas inom psykiatrin. Regeringskommittéer och utredningar om påföljder för psykiskt sjuka brottslingar har så gott som kontinuerligt avlöst varandra under de senast 100 åren. Formellt infördes påföljd för psykiskt sjuka lagöverträdare 1966 med "Lagen om beredande av sluten psykiatrisk vård i vissa fall" (LSPV). År 1991/92 ändrades lagen till "Lagen om psykiatrisk tvångsvård" (LPT) och "Lagen om rättspsykiatrisk vård" (LRV). Detta innebar bland annat en begränsning av de psykiska störningar som kunde ligga till grund för en påföljd om vård. **Syfte:** Den övergripande målsättningen med denna avhandling är att beskriva hur psykiska störningar och olika påföljder påverkar brottsåterfall i en populationsbaserad kohort av män med psykiska störningar vilka genomgått en rättspsykiatrisk undersökning före alternativt efter lagändringen 1991/92. Efter undersökningen dömdes de antingen till vård, fängelse eller icke-frihetsberövande påföljder som t.ex. skyddstillsyn. Syftet med den första studien var att undersöka om lagstiftarens intention med ändringen av lagen 1991/92 stämde överens med utfallet av lagändringen. Syftet med den andra studien var att jämföra brott och recidivister i brott under de två första åren efter indexdomen mellan de olika påföljderna. I denna studie jämförde vi även de individer som hade missbruk/beroende eller personlighetsstörning visavi de som inte hade dessa psykiska störningar. I den tredje studien var syftet att under en längre tid jämföra förloppet av återfall i våldsbrott mellan de olika påföljdsgруппerna samt mellan diagnostiska grupper. Här ville vi undersöka vilka faktorer som hade störst betydelse för återfall i våldsbrott. **Metod och Resultat:** I motsats till vad som förväntats efter den nya lagens införande 1991/92 var det fler som dömdes till vårdpåföljd efter lagändringen jämfört med innan. Detta på grund av en större andel individer med psykosjukdomar. I den andra studien jämfördes brottsincidensen (alla typer av brott respektive våldsbrott) i de olika påföljderna, och under perioderna i institution, i villkorad frihet samt under total frihet från påföljd. Studien visade att brottsincidensen, även för

våldsbrott, var lägre under vård på sjukhus och under permissionstiden (försöksutskrivning) medan den var högre under villkorlig frigivning från fängelse och skyddstillsyn. Bland dömda till vård recidiverade 10% i våldsbrott under de första två åren, 22% bland fängelsedömda, och 28% bland de som dömts till icke-frihetsberövande påföljder. Motsvarande siffror för recidivister i alla typer av brott var 24%, 45% respektive 50%. De individer som hade missbruk/beroende och/eller personlighetsstörningar stod för majoriteten av alla typer av brott och även specifikt för våldsbrott. Återfallsbrottsligheten i de olika påföljdsgrupperna följde samma mönster som hela undersökningspopulationen. Långtidsförloppet (13-20 år efter indexdomen) för återfall i våldsbrott analyserades med Kaplan-Meiers metod. Under denna längre tid försvann betydelsen av typ av indexpåföljd men förloppet skiljde sig mellan olika psykiatriska diagnoser. Sammanfattningsvis låg den största skillnaden mellan de som hade missbruk/beroende bland diagnoserna och de som inte hade det. Med Cox regression påvisades att kriminella faktorer hade större betydelse för återfall i våldsbrott än psykiatriska diagnoser. Vi fann en större risk för återfall under villkorlig frigivning från fängelse och skyddstillsyn än under tiden utan påföljd. Även om antalet tidigare domar hade betydelse för återfall fann vi att den viktigaste faktorn för återfall var åldern vid det första brottet.

Diskussion och slutsats: Ökningen av vårdpåföljder med fler psykossjuka lagöverträdare efter lagändringen kan möjligen förklaras av en samtida neddragning av sjukvårdresurser innan motsvarande resurser inom socialtjänsten hunnit byggas upp. Dessa studier visar att på kort sikt kan påföljdsformen och behandling ha effekt med avseende på återfall i våldsbrott. På längre sikt är debutålder för kriminalitet och omfattningen av kriminella faktorer av betydelse för återfall. Det är angeläget att brottstätheten över tid minimeras med behandlingsinsatser mot missbruk/beroende. Lagstöd för att förhindra exponering för alkohol och narkotika till unga individer är angeläget. Behandlingssträvanden räcker inte som ensam åtgärd.

LIST OF PAPERS

This thesis is based on the following studies, referred to in the text by their Roman numerals.

- I. Lund C, Forsman A. Intended effects and actual outcome of the Forensic Mental Care Act of 1992: a study of 367 cases of forensic psychiatric investigation in Sweden. *Nordic Journal of Psychiatry* 2005, 59:381-387.
- II. Lund C, Forsman A, Anckarsäter H, Nilsson T. Early Criminal Recidivism among Mentally Disordered Offenders. *International Journal of Offender Therapy and Comparative Criminology* 2012, 56:749-768.
- III. Lund C, Hovfander B, Forsman A, Anckarsäter H, Nilsson T. Violent recidivism and mental disorders. A Follow up of 13-20 years. *International Journal of Law and Psychiatry* 2013, 36:250-257.

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ABBREVIATIONS

ADHD	Attention deficit/hyperactivity disorder
AUC	Area under curve
CD	Conduct disorder
CI	Confidence interval
FPI	Forensic psychiatric investigation
FPT	Forensic psychiatric treatment
OR	Odds ratio
OMD	Other mental disorders
PCL-R	Psychopathy Checklist Revised
PD	Personality disorder
ROC	Receiver operating characteristic
SAD	Substance abuse/dependency disorder

1 INTRODUCTION

The long tradition in Western history of exempting severely insane offenders of serious crimes from punishment goes back in written sources to medieval times in Sweden. The long-term developments in forensic psychiatry have entailed a continuous reconstruction of a bridge between two completely different categories, namely mental disorders and criminality, the latter defined by law, and uttermost by the people of democratic states. The courts' decisions on application of the criminal law regarding mentally disordered offenders have brought the medical profession into investigations of the mental health of the offender.

Forensic psychiatry is defined as a sub-specialty in the medical branch of psychiatry, and it makes its knowledge available to the courts in criminal cases at request of the courts. Mentally disordered criminal offenders may be defined in various ways, ranging from all offenders who at some time have been assigned a diagnosis of a mental disorder, to those referred to a forensic psychiatric investigation (FPI), or only the offenders actually sentenced to forensic psychiatric treatment (FPT). The latter is a severely mentally ill group, in practice roughly corresponding to offenders declared "not guilty by reason of insanity" in countries where accountability is a prerequisite for criminal responsibility.

As a subject for research, the definition of forensic psychiatry is broader. Current advances in research on mentally disordered offenders include the improved epidemiological understanding of the relationship between mental disorders, substance abuse, social factors, and crimes [23]. It also includes a more detailed knowledge regarding risk prediction [56] and the role of childhood-onset mental disorders and behavior deviances in trajectories leading to adult mental disorders and patterns of deviant behaviors, including criminality [38]. These areas are presented and briefly overviewed below.

The research in this thesis aims to describe criminal recidivism in offenders with mental disorders.

1.1 Legislation

After the introduction of the first nationwide Criminal Code in Sweden during the 18th century, exempting the insane offenders of the most serious crimes from punishment on the grounds of not being accountable for their crimes, assistance of the medical profession in investigation of insanity was legalized in 1826. The examination reports from the general practitioners were henceforth also to be sent to the authority of the Royal Health Board, a forerunner to the current National Board of Health and Welfare. A consequence of these reports was that insane criminals might be incarcerated for public protection.

The Criminal Code from 1864, exempted criminals with insanity from punishment, and added a less severe punishment for offenders suffering from milder forms of insanity. In 1946 the medicolegal concept of “insanity”, was enhanced with the addendum “equal to insanity”, defined as “other mental abnormality of such profound character that it must be considered to be on a par with insanity” [78]. This addition, “equal to insanity”, soon gave rise to a debate and recurrent governmental committees.

The next Criminal Code, introduced in 1965, stipulated that all criminal offenders should be held responsible for their crimes and that a sanction should be imposed. This was an attempt to make mentally disordered and non-disordered offenders more equal before the law by sentencing the former to inpatient treatment instead of acquitting them on the basis of unaccountability. Offenders who suffered from a mental disorder classified as “insanity” or “equal to insanity”, were to be sentenced to compulsory psychiatric treatment. The Compulsory

Mental Care Act of 1966 regulated the criteria for all patients in need of treatment for serious mental disorders, including offenders who were transferred by the court [1]. The difference between civil and forensic compulsory treatment was that for the latter any permission to stay outside the hospital, as well as final discharge from sanction, was to be granted by an authority, the Board of Discharge [1]. These “Boards” were in the preparatory legislative documents considered to be equal to courts and consisted of a judge, an experienced psychiatrist, a social worker, and two laymen. The superior authority was the National Psychiatric Board [1]. From 1977, several subsequent committees were appointed by the government to inquire into the vagueness of the classification of the condition “equal to insanity”.

In 1991/92, The Compulsory Mental Care Act (Special Cases) was divided into the ”Compulsory Mental Care Act”, regulating civil compulsory treatment, and the “Forensic Mental Care Act” [2, 3], regulating treatment of offenders sentenced to compulsory psychiatric treatment. The previous concepts of “insanity” and “equal of insanity” were replaced by “severe mental disorder”, referring to type and degree of a mental disorder, excluding several cases of non-psychotic disorders from all compulsory treatment. Besides the basic condition of “severe mental disorder”, the concept “his personal circumstances generally” might also be taken into account [2, 3]. The guidelines listing mental disorders, which could be referred to the new medicolegal concept of severe mental disorder, was described in the preparatory work [73].

For public protection, assessments of the risk of relapse in violence might be ordered by court, referred to as “Special Court Supervision”. This means that the prosecutor can appeal against the decisions by the county administrative court of permission to stay outside the hospital or of complete discharge. The Special Court Supervision measure came to be included in the majority of forensic psychiatric investigation cases. The exemption from prison penalties was still

enacted for offenders suffering from a severe mental disorder at the time of the crime. If a severe mental disorder remained at the time of the FPI and required inpatient treatment, the offender should be sentenced to FPT, but if the symptoms had subsided without any need for compulsory treatment, the offender should be sentenced to a non-institutional sanction, such as probation, instead of prison. The 1991/92 law emphasized the psychic state when the crime was committed, while the need for treatment was a main point in the in the previous legislation from 1966. In both legislations the courts decided the sanctions for the offender, while the forensic psychiatric report comprised a binary answer to the court whether the medicolegal concept was applicable or not.

Since the current law was passed, governmental committees have continued to work for amendments to the law [74, 75]. In 2002 the committee proposed a re-introduction of accountability, meaning that all convicted offenders should be given a sanction within the correctional sanction system. Only a restricted number of offenders, should be considered not accountable for their crimes and be free from sanction [76]. This proposal was not considered possible to accomplish. Discussions about legal changes have continued, until a new governmental committee was appointed in 2008 to investigate and propose a new compulsory law including sanctions for mentally disordered offenders.

1.2 Mental disorders and criminality

Some of the quantitatively largest diagnostic groups in forensic psychiatry are psychotic disorders, personality disorders (PD) and substance abuse disorders (SAD, defined as substance related disorders). Psychotic disorders are predominantly found in forensic psychiatric treatment groups as the medicolegal concepts of “insanity”/“equal to insanity” and “severe mental disorder” make

psychotic disorders the target of forensic psychiatry. PD and SAD are the most common groups in criminal populations, including those in forensic psychiatry. These are also large groups among subjects sentenced to FPT, since their impairment may reach the criteria for the medicolegal concepts. International studies show a high prevalence of PD and SAD among offenders [13, 21], and diagnoses of PD are more common in offender populations, as compared to within the general psychiatric health service, especially in male patients [69, 72].

Out of all violent criminality in Sweden, the contribution from subjects with psychotic disorders, irrespective of concurrent diagnoses, constitutes 5% of all convictions for violent crimes [22]. The prevalence of psychotic disorders in prisoners is relatively low, 3-5%, but is still higher than in the general population [26]. Studies of offenders given community sanctions are scarce. However, in one nationwide Swedish study violent re-offending in this group of offenders was associated with PD and SAD [29].

One problem in the research field of mental disorders and criminality is the concept of diagnosis. Mental disorders have for a long time been considered as categories of morbidity, and have been given the names of diagnoses. More and more diagnoses have been discerned, either as additions to, or subdivisions of, the existing diagnostic system. Furthermore, the criteria for a defined diagnosis may be shared by several disorders. The concept of co-morbidity is a product of the current diagnostic system. Concurrency of diagnoses is frequent in psychotic disorders, SAD and PD, especially in forensic psychiatry.

Psychotic disorders are the diagnostic group, which are the most stable over time. In a study of 10 000 patients, prospectively and retrospectively assessed in different settings, schizophrenia was the most consistent diagnosis over time (70%), while PD showed the lowest stability (29%) [7]. In first-admission patients to psychiatric care, schizophrenia was the most stable psychotic disorder, while the

schizophreniform disorders, measured over a two year period, were changed to schizophrenia or schizoaffective disorders [60].

1.2.1 Psychotic disorders and criminality

Studies of severely mentally disordered patients who have committed serious violent crimes have shown that only a small proportion of these crimes could be linked to the psychotic symptoms [11, 81]. Aggressive behavior in a hospital ward of patients with schizophrenia seemed to be related to different subgroups of patients, those with positive psychotic symptoms without any pre-morbid antisocial development, those with impaired impulse control, i.e. without planning and a clear motive, and those with a co-morbidity of antisocial personality disorder or traits, preceded by a history of behavioral problems [57, 82].

One type of psychotic symptoms that has been linked directly to serious violent crimes, is delusions of persecutory type [71]. The acting out was associated with feelings of distress associated with the perceived persecution, actively seeking evidence of the delusion, or when another person questioned the perceived persecution [11, 85]. Considerably more common than violent acting out on persecutory symptoms is the use of safety behaviors such as avoidance or escape, when experiencing feelings of distress [28]. In a population-based study, symptoms of experiencing dominant forces beyond one's control, such as extraneous thoughts and threats, referred to as "threat/control-override" symptoms (TCO-symptoms), were related to violent behavior [50]. However, a study using data drawn from the MacArthur Violence Risk Assessment Study failed to identify a link between the prevalence of TCO symptoms and violence among the mentally ill [6]. This could be connected to methodical difficulties when interviewing patients with psychotic symptoms, where the patients' abnormal beliefs and expectations, not obvious to the interviewer, must be considered [85].

Concerning auditory hallucinations and the question whether command hallucinations are associated with violence, compliance with harmless commands is more common than with dangerous commands. The propensity to act on dangerous commands is related to their combination with the content in the persecutory delusions and identification of the voice [40, 70]. Further, when the voice is ascribed an authoritative role, and the patients believe that they will get rid of their fear, the risk for action will increase [9].

Positive psychotic symptoms have been associated with violence in patients without any history of early conduct problems. However, patients with a history of early conduct disorder (CD) show no direct link between acute psychotic symptoms and violence [71]. Primarily two pathways leading up to violence have been proposed: one associated with the acute psychotic symptoms and the other associated with a pre-morbid development of antisocial behavior [71]. There is an association between CD and violent convictions prior to the appearance of schizophrenic symptoms and concurrent adult antisocial PD. As adults, these patients have more convictions for both general and violent crimes, as compared to patients without early CD [79]. Among subjects in a maximum-security hospital population diagnosed with psychotic disorder, 50-55% also had antisocial PD [12].

The relationship between psychotic symptoms and violence may be influenced by concurrent substance abuse/dependency disorders. Delusions of persecution and emotional instability may increase the propensity to act out [4, 53]. Furthermore, psychotic symptoms arising as a result of abuse of amphetamine, cannabis and hallucinogens may well mimic schizophrenia. During a 15-year period, 30% of patients without any psychotic disorders, but with cannabis or amphetamine abuse, were diagnosed with a psychotic disorder during at least one hospitalization period [19].

1.2.2 Personality disorders and criminality

The concept of “Psychopathy”

The concept of personality disorders goes back to the end of the 19th century, when Koch suggested the label “psychopathic inferiority” for people with disordered lives, but who were not retarded or mentally ill. It was soon replaced by “psychopathic personality”. Schneider further expanded the concept of personality disorders to the abnormal personalities who suffer from their abnormality and to those who cause suffering to the society, roughly corresponding to “neurotic” and “psychopathic” in American psychiatry during the earlier half of the 20th century [65]. In the third edition of DSM, the concept of antisocial personality disorder was introduced.

The concept of “psychopathy” re-appeared with the Psychopathy Checklist Revised (PCL-R), developed in a North American prison population by Hare [35]. PCL-R was used as an instrument for risk assessment of criminal recidivism, where a cutoff level was set to dichotomize psychopaths and non- psychopaths. PCL-R was later broken down into four subscales or facets: interpersonal, affective, impulsive/lifestyle, and antisocial [34]. These facets were differently associated with the PDs and with Axis I disorders. In prison inmates, predominantly lifestyle and antisocial facets were associated with all types of substance abuse/dependency [16]. However, a recent study alternatively suggested “PCL-R psychopathy” to be a severe form of antisocial PD, with more violent criminality, but not more general criminality [14]. Hare has also agreed to a dimensional, rather than a categorical, approach of “psychopathy” [36]. Violent recidivism in males is associated with antisocial PD and also a more extensive criminal history than non-violent recidivists and non-recidivists [17].

Early antisocial development.

In the long-term perspective, recent advances regarding the significance of childhood psychiatric disorders have provided important clues to the links between childhood behavior disorders,

early-onset of norm-breaking behavior, and subsequent criminal development. The Dunedin study [42] was a prospective population-based birth-cohort study that followed the study participants, starting with a first examination at three years of age, with repeated diagnostic assessments during childhood, adolescence and adulthood. Mental disorders at 26 years of age were in 50-60% of cases preceded by different juvenile disorders before the age of 15, sometimes indicating a connection to the adult disorder, sometimes not. In subjects with a diagnosis of antisocial PD at 26 years of age, 67% had conduct disorder (CD) already at 11-15 years of age, and 86% at 18 years of age. Anxiety and CD were twice as common as depression and ADHD before 15 years of age [42]. The group with antisocial behavior starting during childhood had a larger risk of life-course persistent criminality, with more frequent criminality and violent criminality than those with an onset antisocial behavior during adolescence. A smaller group with early onset CD, seemed to have recovered in adolescence, though they were not completely free from criminality during life and had tendencies towards social isolation, anxiety and depressiveness [54]. The 6 months stability of psychopathic traits is lower in early adolescence than in later adolescence [47]. Taxometric analyses supported that CD with early, as well as with adolescent, onset were quantitatively different, but not two different categories [83].

Even though ADHD initially was believed to be a strong precursor of CD, this has not been confirmed by later studies [51]. It is thus possible that ADHD and CD are two independent disorders that share genetic and/or environmental influences [59]. The finding of a genetic link to severe ADHD and to a sub-threshold variation gives further support for a dimensional view regarding this diagnosis [46]. Importantly, ADHD without later development of CD/antisocial PD or substance abuse/dependency, does not appear to increase the risk of criminality [52]. Furthermore, when controlling for CD and substance abuse/dependency, ADHD is not a predictor for criminal recidivism [32]. When testing the capacity for motor inhibition control, visualized

by functional magnetic resonance imaging, in young adolescents with ADHD symptoms and experience of substance misuse, it has been shown that these two groups had a lower inhibitory control than their corresponding control group. Activity in different networks of the brain was seen in those with ADHD and those with substance misuse [86].

Personality disorders; disorder and trait

Diagnoses of PD have a low stability over time. Clinical studies, excluding antisocial PD, indicate concurrency with Axis I-disorders and show a decrease in PD diagnoses over the two consecutive years following hospitalization [33]. Overlaps between PDs and Axis-I-disorders have been reported [64]. Assessments of PDs in healthy samples showed a more rapid decline over four year in those 7.6% of subjects diagnosed with PD, than in the other subjects who had scores of PD features, but who did not meet criteria for these diagnoses [48].

The question is, if Axis-I and Axis-II are both disorders with interconnected domains, and whether symptoms and personality traits are possible to separate [45, 39]. During the preparatory work with the fifth edition of DSM, the effort to change the concept of personality disorder from a categorical towards a dimensional classification, based on the view of psychological theories, was inspired by the five-factor model [87]. Recently, at the prospect of the fifth edition of DSM, a hybrid of fewer categorical personality disorder diagnoses and a dimensional trait system was proposed, including antisocial/psychopathic disorder as a categorical diagnosis without criteria referring to criminality but rather to the PCL-R assessment instrument [61].

1.2.3 Substance abuse/dependency disorders and criminality

According to a population based interview study of the household population in the UK, hazardous alcohol drinking generates the largest contribution to violent criminality with injured victims, corresponding to 51% of all crime-induced injuries [15]. Alcohol dependency

generates the most serious and repetitive violent crimes, and stands alone for 30% of the violent criminality [15]. A Swedish register study built on hospital registers found that 25 % of all violent crimes over a time-period of 13 years were committed by subjects with substance abuse/dependency [30]. The prevalence of SAD in prison populations varies between 18-55% for alcohol abuse/dependency, while 10-48% of inmates show abuse/dependency of illicit drugs [13, 21]. Furthermore, in prison populations with severe mental disorders, SAD is common as concurrent disorder [62].

In prison populations the concurrency of PD and SAD is large, in the UK 70 % of prisoners with antisocial PD have alcohol dependency/abuse, and 38-47% has dependency/abuse of illicit drugs [13]. The excess risk of violent criminality in people with psychotic disorders as compared to the risk in the general population, was related to a concurrency with substance abuse, and was similar to the risk of substance abuse/dependency without psychotic disorders [23].

Among men diagnosed with schizophrenia in the hospital register, the crime rate was similar to that of the general population. However, for violent criminality the crime rate was four times higher than in the general population [49]. In a nationwide Swedish register-study, the risk for violent criminality in those with schizophrenia and SAD compared to general population controls was also four times that in schizophrenia without SAD. Furthermore, when subjects with schizophrenia and SAD were compared to their non-schizophrenic siblings, the risk of the disordered was twice the risk of their siblings [25]. This raised the question of relations between SAD, schizophrenia, family-related predictors, and their nature. Is there any genetic influence in schizophrenia augmenting the risk of SAD, thereby increasing the risk of violence, or, conversely, a genetic susceptibility in SAD for schizophrenia. It is also possible that there is a genetic background of importance to both disorder and that each disorder increases the risk for violence, or finally, a genetic background influencing both disorders and violence [25]. Moreover,

the risk of violent criminality in bipolar disorders combined with SAD was two to three times that of the general population, but compared to non-disordered siblings, the risk was similar [24].

1.3 Risk prediction

Ever since discrepancies were found between clinicians risk evaluations and the actual outcome of violent recidivism [68], the knowledge about important factors related to criminal relapse has increased. The effort to improve evaluations of risk for criminal recidivism has generated a large number of instruments, ie. risk assessment scales. In Sweden the Violence Risk Appraisal (VRAG) [37], Historical, Clinical and Risk management [84] and Psychopathy Checklist-Revised (PCL-R) [35] came to be the most well known. Other instruments adapted to special groups regarding age and gender, special settings, and types of crimes have been developed. The instruments have been advantageous when it comes to making clinicians aware of important risk factors, though any practical use of the scales for crime prediction has not been found. Subsequently, the assessment scales came to be used in research, while in clinical settings they were used as guidelines and for risk management.

In risk prediction, a measure of the proportion of cases that are correctly predicted by the instrument can be analyzed, showing the validity of the risk analyses. In earlier Swedish research articles a predictive validity of 0.70-0.75 is reported for violent recidivism. This is only moderately better than chance [31]. In risk prediction analyses, the factors that can be used are historical factors, which are stable over time, and dynamic factors, which can change over time. One study compared the predictive validity of criminal recidivism using a model of assessing static risk factors (0.81) and a model of both static risk

factors and time-dependent dynamic risk factors (0.89), which is a fairly good result compared to chance [10].

It is essential to specify the dynamic factors for inclusion in risk prediction analyses. The variation over time, sequence, and time of exposure of the dynamic, predictive and protective factors, are important in risk prediction, due to the complexity in interactions. Different dynamic protective factors may reduce the risk of violent relapse over a shorter period, but over a longer period of time these factors may be of no importance [80]. A recent review of 68 studies of risk prediction has so far verified heterogeneity in the predictive validity between studies, with a median validity of 0.72 [27]. Since many studies reach about 0.70-0.80 in the ability of risk prediction, there is a lack of certainty in the individual case. The earlier criticism of the clinicians' predictions concerned keeping offenders in institutions for a longer time than necessary out of fear for new serious violent criminality is still valid [56].

1.3.1 The most important predictors of violent criminality

In general prison populations and in disordered offenders, the established predictors of criminal recidivism are previous criminality, male gender, young age and single marital status. More specifically, violent recidivists have a larger amount of previous violent and non-violent criminality than recidivists in non-violent crimes. The violent recidivists are younger at the index crime, and more often have an antisocial personality disorders than other [8, 17].

1.4 Swedish health service and sanctions over time

1.4.1 Sanctions over time

During the observation time (1988-95) the annual number of sentences to FPT ranged from 301-372. The proportion of treatment sanctions was approximately 0.05% of all sentences, and constituted 2% of all sanctions to institutions (prison and FPT). For the total observation period (1988-2008) the number of FPT sanctions was at average 350 (range 298-380) while the annual number of prison sanctions varied between 12 205-16 635 [66].

1.4.2 Health service over time

In the Western world a closing down of the large mental hospitals started during the 1960ies. In Sweden, the start of the deinstitutionalization, as well as the speed of the process, were different throughout the country [66].

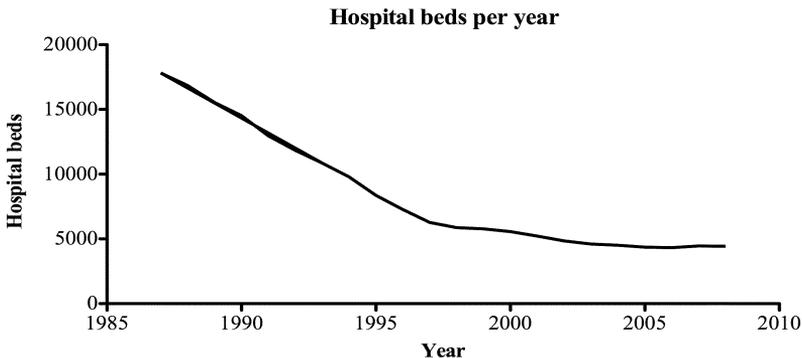


Figure 1. The total number of hospital beds in the country between 1987-2008.

When the new compulsory law was implemented on the first of January 1992, the reduction in hospital beds was on-going (Figure 1). During 1988-92 discharge from compulsory care was most common in patients with alcohol and drug abuse/dependency. After the

implementation of the new compulsory law the prevalence of patients treated in compulsory treatment continually decreased during the following years, more so in civil compulsory care, while the proportion of patients treated in forensic care was stable [43, 44, 77].

The largest reduction was seen in number of hospital beds of voluntary in-patient care, which then leveled off. The proportions of patients in forensic treatment in relation to all patients in compulsory treatment, increased over the years 1991, 1994, 1997, and 2005 (30%, 40% 45%, and 52%), as did the proportions of the forensic patients out of all hospital patients (7%, 9%, 13%, 23%) [77]. The relative increase in patients who were treated by the Forensic Mental Care Act, in contrast to the stability in numbers of new treatment sanctions issued each year, mirror the long periods in treatment sanctions, especially in sanctions with Special Court Supervision.

The period 1990-1994 was a time of financial crisis, restricting expenditure and increasing unemployment [67]. In the study area the number of hospital beds during years 1988-1994 were reduced more rapidly (from 3045 to 1258 hospital beds) [66], compared to the entire country (from 16844 to 9797 beds). The psychiatric clinics in the study area organized nursing homes, housing, support and daily care for their patients with serious disorders in need of high-level service. These resources were closed down before similar resources, that were planned to be administered by the social service, were established [63].

2 AIM

The overall aim of this thesis was to describe how the variation in offenders with mental disorders, by the medicolegal concepts assigned to different sanctions, was related to the outcome of criminality.

The specific aims of the three studies were:

Study I

To establish whether the actual outcome of the Forensic Mental Care Act of 1992 was consistent with the legislators' intention of restricting the proportion of offenders sentenced to treatment sanction.

Study II

To quantify early criminal recidivism among mentally disordered offenders in different forms of sanctions.

Study III

To describe long-term violent criminal recidivism among mentally disordered offenders over a period of 13-20 years, in relation to different forms of sanctions and mental disorders.

3 SUBJECTS AND METHODS

3.1 Design

The present thesis consists of three studies carried out in a study population of males, referred for a pre-trial forensic psychiatric investigation. The first study is a cross-sectional study, comparing the two groups of investigation cases referred before and after a change in the law regulating civil and forensic psychiatric treatment. The second study is a follow up study during two years in sanctions, comparing incidence rates of crime in three different types of sanctions. The third study is a longer follow up study over a period of 13-20 years, analyzing the course of violent recidivism in relation to diagnoses and the initial types of sanctions, as well as possible predictors for risk of violent recidivism. Survival analyses were used in this study.

3.2 The study population

The study population, which was identified by means of the central archives of the National Board of Forensic Medicine, consisted of all 349 males who had been referred to a FPI during 1988-90 and 1993-95, and who were registered inhabitants of Gothenburg or adjacent counties (a population of 1.2 million inhabitants). The mean age at the index crime was 34 years (median 32 years, interquartile range 25-41 years, total range 15-78 years). The total number of men in the area during these periods and in the corresponding age span of 15-79 years was approximately 460 000. Among the 349 subjects 80 subjects were born outside the Nordic countries, and 15 of them arrived in Sweden

before the age of 15, i.e. the age of criminal responsibility. The immigrants came from countries all over the world, half of them were born outside of Europe, and their time in Sweden before the index crime ranged from six months to 29 years.

Seventeen percent (55/327 subjects of working age, 20-65 years) were employed, while the others depended on social security benefits. Half of the study population had no permanent address, but were moving between temporary shelters provided by the social welfare system, or nearby persons, during the year before the index sentence. Single marital status was most common. Among the few subjects who lived in marriages or in long-term partnerships, a separation processes was ongoing before the crime, leading up to the pre-trial investigation, or had started later and was related to the crime. For 58% (206/349) of the subjects, some information about problems during childhood and adolescence was available in the forensic psychiatric investigation reports. This information ranged from brief notes to longer descriptions from different sources. Dysfunctional behavior was most often described from starting school or during the early teens. For the remaining 143 subjects it was not possible to establish if data were missing or if important childhood problems was absent. The history of adult psychiatric care varied substantially, ranging from one solitary visit at an emergency ward, or a few short periods of hospital treatment, up to several longer periods of hospital treatment lasting for years. The time between the last contact with an open care unit or a hospital ward and the index crime also varied substantially.

Women were not included in these studies. The frequency of women who are referred to forensic psychiatric investigation is approximately 10%, but is slowly increasing. There are gender differences where convicted crimes are concerned. Regarding convicted crimes in total, women constitute a smaller fraction of offenders, however this varies between different types of crimes. In violent offenders, the prevalence of women is less than 10%, but for shoplifting, fraud, and forgery they

constitute a larger part, almost reaching the prevalence of male offenders. The distribution in age at criminality in women also differs from that of men.

3.2.1 Specific characteristics

The study population of totally 349 subjects was used in all papers, with some modifications as specified below (Figure 2). The 349 subjects represented 367 cases of forensic psychiatric investigations.

Study I was made up of 367 FPI cases in the 349 subjects. Eighteen subjects had undergone two FPIs during the periods, 186 subjects represented 187 investigations during 1988-90, and 163 subjects represented 180 investigations during 1993-95.

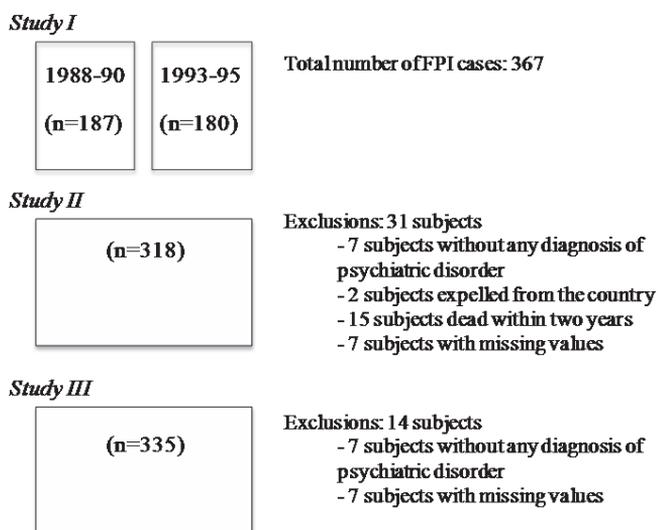


Figure 2. Number of investigated subjects and cases in the three studies

Study II included 318 subjects (91% of the entire study population). Thirty-one subjects were excluded, since the analyses could only be carried out in subjects with complete data during the two year follow up, and only subjects who had a mental disorder were included.

Study III included 335 subjects in total (96% of the entire study population), and 14 subjects were excluded.

3.3 Data sources

Social and medical history, including data from psychiatric treatment, life circumstances and health, were collected from the forensic psychiatric investigations kept at the central and local archives of the National Board of Forensic Medicine. Diagnoses were obtained from the FPIs, using the ICD-9 system [88] alone up until 1992, when it was supplemented with the DSM III-R [5].

Information about all crimes, such as crime definitions, the dates when the crimes were committed, dates of decisions in court, types of sanctions, as well as periods served in the imposed sanctions (including periods in forensic psychiatric treatment with information regarding conditional discharge, re-admittance and absolute discharge), was recruited from the Central Criminal Records of the National Police Board. After registers available for research were transferred to the National Council of Crime Prevention and to the Swedish Prison and Probation Service, information about crimes and sanctions and periods served in correctional sanctions was recruited from these registers.

Data on hospital treatment periods and diagnoses were collected from the Hospital Discharge Register and data regarding deaths from the Causes of Death Register, both hosted by the National Board of Health and Welfare.

3.3.1 Data extraction

Information from the FPIs was limited by the purpose of the FPIs, i.e. issued for the courtroom, which restricted the characteristics required

for standardization of the data. All data were anonymized and coded files were used for analyses to protect the integrity of the subjects. The code keys were stored separately.

3.3.2 Data sources specific for each study

Study I

Data regarding the history of psychiatric treatment was retrieved from hospital files. Population data, criminal statistics, public health and labour market data were obtained from the Yearbooks of Swedish Statistics (1991-1994 and 1996-1998) and from the National Bureau of Official Statistics.

Study II

Regarding subjects sentenced to forensic psychiatric treatment dates of crimes during the two year follow up were compared to data from the Hospital Discharge Register and the Central Criminal Records. The data were checked against files, and by personal contacts with hospitals to obtain details of specific periods (in hospital, in conditional discharge, or completely discharged), when the crime was committed. For the subjects with correctional sanctions the dates for the crimes were checked against the periods of sanctions served in the Central Criminal Records.

Study III

For this study a new Hospital Discharge Register from the National Board of Health and Welfare was recruited. This register covered in- and out-data (the last day in inpatient treatment before the absolute discharge from FPT, excluding periods of conditional stay in the community between hospitals periods). The register from the National Board of Health and Welfare was supplemented with the decisions from the administrative courts for information about the day of absolute discharge, and in some cases also for the day of discharge

from inpatient treatment, if this information could not be obtained from registers by communication with hospitals or archives.

3.4 Measures

3.4.1 Index diagnoses

Diagnoses from the forensic psychiatric investigations were used, and divided into diagnostic groups. These were psychotic disorders, substance abuse disorders, including dependency (SAD), personality disorders (PD), and a fourth heterogeneous group comprised of smaller numbers of diagnoses, which were not interrelated, labeled other mental disorders (OMD).

In *Study I*, the analyses of the diagnostic groups of interest for legal regulation of sanctions for mentally disordered subjects were included, ie. psychotic disorders, SAD and PD and they covered 331 of the 367 cases.

In *Study II*, psychotic disorders, SAD, PD, and OMD were included. They were divided into two mutually exclusive groups to get a reasonable ground for comparisons of diagnoses in different types of sanctions. Since SAD and PD are the most common diagnoses in offender populations this became the ground for the division between the two mutually exclusive groups: one group was made up by subjects who had SAD, PD, or both SAD and PD, either alone or in combination with psychotic disorders or OMD (n=251), the other group consisted of those with psychotic disorders or OMD, or both of these diagnoses, but neither SAD nor PD (n=67) (Figure 3).



Figure 3. Diagnostic groups used for analyses in Study II. PD = personality disorder, SAD = substance abuse disorder, POS = psychotic disorder, OMD = other mental disorders.

In *Study III*, the four diagnostic groups were divided as in Study II, but the first group was further subdivided into three groups: subjects with diagnoses including SAD but not PD, those including PD but not SAD, and those including both SAD and PD. In this study the fourth group (the second in Study II), with psychotic disorders and OMD but no SAD or PD diagnoses, was labeled “residual group”. This made up four mutually exclusive groups (Figure 4).

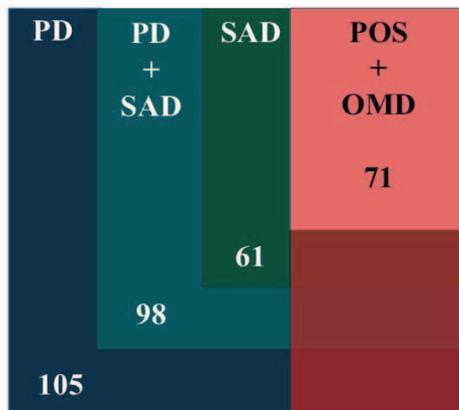


Figure 4. Diagnostic groups used for analyses in Study III. PD + OMD formed the “residual disorder” group. PD = personality disorder, SAD = substance abuse disorder, POS = psychotic disorder, OMD = other mental disorders

3.4.2 Variables of Criminality

Throughout all studies, violent crimes were defined as homicide, assault, unlawful deprivation of liberty, unlawful coercion, unlawful threats, threats and violence against an officer, rape towards adults, sexual crimes against children, robbery, arson, including aggravated forms and attempted crimes. The crime defined as gross violation of integrity was added to the Swedish Criminal Code in 1998, and included in the definition of violent crimes for the follow up studies. All other crimes were defined as non-violent. Convictions for violent crimes were defined as having at least one violent crime included in the sentence. At the index sentence, the offenders were sentenced to

three sanction forms; forensic psychiatric treatment, prison and non-institutional or non-custodial sanctions.

In *Study I* and *II*, previous criminality (convictions) is defined as all convictions prior to index sentence, but in *Study III* the index sentence is included among the previous convictions. In *Study III*, the intermediate periods of conditional stay outside the hospital, are not included. If a period of conditional stay in community precedes the absolute discharge from FPT, this period is included in the analyses.

3.5 Analytical methods

Throughout the studies comparison between groups were analyzed by Mann-Whitney's U test for two groups and Kruskal-Wallis test for more than two groups at continuous variables. The non-parametric methods were chosen due to skewed distributions in most variables

For dichotomous variables, χ^2 -test was used for comparisons of distributions and Fischer's exact test for comparisons between groups. All p-values were two-tailed. Data were analyzed with SPSS software (versions 15.0 to 20.1), and SAS 9.2 for Cox regression statistics, and ROC (Receiver Operation Characteristics) statistics.

Study I is a cross-sectional study, comparing groups. The level of significance level was set at 5%. For the main findings the significant levels were <0.01% - 0.02%, meaning that the risk of Type I Error is extremely small.

In Study II the two groups of 1988-90 and 1993 were coalesced and then divided into the three groups of index sanctions (FPT, prison and non-custodial sanctions).

The incidence rates for all types of crimes and for violent crimes that is number of crimes during time and persons under risk were analyzed by Kruskal-Wallis test. The incidence rates for specific periods of the sanction groups were compared: The periods in institutions (hospital wards and prison), and the conditional periods in the community (conditional discharge periods outside hospital, conditional release from prison and probation), and the periods without any on-going sanctions. The data for those recidivists who were serving new sanctions after a first relapse, and relapsed again, were included if the crimes were committed within in the index sanction group. A logistic stepwise regression procedure was applied to analyze the impact of dependent variables on the recidivists, with a result somewhat better than chance.

The significance level was set to 0.5% after correction for multiple comparisons by Bonferroni-Holm. The number of investigations was limited by the number of subjects, as the law limited the distribution of numbers per sanction group. Statistical power will be reduced at

comparison of three groups instead of two groups. No power analyses were made a priori. Since the overall aim of this thesis is descriptive, with a limited number of subjects, a power analysis was not given the first priority.

Study III was a follow up study, using survival analyses, Kaplan Meier's log-rank test and Cox proportional hazard regression analysis [41, 18]. Censored endpoint was 2008-06-30, which is 13-20 years after index. The Receiver Operating Characteristic (ROC) method was used for estimating the accuracy of predictors.

Kaplan Meier's test was used for comparisons of the course of violent recidivism, i.e. the first violent crime committed in a certain moment during time after sentencing, between the index sanction groups, and between the four diagnostic, mutually exclusive, groups ("SAD+PD", "SAD, but not PD", "residual disorder" and "PD but not SAD"). The comparisons were analyzed by the log-rank test.

By the Cox hazard regression analysis the time to relapse was modeled on possible explanatory variables, baseline variables (fixed variables) and time-dependent covariates (vary over time and are assigned to the follow-up time). After univariate analyses of the variables, the explanatory variables with $p < 0.1$ were selected for the final model. The time-dependent covariates are the sanction periods, and they were compared to the periods in absolute liberty. The final model shows the explanatory variables of the predictors, given as Hazard Ratios (HRs) with 95% CI, which explains the risk of relapse at a given time.

Receiver Operation Characteristic (ROC) analysis was conducted to assess the prediction accuracy of the variables in the final model [58]. The method calculates the specificity (given as 1-specificity) and sensitivity of each variable, resulting in a graph, the area under the ROC curve (AUC). This method can inform about the risk for true negative (by specificity) and true positive (by sensitivity) classified values.

3.6 Ethical Considerations.

Study I, II: The study was approved by the Research Ethics Committee of the Göteborg University (Lnr 304-97), and the Data Inspection Board (Dnr 2890-97). For study III: approval by Research Ethics Committee of the Göteborg University (Dnr 193-05) in accordance with the law regulating access to registers of delicate information for researchers (the Personal Data Act 1997).

Contacting the study subjects for their consent is potentially harmful and offending. These studies were carried out without each subject's individual consent, a long period of time following pre-trial investigations, and the data is presented in such a way that identification of a single individual is impossible. The studies were presumed to increase knowledge regarding associations between forensic psychiatric assessments and criminal recidivism, taking the sentenced sanction into consideration.

4 RESULTS

4.1. Study I

The actual outcome of the Forensic Mental Care Act of 1992 was that out of a similar number of pre-trial investigation cases, during 1988-90 (n=187) and 1993-95 (n=180), more cases were sentenced to forensic psychiatric treatment in 1993-95 than in 1988-90. Also, more cases in the latter group had a psychotic disorder than in the former group. In total, the most common diagnostic group, personality disorders, did not differ between the groups 1988-90 and 1993-95, but PD as primary diagnosis was more common in the 1988-90 group, and as a secondary diagnosis PD was more common in the later group. The prevalence of substance abuse/dependency disorders was similar in the two groups (Table 1). Few subjects with these disorders as a primary diagnosis were sentenced to treatment sanctions in two groups (7%, 5/76, and 5%, 5/103, respectively), which is consistent with both legal concepts, requiring severe complications to abuse or dependency to meet the legal concepts to be eligible for psychiatric treatment sanctions.

A larger proportion of sanctions to forensic psychiatric treatment in the group 1993-95 was not expected, due to the restriction in disorders by the medicolegal concept of “severe mental disorder“, but it was consistent with the legal concept that the proportion of subjects who had psychotic disorders were sentenced to forensic psychiatric treatment (Table 2).

Table 1. Differences in sanctions and diagnoses between the investigation cases 1988-90 and 1993-95

	Group 1988-1990 n=187		Group 1993-1995 n=180		p
	n	%	n	%	
Sanctions					
FPT	76	41	103	57	0.002
Prison	75	40	56	31	0.090
Non-institutional	36	19	21	12	0.062
Diagnoses					
Psychotic disorders	33	18	80	44	<0.001
Substance abuse disorders	91	49	82	46	0.62
Personality disorders	104	56	117	65	0.082
Personality disorders, first diagnosis	75	40	40	22	<0.001
Personality disorders, second diagnosis	29	16	77	43	<0.001

Table 2. Differences in diagnoses at FPT sanctions 1988-90 and 1993-95

	Group 1988-1990 n=76		Group 1993-1990 n=103		p
	n	%	n	%	
Psychotic disorders	32	42	72	70	<0.001
Substance abuse disorders	37	49	37	36	0.12
Personality disorders	37	49	56	54	0.55

4.1.1 Comments to the Results

There is no clear explanation to the increase in offenders with psychotic disorders during 1993-95. More immigrants were diagnosed with psychotic disorders 1993-95, but in variables analyzed this study, the immigrants varied as much as the Nordic born subjects, and their time in Sweden showed a wide variation in both groups. On a speculative level, the new legal concept of “severe mental disorder”, and especially the preparatory work with specification and examples of mental disorders, eligible for treatment sanctions, might have had some impact in specification of diagnoses. Also the introduction 1992 of DSM-III-R with the different axis, and criteria for diagnoses, might have increased awareness in diagnosing compared to previous years

when also medicolegal concept of “equal to insanity” was eligible for treatment sanctions.

4.2 Study II

There were fewer recidivists in the FPT group than in the two correctional groups (Table 3), and at average, fewer crimes (all types of crimes and violent crimes) were committed in this group. In the diagnostic group with SAD, PD or both diagnoses (n=251) there were more recidivists than in the group without any of these diagnoses, psychotic disorders and other mental disorders (OMD). Most crimes during the two-year follow-up were generated in the SAD and/or PD group (780 of the totally 808 crimes, and 170 of the 171 violent crimes) compared to the group without these diagnoses (n=67).

During treatment sanctions, in inpatient and outpatient periods, the crime incidence was low, compared to the higher incidence of crimes during conditional release from prison and during probation. After fulfillment of the FPT sanctions the crime incidence for all types of crimes increased (Table 3). Removing all subjects, who had neither SAD nor PD, did not change this result significantly (Table 4).

The logistic regression showed that the age factor and previous number of convictions was predictors for relapse in all types of crime. For violent recidivism, number of previous violent convictions together with the age factor, were predictors. The prediction was moderately better than chance.

Table 3. Recidivism and incidence crime rates compared between sanction groups.

	FPT group n=152	Prison group n=116	Non custodial group n=50	p
Recidivists				
in any crime	24%	45%	50%	0.003
in violent crimes	10%	22%	28%	<0.001
Incidence of crimes				
in institutions				
violent crimes	0.03	0.04	0	0.65
all crimes	0.11	0.27	0.37	0.55
during conditional release				
violent crimes	0.10	0.69	0.53	<0.001
all crimes	0.48	3.79	2.97	<0.001
after complete release				
violent crimes	0.36	0.19	0.90	0.003
all crimes	2.22	2.48	3.75	0.16

Table 4. Recidivism and incidence crime rates in subjects with SAD, PD, and both diagnoses, compared between the sanction groups.

	FPT group n=103	Prison group n=104	Non custodial group n=44	p
Recidivists				
in any crime	28%	49%	55%	0.001
in violent crimes	14%	24%	32%	0.021
Incidence of crimes				
in institutions				
violent crimes	0.04	0.04	0	0.96
all crimes	0.15	0.31	0.40	0.52
during conditional release				
violent crimes	0.15	0.78	0.61	<0.001
all crimes	0.52	4.24	3.40	<0.001
after complete release				
violent crimes	0.50	0.21	0.90	0.011
all crimes	2.75	2.83	3.75	0.25

4.2.1 Comments to the Results

The higher incidence of all types of crimes, and violent crimes, during conditional release periods from prison and non-custodial sanctions, in contrast to periods of conditional stay outside hospital wards, showed a similar pattern in the subjects with more crime-related diagnoses of PD and SAD. This might be due to a difference in care and treatment between correctional sanctions and treatment sanctions. In prison and probation sanctions, the sanction period is time-limited, decided at the sentencing in court. Treatment sanctions are not time-limited. The subjects under treatment sanctions must qualify to be given permissions to stay outside the hospital, as well as for final discharge, decided by the Board of Discharge (1988-90), or the courts (1993-95). The threshold for being re-admitted to the hospital ward from outpatient care, and receiving a prolongation of the sanction, is lower than the threshold for being taken into custody for maximum one week during conditional release or probation. This result indicates that the difference in conditions for staying out in the community and for complete discharge probably has an impact on crime committing.

4.3 Study III

The course of relapse in violent crimes, that is the relapses in a certain moment over a time of 13-20 years, was similar between the index sanction groups, log rank test, $p=0.50$ (Figure 5). In the four diagnostic groups (“SAD+PD”, “SAD, but not PD”, “residual disorder” and “PD but not SAD”), there was a difference in the course of violent relapse, log rank test, $p<0.001$ (Figure 6). The largest difference, when comparing the diagnostic groups in pairs, was found between the groups with and without SAD, log rank test, $p<0.001$. It should be noted that approximately 80% of the violent recidivists relapsed within five years.

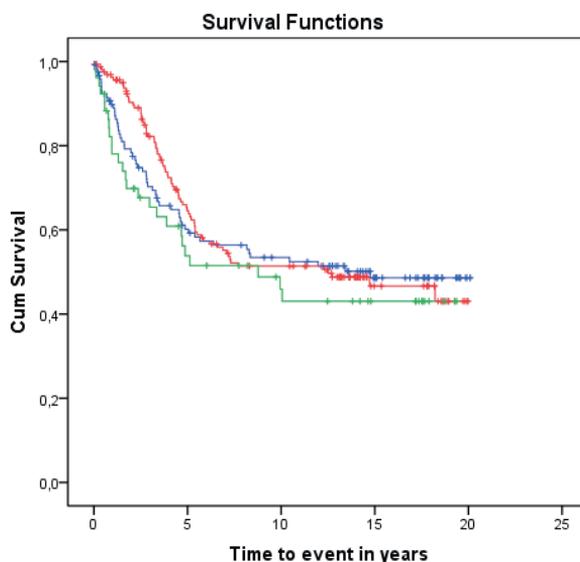


Figure 5. The long-term course of violent recidivism in three different types of sanctions [hospital (red), prison (blue), non-custodial (green)], over time.

Several violent recidivists were convicted for non-violent crimes before they committed their first violent crime. The new sanctions given for these non-violent crimes were not necessarily in the same category as the index sanction. In the FPT group 10 of the 75 violent recidivists committed their violent crimes related to correctional sanctions. From the final Cox regression analysis, age at criminal debut, previous number of violent convictions, and the difference in risk related to ongoing forms of sanctions were all predictive factors ($p < 0.0001$). Periods in hospital or prison were a protective factor, the risk was approximately three times smaller than during absolute liberty. The risk of relapse during periods of conditional release from prison and probation was approximately twice the risk than that during absolute liberty. Together the predictive value of these variables reached the $AUC = 0.72$. Age at the criminal debut was the most important predictor, $AUC = 0.71$.

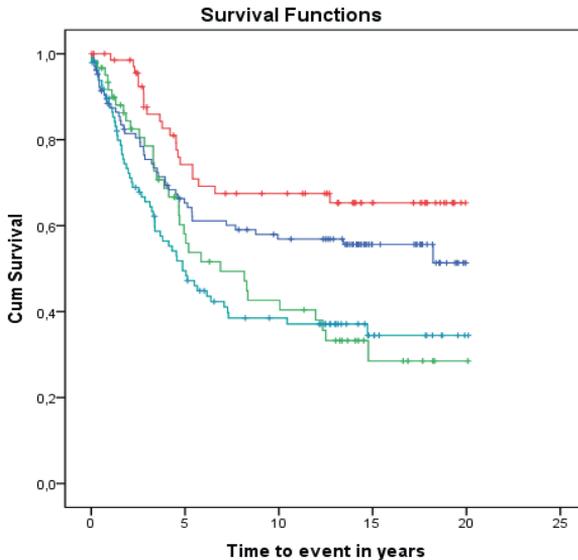


Figure 6. The long-term course of violent recidivism in the four diagnostic groups both PD and SAD (bluish green), SAD but not PD (green), PD but not SAD (dark blue), residual disorder (red)], over time.

4.3.1 Comments to the Results

Few studies cover criminal relapse over a long time. In this study factors possibly predictive for violent recidivism during a long time period were investigated. The type of index sanction was not important in the long run, while different diagnostic groups were important as long as no other variables were included in the analysis. When variables related to criminality were added to the analysis, diagnoses were no longer of any primary importance for violent recidivism, however criminal variables were. The larger risk of violent recidivism during conditional release from prison and probation, and the lower risk in institutions, were in accordance with the findings of study II. The prediction was also now only moderately better than chance, but at the same level of other studies including more variables. Most relapses in violent crimes occurred during the first five years. Possibly a shorter time period than the present follow up might have classified other variables as important predictors.

5 MAIN FINDINGS

- The intention of the new legislation 1991/92 to minimize forensic psychiatric treatment was counteracted by an unexpected increase in number of offenders sentenced to treatment with psychotic disorders.
- The incidence of general and violent crimes was higher during conditional release from prison and probation as compared to in-patient and out-patient psychiatric treatment, investigated over two years following the index sanction.
- The long-term course (13-20 years) of violent recidivism was similar between the index sanction groups.
- The long-term course of violent recidivism was different in subjects diagnosed with substance abuse/dependency disorder compared to subjects without this diagnosis.
- The long-term course of violent recidivism was predominantly associated with crime-related characteristics.

6 OVERALL DISCUSSION

The current knowledge concerning a possible link between mental disorders and criminality is predominantly based on associations between the two. At large, the broad range of clinical symptoms contributing to a single diagnosis further complicates the matter. In addition, the influence of genetic disposition or the interaction between the social context and the dynamic processing in the brain is far from clear. For the subjects included in the present thesis, the mental state at the pre-trial investigation was of importance since the medicolegal concept would influence the court regarding the type of sanction to be imposed.

The current study investigated whether the intention of the new legislation 1991/92, with a more restrictive medicolegal concept, was fulfilled. Although more offenders were sentenced to treatment after the new legislation, there was also a significant increase in offenders with psychotic disorders. Thus, the only possible effect of the change in legislation would be a reduced time under compulsory treatment and reduced high-level care and treatment for patients with psychoses and a propensity for criminality. This is hardly possible to investigate, since it demands a large control group matched for age, diagnoses, previous treatment history and social context.

It is possible that the financial crisis during the early 1990ies may have contributed to the increase in offenders with psychotic disorders, since the financial circumstances contributed to the rapid decrease in available psychiatric hospital care. Subjects with a need of time in psychiatric treatment in a high-level clinical surrounding including psychosocial training were perhaps left without care when hospitals were closing down and the planned facilities within the social services were not yet established. Possibly as a consequence of the reorganization and reduction of psychiatric facilities, a larger number of offenders with psychotic disorders was seen. A report from Denmark showed an increase in the number of criminals with

mental disorders during similar circumstances [55]. Thus, successful implementation of a new law needs stability in factors of relevance to fulfill the aim of the law.

The difference between forensic psychiatric treatment and correctional sanctions in the regulation regarding staying out in the community and final discharge seemed to have an impact on criminal recidivism within two years from the index sanction. Subjects with substance abuse and personality disorders sentenced to in-patient treatment had a lower level of criminality during the first two years, compared to similar subjects during conditional release from prison and probation. This indicates that the design of sanctions may have an impact on criminality [20]. However, one has to consider that treatment effects are possible, at least during the sanction period. The availability of treatment, pharmacological and individually specialized psychotherapeutical support, is larger during treatment sanctions than during correctional sanctions. However, the significant difference in violent recidivism between index sanctions disappeared over time. At a closer look, the long-term course of relapse depended on psychiatric diagnosis, with the most prominent difference attributed to those with substance abuse included among their diagnoses. However, this was only the case as long as criminal characteristics not were included in the analysis of violent recidivism. In the final analysis, the criminal variables superseded the diagnoses in significance as predictors, and taken together their capacity to predict violent recidivism was moderately better than chance. This finding is in line with the predictive power in other studies aiming at predicting recidivism within a short time frame following a sanction [31]. The risk of violent recidivism during conditional discharge and probation was approximately two times higher than during time outside any sanction, but the variation was considerable. At the end, the most important predictor for criminal recidivism was a low age at the first crime, a finding which has support in a large volume of research [8, 17] and implicates a link between early deviance in behavior and development of criminality. In this study, with predominantly mental disorders and

crime-related characteristics, substance abuse/dependency disorder is that among the disorders which is most influential on criminal recidivism over time, though criminal variables supersedes diagnoses, and, among the criminal variables age at the first crime is the most important predictor to violent recidivism over time.

6.1 Limitations of the studies

Selection of the study population.

Since this is a small study, inclusion of more investigated subjects/cases during the period before and the period after the change in law would have given a better power in the analyses, but could also have generated problems with the time factor. Another limitation is the short period of time that lapsed between the implementation of the new law and the first FPI in the second group. The implementation of a new law may take some time before its usage is established. A later time point would perhaps have disregarded this issue.

Comparisons between sanction groups.

Comparisons between different sanction groups are problematic, since the medicolegal concepts will bring more disordered offenders to treatment sanctions and those with milder disorders to correctional sanctions. The question was raised whether a more severe disorder will act as a crime protective factor [8]. The same author, Bonta [8], concluded that the major predictors of criminal and violent criminal recidivism seemed to be comparable for mentally disordered and non-disordered offenders. When designing *Study II*, and before the coalescence of the 1988-90 and 1993-95 groups, the following statistical testing and considerations were done:

- A. Age at criminal debut and at index, number of previous sanctions, previous violent criminality, any type of previous contact with a psychiatric clinic, and homelessness, were compared between the two groups and within each of the three sanction forms, as well as between the entire groups. Statistical differences were not found, but Type II Errors are possible at comparisons within the smaller sanction groups.
- B. The outcome variable is criminality.
- C. From a theoretical point of view the meaning of the two medicolegal concepts current for each of the two groups carry a possibility of a generally higher level of “severity” of disorder in the treatment group of 1993-95 as compared to the former group, not only due to the larger number of psychotic disorders, but also to the concept “severe mental disorder”, including “degree“ as a criteria for treatment sanctions. The actual complexity in interpretation and application of the legal construct and the fact that mental disorders and crime are two completely different concepts, whose relationship is far from clear, contributed to the coalescing the two groups.

These considerations do not exclude all the differences between the sanction groups. A larger propensity for criminality in subjects sentenced to prison than forensic psychiatric treatment is possible. The high incidence of crimes during conditional release from prison and during probation may be due to a higher propensity to commit crimes, signifying that the crimes are committed early after leaving the institution. (This is another interpretation of the higher incidence of crimes during conditional release from prison/probation compared to the legal regulation of permission to stay out in the community during treatment sanctions). Since randomization to sanctions is not permitted by law, this problem is difficult to address in these types of studies.

Diagnoses, variables in the analyses.

The diagnoses from the forensic psychiatric investigations were established for the courtroom. It is the fulfillment or not fulfillment of the medicolegal concept, that is the primary goal for the investigation report. A retrospective assessment using a proper psychiatric instrument was not possible. The grouping of diagnoses in order to get mutually exclusive groups may hide another outcome. The diagnoses, though different in stability, are for methodological-statistical reasons handled as stable units. The outcome of *Study III*, the long follow up with criminal variables superseding mental disorders, should be interpreted with caution since a shorter follow-up might have yielded another result.

Representativity.

The study subjects were all diagnosed with different mental disorders, given by a pre-trial multidisciplinary team of experts. This small group of offenders consists of candidates for treatment sanctions, and the result cannot be extrapolated to other offender groups.

7 IMPLICATIONS

Considering the implications of this study, treatment efforts should be a priority for patients with mental disorders, including substance abuse disorders. Treatment programs including treatment and care for substance abuse for released prisoners, especially in young prisoners, with short prison periods seems important. It is also important to follow up and find out what components of a program, seems to work in different groups of prisoners.

Studies aiming at specifying measures which are effective for young people with early signs of being at risk of developing antisocial behavior or substance abuse, is another area in need of further research.

Overall, a plausible conclusion from the findings in the present thesis studies seems to be the need for legal support to prevent exposition of alcohol and drugs to young people. It would also be beneficial with a promotion of research within the area (including gene-interaction and brain functioning, alone and in relation to context depending factors) in order to understand underlying mechanisms of dependency and substance-mediated emotional states facilitating violent criminality. One should be aware of that the proportion of convicted crimes is a smaller part of criminal acts, reported to the police. A postponement of crimes will in the longer perspective reduce criminality and even a minor “postponement” in occurrence of criminal activity is advantageous both from human and economic perspectives.

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APPENDIX