

Karolinska Institutet, Department of Clinical Neuroscience
Centre for Violence Prevention, P.O. Box 23000, SE-104 35 Stockholm

Violence among mentally disordered offenders

Risk and protective factors

Ulrika Haggård-Grann



Stockholm 2005

Printed by Edita Norstedts Tryckeri
Box 49031, SE-100 28 Stockholm, Sweden
© Ulrika Haggård-Grann, 2005
ISBN 91-7140-377-9

ABSTRACT

Background: Violence is one of the leading causes of unnatural deaths, and the consequences of violence for victims, victims' families, offenders, and society at large involve extensive suffering and monetary costs. Improving strategies to prevent and reduce violence is of great importance, and refining techniques for risk assessments in forensic and correctional settings is assumed to be one way of doing so. The procedures currently used for risk assessment mainly focus unchangeable, static risk factors, and provide few directions as to what clinicians can do in order to decrease a client's risk by treatment and management. The aim of this thesis was to improve understanding of the violence relapse process, to identify triggers and protective factors for violence among mentally disordered offenders, and to develop a structured model for the management of violence risk in forensic mental health after-care.

Methods: This thesis used both qualitative and quantitative research designs. To identify protective factors of violent behaviour we interviewed individuals, selected from a cohort of 401 violent offenders who had unexpectedly ended their criminal career ($n=4$; Paper I). Semi-structured interviews were likewise conducted to explore the violence relapse process and communication of risk among offenders who had relapsed into criminal violence ($n=14$; Paper II). Content analysis was used for the exploration of data. In the quantitative studies, which aimed to identify triggers of violence among offenders, we used the case-crossover design, by which each subject serves as his or her own control. Structured interviews were performed with 133 violent offenders with respect to hypothesised triggers (Papers III and IV). Standard Mantel-Haenszel methods were used for the statistical analyses. To develop a structured model for the management of mentally disordered offenders, we gathered law, criminology, and mental health professionals with different educational backgrounds to elicit clinically relevant contextual and individual factors related to the individual outcome following forensic psychiatric hospitalisation (Paper V).

Results: Qualitative studies suggested that the desistance process among individuals with long criminal and violent "careers" was triggered by a shocking experience related to their criminal lifestyle and insight about the negative consequences to that lifestyle. Suggested protective factors were a strong relationship with family, social and geographical isolation, and the identification and avoidance of potential risk situations. Important risk factors in the relapse process were separations, drug problems, homelessness, and acute risk factors were lack of sleep, substance intoxication and conflicts. Some of these acute risk factors of violence were tested and confirmed in the quantitative case-crossover study. Acute suicidal ideation/parasuicide and alcohol intoxication were among the most important triggering factors. Acute conflicts and being denied psychiatric care also increased the risk of criminal violence. In contrast, potential inhibitors of violence were regular doses of benzodiazepines and antidepressants. All but one of the mentally disordered offenders interviewed in the relapse study had, by their own account, communicated that there was a risk of acting violently. The communication patterns were directed towards professionals and acquaintances and were verbal and non-verbal. Finally, a structured model for management of violence risk in forensic psychiatric after-care called the SORM (Structured Outcome Assessment and Community Risk Monitoring) was developed.

Conclusions: This thesis points to several potentially fruitful research areas for the violence prevention field. Previously, communication of risk has only been addressed in clinical work with suicidal patients, even though this may be of substantial interest also in the field of violence prevention. Some triggering and protective factors of violence among mentally disordered offenders were identified in this thesis, but needs to be replicated in future studies. The case-crossover design, for the first time applied to study triggers of aggressive acts, may substantially advance research on acute risk factors of violence.

LIST OF PUBLICATIONS

This thesis is based on the following publications, which will be referred to in the text by their Roman numerals:

- I. Haggård, U., Gumpert, C., & Grann, M. (2001). Against all odds. A qualitative follow-up study of high risk violent offenders who were not reconvicted. *Journal of Interpersonal Violence*, *16*, 1048-1065.
- II. Haggård-Grann, U., & Gumpert, C. (2005). The violence relapse process – A qualitative analysis of high risk situations and risk communication in mentally disordered offenders. *Psychology, Crime, & Law*, *11*, 199-222.
- III. Haggård-Grann, U., Hallqvist, J., Långström, N., & Möller, J. (in press). Substances triggering criminal violence – a case-crossover study. *Addiction*.
- IV. Haggård-Grann, U., Hallqvist, J., Långström, N., & Möller, J. (2005). Short-term effects of psychiatric symptoms and interpersonal stressors on criminal violence: A case-crossover study. Submitted manuscript.
- V. Grann, M., Sturidsson, K., Haggård-Grann, U., Hiscoke, L. U., Alm, P-O., Dernevik, M., et al. (in press). Methodological development: Structured outcome assessment and community risk monitoring (SORM). *International Journal of Law and Psychiatry*.

All previously published papers were reproduced with kind permission from the publishers Taylor & Francis Ltd, Sage Publications, and Elsevier Ireland Ltd.

CONTENTS

ABSTRACT	1
LIST OF PUBLICATIONS	2
ABBREVIATIONS	4
BACKGROUND	5
MENTAL DISORDERS AND VIOLENCE	5
DEFINITIONS	6
THE SWEDISH LEGAL SYSTEM	6
A CONCEPTUAL FRAMEWORK OF RISK AND PROTECTIVE FACTORS	7
RISK ASSESSMENT	10
RISK ASSESSMENT CHECKLISTS	11
Psychopathy Checklist-Revised	12
The HCR-20 violence risk assessment scheme	12
AIMS	14
METHODS	15
METHODOLOGICAL CONSIDERATIONS	15
QUALITATIVE METHOD (Papers I & II)	15
Participants	15
Procedure	16
Analysis	17
CASE-CROSSOVER DESIGN (Papers III & IV)	18
Participants	20
Procedure	22
Exposure definitions	22
STATISTICS	25
Case-crossover analysis	25
Power analysis	25
Between groups analysis	26
Interrater reliability	26
METHODOLOGICAL DEVELOPMENT (Paper V)	26
ETHICAL CONSIDERATIONS	27
RESULTS	29
AGAINST ALL ODDS (Paper I)	29
THE VIOLENCE RELAPSE PROCESS (Paper II)	30
TRIGGERS OF VIOLENCE (Papers III & IV)	31
Substances	31
Psychiatric symptoms	32
Interpersonal stressors	32
THE SORM (Paper V)	35
DISCUSSION	37
LIMITATIONS	41
CONCLUSIONS AND FUTURE DIRECTIONS	46
ACKNOWLEDGEMENTS	47
REFERENCES	48
ORIGINAL PAPERS I-V	

ABBREVIATIONS

FPE	Forensic Psychiatric Evaluation (major)
CI	Confidence Interval
DSM	Diagnostic and Statistical Manual of Mental Disorders
ICC	Intraclass Correlation
RR	Relative Risk
OR	Odds Ratio
AUC of the ROC	Area Under the Curve of a Receiver Operating Characteristic analysis
PCL-R	Psychopathy Checklist – Revised
COMET	Contextual Factors that Mediate Violence Risk
ICT	Iterative Classification Tree
VRAG	Violence Risk Appraisal Guide
HCR-20	Historical-Clinical-Risk 20, Violence Risk Assessment Scheme
SARA	Spousal Assault Risk Assessment Guide
SVR-20	Sexual Violence Risk 20
SORM	Structured Outcome and Community Risk Monitoring Model
SSRI	Selective Serotonin Reuptake Inhibitor

BACKGROUND

In 2000, interpersonal violence caused 520 000 deaths worldwide, more than collective violence such as wars and armed conflicts (World Health Organization, 2002). In Sweden specifically, approximately 84 000 violent crimes, and 200 homicides are reported each year in Sweden (National Council for Crime Prevention, 2004). Violence is a multifaceted problem, with causal roots in biological, psychological, and social domains. The focus of this thesis is on risk and protective factors of violence committed by offenders with mental disorder.

MENTAL DISORDERS AND VIOLENCE

In recent years, serious violent crimes committed by mentally disordered offenders have been in focus of intense media attention in Sweden, especially issues concerning the management of this group of offenders. However, the media rarely accounts for the complexity behind the tragic incidents involving “mad killers” (Rasmussen & Höijer, 2005). The lack of nuance in the public debate may lead to a distorted view of the magnitude and causes of the problem (Berlin & Malin, 1991; Philo, 1997; see also comment by Webster, 1995).

Public assertion has long maintained that mentally ill persons are “dangerous” (Maclean, 1969; Miles, 1981; Phelan & Link, 1998), a perception dating back to ancient Greece (Monahan, 1992). This is a correct assumption if based on the fact that mentally disordered individuals are statistically more likely to commit violence compared with individuals who do not suffer from these disorders (Arseneault, Moffit, Caspi, Taylor, & Silva, 2000; Hodgins, 2001; Swanson, Holzer, Ganju, & Jono, 1990; Tiihonen, Isohanni, Rasanen, Koiranen, & Moring, 1997; Eronen, Hakola, & Tiihonen, 1996; Lindqvist & Allebeck, 1990). The co-occurrence of mental disorders and homicide is even stronger (Fazel & Grann, 2004). Yet, the causal links between mental disorder and violence are far from clear, and there is considerable debate as to whether components of illness actually mediate violent behaviour, or if the statistical relationship is confounded by other factors, such as social class or immigrant status (see e.g. Silver, 2000). It is indeed important to acknowledge that only 5.2 percent of the violent crimes in Sweden are attributable to individuals ever treated in hospital for severe mental illnesses (i.e. schizophrenia, bipolar disorders or other psychotic states) (Fazel & Grann, in press). In contrast, individuals suffering from substance abuse are to a much greater extent involved in violence committed in the community (Grann & Fazel, 2004). Nonetheless, the Swedish and other Western governments have responded to this fear by passing laws by which mental health professionals are requested to assess violence risk of mentally disordered individuals.

Violence and mentally disordered criminal offenders are the two main denominators in this thesis. Mentally disordered offenders are, by definition, individuals who have committed crimes and who suffer from mental disorder(s). However, this definition may refer to practically any group of offenders diagnosed with any form of mental

disorder included in the DSM-IV-TR (American Psychiatric Association, 2000), such as organic psychiatric disorder, major mental disorders such as major depression or psychotic disorder, substance use disorders, personality disorders, or mental retardation.

DEFINITIONS

The term “mentally disordered offender” has been used in research to describe a clearly heterogeneous group of offenders. The definition used in this thesis also varies to some extent, depending on the specific aims of each study. For example, in Paper I, when trying to identify high-risk violent offenders with unexpected positive outcomes, the selection was based on a cohort of personality disordered offenders with or without concomitant substance abuse who had undergone a major forensic psychiatric evaluation (FPE). The second paper, focusing on the violence relapse process, included individuals who had been or still were in compulsory forensic psychiatric inpatient treatment and who had recidivated violently, and most likely were suffering from more severe mental disturbances than individuals included in Paper I. The term mentally disordered offenders used in this thesis is broader than the medico-legal term “severe mental disorder” (Swedish Penal Code, Chapter 30 § 6). The Swedish medico-legal definition of severe mental disorder has changed over time (for example, a more restricted medico-legal construct was introduced in 1992 [Kullgren, Grann, & Holmberg, 1996]) and, hence, does not provide a timeless or universal definition.

Even though the majority of participants in this thesis were recruited from forensic psychiatric settings, it should be kept in mind that a large proportion of offenders sentenced to imprisonment suffer from one or more mental disorder(s). In the largest to date systematic review of surveys of the prevalence of mental disorders among prisoners in Western countries it was concluded that approximately 4% of the male prisoners suffered from psychotic illnesses, 10% had a major mental disorder, and 65% a personality disorder (Fazel & Danesh, 2002). Since mentally disordered offenders are encountered also in prisons, juvenile institutions, general psychiatry, substance abuse services etc., the assessment, treatment and management of violence risk is definitely not a quest exclusive to forensic psychiatry.

The definition of interpersonal violence adopted in this thesis was that described by the World Health Organization: “the intentional use of physical force or power, threatened or actual, against another person that results in or has a high likelihood of resulting in injury, death, psychological harm, ‘maldevelopment’ or deprivation” (p. 80, World Health Organization, 2002). Violent crime in this thesis included both physical violence (homicide, assault, grievous bodily harm, assaulting an officer, rape, and other sexual crimes) and non-physical violence such as threats, harassment, and arson.

THE SWEDISH LEGAL SYSTEM

According to Swedish law, an offender who has committed a crime under the influence of a ‘severe mental disorder’ (Swedish Penal Code, Chapter 30 § 6) must not be sentenced to prison. The court can decide that the defendant should undergo a forensic psychiatric evaluation if the he or she has confessed to the crime or if there is

convincing evidence of the defendant's guilt. There are two types of forensic psychiatric evaluations (FPEs); a minor FPE (§ 7, 1991:2041) and a major FPE (§ 1, 1991:1137). The minor FPE is commonly performed in order to screen for the need of a major FPE. The medico-legal term 'severe mental disorder' includes psychotic states irrespective of etiology, with disturbed apprehension of reality and with symptoms such as confusion, thought disturbances, hallucinations or delusions, and severe personality disorders with uncontrollable impulsivity or compulsive behaviour (legal text: SOSFS 1991:10)

Approximately 2,000 minor FPEs and 650 major FPEs are performed yearly in Sweden (National Board of Forensic Medicine [RMV], 2002). Almost 80% of those referred for a minor FPE are charged with a violent offence. Around 95% of those undergoing a major FPE are diagnosed with a mental disorder, but only half are judged to suffer from a severe mental disorder in the medico-legal sense. As mentioned previously, the offender cannot be convicted to imprisonment if he or she is judged to suffer from a severe mental disorder. Instead, most offenders with 'severe mental disorders' are diverted to forensic hospitals, or, in some cases, put on probation with psychiatric outpatient treatment orders.

The major FPE usually takes four weeks to complete. The evaluation is performed by a team consisting of a forensic psychiatrist, a certified clinical psychologist, a social worker, ward staff, and occupational therapy staff. Each professional writes his or her own report, which are then compiled into a main concluding section, for which the forensic psychiatrist is responsible. In the statement to the court the team is to answer three main questions; if the offender 1) suffered from a 'severe mental disorder' at the time of offence(s), 2) suffers from a 'severe mental disorder' at the time of the FPE, and 3) is in need of compulsory inpatient forensic psychiatric care. The FPE team may also be requested by the court to make a statement about the risk that the offender may relapse into severe criminality. If the team concludes that there is a risk that the offender may do so, he or she can be convicted to compulsory forensic psychiatric care where a court review determines when the offender may be discharged. In practice, for FPEs in which the defendant is judged to suffer from a 'severe mental disorder', the teams usually find a significant risk of recidivism, and hence recommend the court that hospitalisation is accompanied with the court review procedure.

A CONCEPTUAL FRAMEWORK OF RISK AND PROTECTIVE FACTORS

The chain of events leading up to violent acts involves different subtypes of contributing factors in a "causal web" (Rothman & Greenland, 1998) of violence, and in the following section I will briefly discuss the categorisations of risk and protective factors.

Useful descriptions and subdivisions of risk factors and risk markers have been provided by several researchers (see for example Hanson, 1998; Monahan, 1997; Kraemer, Kazdin, Offord, Kessler, Jensen, & Kupfer, 1997). These authors used different terms to describe similar subtypes of factors, creating problems when drawing

conclusions from research findings and in the policy making (Kraemer et al., 1997). Kraemer and colleagues (1997) suggested that the term risk factor is only to be used to describe factors that precedes or is correlated to the outcome. The conceptualisations of risk factors are important in the prevention field to identify which factors to target in treatment and which factors should be continuously monitored (Hanson & Harris, 2000).

Taken together, there are two major categorisations of risk factors currently discussed in the literature, and these are *static/stable* versus *acute/dynamic* and *individual* versus *contextual*. These concepts do not, however, provide clear-cut descriptions of the risk factors. Nonetheless, static/stable versus acute/ dynamic says something about the possibilities of change. Risk factors referred to as static or stable have more stability over time and include dispositional factors (e.g. gender, age, ethnicity, genotype) and historical factors (e.g. diagnosis of substance dependence, previous violent behaviour, age at first conviction) and do not change independent of treatment efforts. Acute or dynamic risk factors are, on the other hand, inclined to shift (e.g. intoxication, psychiatric symptoms, interpersonal stressors), and can, at least theoretically, be changed with interventions.

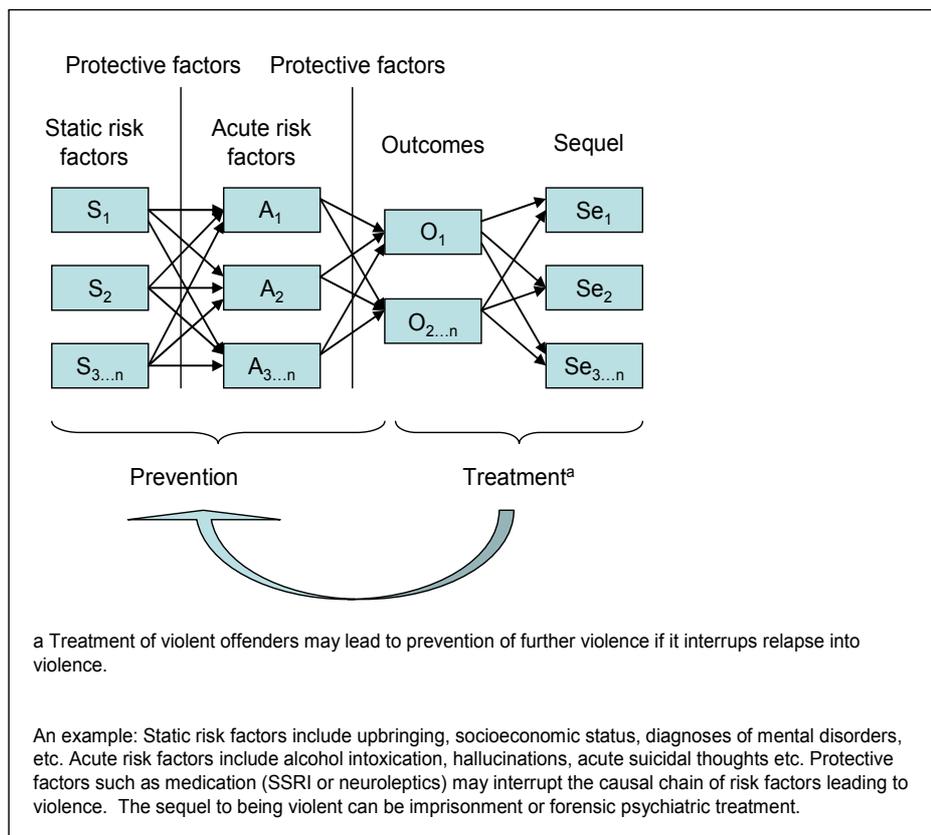
A risk factor is said to be *individual* if it is a characteristic of the assessed individual. Dispositional factors, personality traits, or a psychiatric diagnosis are all examples of individual factors. A *contextual* factor on the other hand refers to circumstances in the individual's environment, such as social network, housing conditions, access to mental health services etc. Again, the boundaries between the two are not clear-cut, but the main point is that individual factors are characteristics of the client, and that contextual factors are characteristics of the surrounding environment. The distinction between individual and contextual factors is important from a policy perspective. If "risk" and "dangerousness" are conceptualised only in terms of individual factors we will inevitably attribute the client's proneness to violence only to the clients himself/herself, when, in fact, it may be determined by external factors such as services provided (or lack of services) and the treatment delivered (or not delivered) (Grann, 2002; Gunn, 1996; Price, 1997). For improved risk assessment it is therefore crucial to consider not only individual risk factors (e.g. substance misuse, psychopathy, major mental disorder) but also contextual risk factors (e.g. social networks, lack of access to treatment, housing problems), and, similarly, protective factors that may reduce the likelihood of violence.

Protective factors are often described as factors that reduce the effects of and create positive strategies to counteract risk factors (Jessor, 1991). Examples of protective factors are intelligence, social connectedness, conventional attitudes and intolerance towards deviant behaviours (Fitzpatrick, 1997; Jessor, 1991; Resnick, Ireland, & Borowsky, 2004), whilst the correlates to risk factors would be low intelligence, high impulsivity, substance abuse in the family, deviant behaviours in the social network, and aggressive attitudes (Loeber & Farrington, 1998). The division between risk and protective factors is not obvious, and some researchers have argued that protective factors are merely the absence of risk factors (Stattin, Romelsjö, & Stenbacka, 1997). However, others have argued that this is not generally a fruitful way to describe protective factors. Hawkins and colleagues (1992) maintained that protective factors

are factors creating differences in outcome at a certain level of risk. Some researchers argue that treatment should principally be focusing on reducing risk factors for successful interventions (Pollard, Hawkins, & Arthur, 1999), while others argue that strengthening the protective factors in risk groups are as much or even more effective in decreasing risk behaviours than reducing presence of risk factors (Blum & Ireland, 2004; Resnick, Ireland, & Borowsky, 2004). Most likely, both protective and risk factors are important to address in interventions aiming at decreasing violent behaviour.

When studying risk and protective factors there is the difficulty of determining causality and identify the likely “causal chains” of risk and protective factors for violence. The causal chain consists of both distal and proximal risk factors. The causality between a risk factor and an event is more difficult to establish when the risk factor is distal, since multiple factors may be influencing the relationship. The causal potential of risk factors closer in time may be more easily determined and hence easier to intervene against (see for example; World Health Report, 2002). The figure below (Figure 1) is an attempt to graphically depict the causal chain of risk factors leading to violence and the moderating effects of protective factors, and interventions.

Figure 1. An attempt to describe a general causal web of exposure to risk factors leading to violence, moderating protective factors, and consequences of violence.



RISK ASSESSMENT

Forensic mental health clinicians face the dual task of identifying and treating clinical needs among mentally disordered offenders, and assessing and managing the risk of violence towards others. Ideally, risk assessments are not only used for prediction of violence, but rather as a departure point for attempts to decrease the violence risk posed by an individual with adequate interventions. Thus, forensic mental health professionals have a responsibility to assess violence risk of clients, to define the context (when and under which conditions) and to monitor changes in those conditions (Heilbrun, 1997; Steadman et al., 1994). However, risk assessment is a complex task, partly because the outcome encompasses a wide variety of violent acts (from deadly physical violence to verbal threats) and partly because the mechanisms underlying violent acts often differ but the outcome may be the same (equifinality).

As a consequence of the highly publicised homicides committed by mentally disordered persons in Sweden in 2003 and 2004, including the assassination of former Secretary of State, Ms Anna Lindh, the National Board of Health and Welfare appraised the possibility to expand the practice of violence risk assessment in mental health agencies (National Board of Health and Welfare, 2004). It was concluded that risk assessments of violence towards third parties generally were made in an “unstructured” or non-systematic manner in adult, child and adolescent, and forensic psychiatric practice. Unstructured clinical assessment means that the clinician gathers data he or she believes to be useful and makes a judgment of the risk based on that information (Otto, 2000) in a process that may be characterized as “intuitive” or “experiential” (Hart, 2000).

However, clinicians’ ability to correctly assess future violence without a structured decision support has been addressed and criticised by many (Monahan, 1984; Monahan, & Steadman, 1994; Quinsey, Harris, Rice, & Cormier, 1998; Webster, Douglas, Eaves, & Hart, 1997). The critique was spurred by studies in which unstructured risk assessment had been shown to be non-transparent in the decision of risk, produce low interrater reliability, and low predictive validity. It has been argued that unstructured clinical judgments are not made consistently and rationally (Mulvey, & Lidz, 1995), and that they are unimpeachable because of the lack of standards of how they have been made (Hart, 2000). Twenty years ago, Monahan (1984) concluded in an influential review that unstructured clinical predictions were as good as “coin-flipping”, that is, no better than chance (see also Ennis & Litwack, 1974). This conclusion has been challenged in more recent years with the publication of studies suggesting moderate predictive ability in unstructured clinical assessments (Lidz, Mulvey, & Gardner, 1993; Litwack, 2001; Menzies, Webster, McMain, Staley, & Scaglione, 1994; Mossman, 1994; Nijman, Merckelbach, Evers, Palmstierna, & Campo, 2002). However, unstructured clinical assessment of risk is made on a conditional basis (Mulvey & Lidz, 1995). Independent of the rationale behind the assessments, assessments made solely on clinical experience often overestimate risk (i.e. have high false positive rates) (Skeem, Mulvey, & Lidz, 2000).

So-called actuarial instruments appear to be the anti-thesis to unstructured clinical risk predictions. The items in these assessment schemes are weighted and combined

according to a fixed algorithm, and the clinician must not include his or her own case-specific judgments (Grove & Meehl, 1996; Quinsey, Harris, Rice & Cormier, 1998). The actuarial approach to predict future violence has been criticised by several authors (Dernevik, 2004; Grann & Långström, in press; Grubin & Wingate, 1996; Hart, 1998; Litwack, 2001; Reed, 1997; Sjöstedt & Grann, 2002). These authors argued that risk assessment should drive risk management, and that thus the factors used for actuarial prediction schemes, which are mainly historical and static in nature, have little value to the real-world task, that is, to prevent future violence. Since actuarial models are usually based on historical variables, one would expect that treatment would, by definition, not have any measurable effect on the risk. Further, risk factors in actuarial instruments are compiled in an atheoretical manner, and can become bizarre in their presentation (Hart, 1998). For example, a factor, such as “the victim died”, will lower the risk of violent recidivism in a purely statistically calibrated risk instrument, and killing a woman is in particularly beneficial for the assessed offender, since that corresponds statistically to lower risk compared with killing a man (which is the case in the VRAG; Quinsey et al., 1998). Additionally, actuarial instruments, usually calibrated and optimised for a specific offender population, may replicate poorly when used in different settings or populations (Grann, Belfrage, & Tengström, 2000; Långström, 2004; Tengström, 2001), and that the weighting of risk factors in actuarial algorithms does not improve predictive validity (Grann & Långström, in press).

Grubin and Wingate (1996) concluded that actuarial predictions are good for determining who are at low risk of recidivism (i.e. true negative individuals), but poorly identify the true positive individuals. This conclusion appears well warranted, as empirical studies consistently report a very promising so-called negative predictive value (typically around .90) but a near-useless positive predictive value (typically around the “coin-flipping” level of .50). Actuarial schemes may serve as tools to screen out individuals who would do equally well without specialised (and more expensive treatment programs), or which individuals that need not to be subjected to more thorough evaluations of recidivism risk, but beyond that, their practical value may be more limited (Sjöstedt & Långström, 2002). However, the advocates for the actuarial approach have maintained that there are no serious alternatives (see in particular Harris, Rice, & Cormier, 2002; Quinsey et al., 1998).

The controversy of the merits and limitations of actuarial versus unstructured clinical risk assessment has resulted in an attempt to create a synthesis of the two approaches, called structured clinical judgment. For this purpose, a number of checklists consisting of dynamic as well as static/historical factors have been developed, see for example the Sexual Violence Risk-20 (SVR-20; Boer, Hart, Kropp, & Webster, 1997), the Spousal Assault Risk Assessment Guide (SARA; Kropp, Hart, Webster, & Eaves, 1995), and the violence risk assessment scheme HCR-20 (Webster et al., 1997). These checklists prescribe the assessment of a comprehensive set of risk factors that may be summarised into a total sum, but without providing any norms or fixed cut-off points for when a person is judged to be at increased risk of reoffending. Instead, the clinician is encouraged to grade the risk as low, medium or high in a relative fashion, on basis of the number of risk factors identified with the checklist, the constellation of these risk factors, and case-specific risk factors not captured by the checklist. For an overview of

some well-established actuarial and structured clinical risk assessment schemes, see Haggård-Grann (in press).

RISK ASSESSMENT CHECKLISTS

Two risk assessment checklists were used for the identification of the study population in Paper I, and will be further presented below.

Psychopathy Checklist-Revised

Hare's Psychopathy Checklist-Revised (PCL-R) is an instrument designed to assess the degree of psychopathic personality traits in an individual (Hare, 1991). This checklist was not initially intended as a risk assessment instrument, but since psychopathy has been shown to be one of the strongest individual predictors of violence and violent recidivism among adults (Hare, Clark, Grann, & Thornton, 2000; Hemphill, Hare, & Wong, 1998; Salekin, Rogers, & Sewell, 1996; Steadman, Silver, Monahan, Appelbaum, Robbins, Mulvey et al., 2000), it is being used as a tool to assess the risk of future violent acts. The PCL-R consists of 20 items that express underlying dimensions; affective and interpersonal traits (such as grandiosity, superficial charm, manipulation and callous, remorseless use of others), and an unstable and impulsive lifestyle (such as juvenile delinquency, criminal versatility and impulsivity). Each item is rated on a 3-point scale, ranging from 0 (the trait or characteristics is absent), to 2 (the trait or characteristic is definitely present). In other words, the total score ranges from 0 to 40. Cross-cultural studies on the PCL-R have suggested that different cut-off scores be used in North America and in Europe (Cooke & Michie, 2002). The cut-off score is 30 in North America (Hare, 1991). Psychopathy is included as one risk factor in the HCR-20 risk assessment scheme (see below). Results from a meta-analysis of 18 studies that investigated the relationship between the PCL/PCL-R and violent and non-violent recidivism, showed that the checklist predicted recidivism with moderate to strong effect sizes among offenders (Salekin, Rogers, & Sewell, 1996). It is of clinical relevance to know that the psychopathic offenders' criminal career differ from other offenders in the sense that their careers usually begin earlier in life, they are engaged in more crimes, and their criminality is more versatile (e.g. Hare, McPherson, & Forth, 1988).

The HCR-20 violence risk assessment scheme

The clinical checklist HCR-20 was introduced in 1995 (Webster, Eaves, Douglas, & Wintrup, 1995) and a revised version was published in 1997 (Webster et al., 1997). The checklist is described as a vehicle that should promote discussion among clinicians about assessing risk. The checklist is divided into three sections and consists of 10 Historical factors (e.g. previous violence, substance use problems and psychopathy), 5 Clinical factors (e.g. negative attitudes, active symptoms of major mental illness and impulsivity), and 5 Risk management factors (e.g. exposure to destabilizers, lack of personal support, and stress). Only the historical part of the HCR-20 was used in Paper I for the selection of high-risk individuals. Each item is rated in similar way as in the PCL-R (see above) and the total score of the instrument ranges from 0 to 40. The checklist is primarily intended to guide the assessment rather than to determine definite

“risk scores”. This is stressed in the checklist by not providing cut-off points corresponding to certain risk levels, but merely encouraging the clinician to make a global judgment of the risk level (low, medium and high) on basis of the presence of risk variables, their constellation, and case-specific factors. During the last few years several studies has proven this checklist to have poor to moderate validity in correctional as well as forensic samples (e.g. Douglas & Cox, 1999; Douglas, Ogloff, Nicholls, & Grant, 1999; Kroner & Mills, 2001; Nicholls, Douglas, & Ogloff, 1997). In an impressive review of the studies carried out thus far, the overall AUC of the ROC for the HCR-20 to predict violence across 22 studies in 6 nations was .75 (Douglas, Poythress, Spain, Falkenbach, & Epstein, 2002) corresponding to “modest” accuracy (Sjöstedt & Grann, 2002).

In simpler terms, an AUC of .75 means that there is a 75% chance that a randomly chosen recidivist will have a higher HCR-20 score than a randomly chosen non-recidivist. An AUC of .50 would have been the same as saying that you could just as well flip a coin instead of using the instrument. An AUC of 1.0 would have corresponded to a perfect separation of recidivists’ and non-recidivists’ total scores, that is, all the recidivists would have had higher scores than all the non-recidivists. It is important to note that an AUC of .75 would imply that while the negative predictive value (the instrument’s ability to correctly classify those who will not be violent in the future) is generally promising (around 80-90% correct classifications), the positive predictive value (the ability to correctly identify those who will recidivate violently) is generally very low (around only 50% correct classifications).

AIMS

The overall aim of this thesis was to yield knowledge of the violence relapse process and risk- and protective factors related to criminal violence in mentally disordered offenders.

The specific aims of the studies were:

- To explore unexpected positive outcomes in a group of high-risk violent offenders in order to identify protective factors for persistent violent behaviour. (Paper I) and explore the desistance process
- To identify high-risk situations and communication of risk in mentally disordered offenders who had relapsed into violence by qualitatively analysing the relapse process. (Paper II)
- To study the triggering effects of alcohol, illegal substances, major classes of prescribed psychotropic drugs, psychiatric symptoms and interpersonal stressors on criminal violence among offenders with varying levels of psychiatric morbidity, and to investigate the utility of the case-crossover design for research on triggers of violence. (Papers III and IV)
- To create a standardised multi-level measure of outcome for offenders released into the community from inpatient forensic psychiatry to provide means to monitor violence risk and evaluate and compare services. (Paper V)

METHODS

METHODOLOGICAL CONSIDERATIONS

A methodological distinction in research is between qualitative and quantitative approaches. The bases for these two research approaches are different. Qualitative method emphasizes the qualities of entities, processes and meanings that are not experimentally examined or measured in terms of quantity, intensity, or frequency. Quantitative methods emphasize the measurement and analysis of causal relationships between variables (e.g. Denzin & Lincoln, 2003).

Taylor (1998) concluded that no study is in itself adequate in the epidemiology of studying risk factors such as mental disorder and violence considering that all studies have limitations which will affect the interpretation and generalisability of the data. Therefore, triangulation of methods is a way to supplement the strengths and limitations of methods, and thereby reducing validity threats (Miles & Huberman, 1994). In this thesis, I have chosen to use both qualitative and quantitative methods to pursue the overall aim of the study.

QUALITATIVE METHOD (PAPERS I & II)

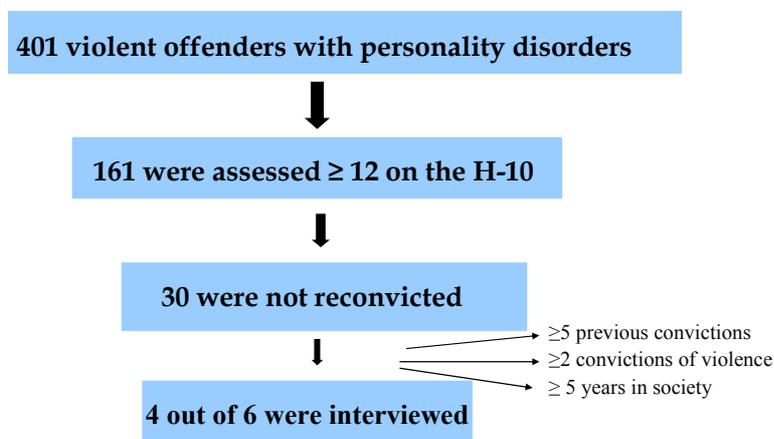
When using qualitative methods, it is of great importance to be aware of the conceptual context of the study and to elucidate these conceptions in an effort to establish the study's authenticity (Maxwell, 1996). The conceptual framework was influenced by experiences from the social and medical sciences and clinical work, mainly in forensic and child and adolescent psychiatry. At the time of interviews it was an advantage that I, as an interviewer, had experiences of working with this group of offenders and had some understanding of the language and lifestyle of these informants.

Participants

The sampling procedure in Paper I was dependent on the goal of including "extreme and deviant cases" (Miles & Huberman, 1994). The target population was selected from a previously conducted epidemiological study (Grann, 1998). The cohort consisted of 401 personality disordered violent offenders who underwent an FPE during 1988-1990, and was retrospectively followed-up during a ten-year period. Individuals with unexpectedly positive outcomes were identified with guidance from risk factors for the prediction of future violence; the HCR-20 (Webster et al., 1997). However, we did only use the historical part of the instrument to detect high-risk individuals, using a cut-off of ≥ 12 (out of 20) points. These risk assessments were blind to the outcomes, and were based on the extensive forensic psychiatric assessment files. From individuals who met the criteria of the set cut-off point, and had not been reconvicted, we selected those who had at least five previous convictions, and at least two of these for violent offences (to ascertain a high-risk group), and had time at risk in the community for at least five years (to have the opportunity of committing crimes).

After using these inclusion criteria only six subjects remained, whereof four participated. For an overview of the selection process in Paper I, see Figure 2.

Figure 2. The selection process of unexpected positive outcomes in a cohort of 401 violent offenders undergoing an FPE 1988-1990.



In Paper II, we included a consecutive sample of nine violent recidivists, previously treated in forensic psychiatry, and undergoing a pre-sentence FPE at the Department of Forensic Psychiatry in Stockholm, whilst being legally charged for violent crimes during the autumn of 2000 to the spring of 2001. An additional five individuals who had been violent during compulsory inpatient treatment, were included after the first author had been in contact with two forensic psychiatric hospitals. Our aim was to collect as rich material as possible, and the inclusion of both individuals who had committed violent offences while being in the community and individuals who had been violent during inpatient treatment was based on the hypothesis that the violence relapse process and communication of risk may emerge differently in these two contexts.

Procedure

To collect data for Papers I and II, we used semi-structured interviews with pre-defined areas to be covered. All interviews were carried out by the first author (myself). In Paper I the main foci of the interviews were on the desistance from crime and the informants' present life. The focus of the semi-structured interviews in Paper II was to let the informants describe their view of what had happened since the last episode of violence to the relapse in violence, to capture the relapse process and identify possible communication of risk. Before the second interview study, I underwent a five-week-course in interview techniques.

For Paper I, interviews were conducted in premises close to the informants' homes. In Paper II, nine of the interviews were performed at the FPE unit in Stockholm, and another five at two different forensic psychiatric hospitals in Sweden. Additional information about the informants (from the FPE:s) were collected *after* the interviews had been performed so that the interviewer would be as unbiased as possible during the interview.

The lengths of the interviews were 45-120 minutes. After each interview, memos were written on the reflections from the interview. All interviews were audio taped and transcribed verbatim and each interview generated between 9-40 pages of typewritten text. Leading questions and emotional expressions were noted in the margin.

Analysis

There is no generally agreed-upon model to analyze qualitative material. The content of the material sets some requirements, but apart from that there is a certain degree of freedom (Weinehall, 1997). We used several methods to analyse our transcribed interviews. In Paper I we used content analysis to identify common salient themes that appeared across the interviews (Morse & Field, 1995). With this method the interviews are transformed into meaning units. Meaning units consist of blocks of text of one or more sentences. These units are then categorised into smaller units or categories (see Table 1). In an effort to check the reliability in Paper I, uncoded interviews and the preliminary content analysis of the interviews were read by colleagues at Karolinska Institutet (a psychiatrist, a legal expert, a criminologist, and clinical psychologists) to stimulate new approaches to the analysis and interpretation of the texts.

In Paper II, the first and second author individually read and coded all the interviews. First, the interviews were read to ascertain a sense of the whole. Narrative structuration is a method to organise the transcribed text in a temporal order to reveal its context (Kvale, 1996). This method focuses on the stories told during the interviews. We used this approach to capture the relapse process, find underlying themes and create conceptual codes and categories for further content analysis (see Table 1). At this stage we employed the software package QSR-Nvivo (QSR International Pty Ltd) for data coding and analysis. The categories were established after interactive reading and discussions between the authors. To study the reliability of the coding of the interviews, both the first and the second author individually coded a random selection of four interviews. Agreement was obtained after a discussion about discrepancies in the coding, and hereafter the first author coded the remaining ten interviews on her own.

Table 1. Example of the coding process

Quotations (Blocks of text)	Codes	Categories
I didn't have anywhere to live...I stayed at different people's places, in shelters, and just about anywhere... It was quite hard to fix everything every day, walking around on the streets made you physically worn out... It was hard to get out in the snowstorm at eight in the morning... I was pissed off, and fed up too, I was tired of running on the streets, so I set fire to a shelter, where I had been rejected previously.	Housing problems Physical deterioration Fatigue Anger Revenge Fire	The relapse process
I told them (mental health staff) that something would happen, after they had refused me getting visits...I think that the staff should take patients more seriously.	Lack of power Verbal threat Not believed	Direct risk communication

CASE-CROSSOVER DESIGN (PAPERS III & IV)

The case-crossover design, used in Papers III and IV, is a relatively new epidemiological design developed for the study of triggers of acute outcomes. The aim in Papers III and IV was to identify triggers of violence in mentally disordered offenders. Since the design has never been used previously in this field, this method's strengths and limitations will be outlined in more detail.

The case-crossover design tries to answer the question "Did something unusual happen before an event?" The method was developed in the early 1990s to investigate triggers of myocardial infarction (Maclure, 1991). Since then, the method has been applied in many areas for the study of triggers of acute events (Anderson, Mhurchu, Scott, Bennett, Jamrozik, & Hankey, 2003; Barbone, McMahon, Davey, Morris, Reid, McDevitt, & MacDonald, 1998; Brugal, Barrio, de la Fuente, Regidor, Royuela, & Suelves, 2002; Haegebaert, Duche, & Desenclos, 2003; for an overview see Möller, 2003). The design has several advantages. First, it may be used for both rare and common events, and when examining hazardous as well as protective exposures (Redelmeier & Tibishiani, 1997). Second, each individual serves as his or her own control, thereby eliminating so-called long-term within-individual confounding. Self-matching of individuals is a particular advantage when the choice of control group is not straightforward, and it efficiently eliminates the threat of control group selection bias (Maclure, 1991). In many areas, methodologically sound studies addressing causality have been difficult to carry out because of difficulties with controlling for long-term confounders. Given that violence usually is a result of complex interactions between static long-term and more acute risk factors, the case-crossover design may markedly usher research on triggers.

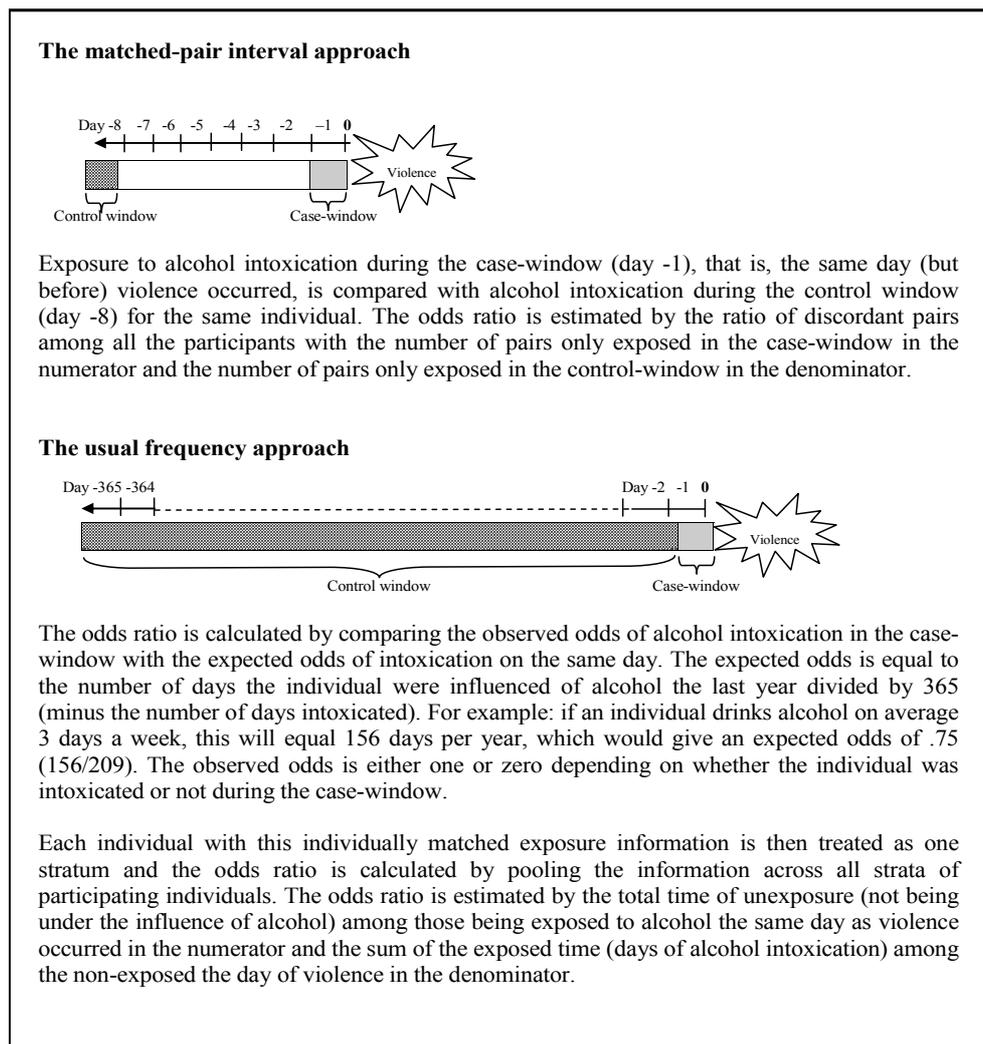
An individual at risk of committing violence may pass through many periods of excess risk without acting violently. The violence occurs at the confluence of additional risk factors/triggers. Epidemiologists define triggers as risk factors or exposures with acute and transient effects. "Acute" refers to having times from causal action until onset of outcome (induction times) of minutes, hours, or days (e.g. Maclure & Mittleman, 2000; Rothman & Greenland, 1998). The basis of the case-crossover method is to compare exposure during a control-window with the exposure during a case-window. Ordinary case-control studies use relative frequencies of exposures among control and cases, respectively, to calculate the effect of an exposure. In the case-crossover study, control information is provided by each individual, but at an event-free time-limited period before the index event. In other words, comparison is made within each case, between the frequency of exposure during a determined period prior to the event or disease of interest (referred to as case-window) with the frequency of exposure during another determined event-free period (referred to as control-window).

The length of the case-window is an arbitrary unit of observation usually based on the hazard-period (i.e. when a population experiences an increased risk of outcome caused by the trigger). Since little was known of the hazard-period for many of the exposures studied (especially in Paper IV where we studied psychiatric symptoms and interpersonal stressors) and some uncertainty of the quality of obtained data with respect

to exact time of exposure (due to high memory demands), the case-window was set to 24 hours for all exposures.

The most challenging part of the case-crossover design is to quantify the answer to the question “How unusual was the trigger?” This information must be obtained in the studied population both from individuals who experienced the trigger before the onset of violence (during the case-window) and from those not experiencing the exposure during the case-window. The control information can be derived in several ways by using either (1) the usual frequency approach, (2) the matched-pair interval approach, or (3) the multiple interval approach (Mittleman, Maclure, & Robins, 1995). The most commonly used approaches are (1) and (2). The difference between the two is that in the matched-pair interval approach exposure information during a specific time-period equally long as the determined case-window is used, while in the usual frequency approach one uses the expected odds of exposure based on exposure frequency during a longer time-period. For a schematic presentation of these control information approaches see Figure 3.

Figure 3. An illustration of the two main approaches to collect control information in the case-crossover design –the matched-pair interval and the usual frequency approaches.



Participants

Two groups of violent offenders were used in the study. The first included offenders undergoing a forensic psychiatric evaluation (FPE) at the Department of Forensic Psychiatry in Stockholm, Sweden, consecutively included from January 2002 to October 2003 ($n=113$). The second group consisted of convicted violent offenders ($n=20$) that underwent evaluation at the National Risk Assessment Unit at the Kumla high security prison, and were consecutively included during five occasions from September 2002 to April 2003. Male offenders sentenced to four years or more in prison undergo an evaluation at Kumla to determine the needs for security measures during imprisonment. We chose to collect information from these two different settings to be able to study triggers of violence among offenders with varying levels of psychiatric morbidity. Violent offenders were defined as individuals who had committed a delimited violent act (threat, assault, homicide, sexual offences, arson, robbery, abduction, serious violation of a woman's rights, or assaulting an officer; legal charges set by the court) at a known time up to six months before the invitation to participate. The study base of the offenders comprised the time of violence and one year before the violent event. For descriptive information on the participants ($n=133$) see Table 2.

Some differences between the two sub-samples were identified. Unemployment was more common in the Kumla sample than in the FPE sample (45% vs. 20%; $\chi^2=5.65$, $df=1$, $P=.02$), and as expected, personality disorder as principal diagnosis (65% vs. 12%; $\chi^2=29.07$, $df=1$, $P<.001$), or no diagnosis set at the time of evaluation (30% vs. 4%; $\chi^2=14.65$, $df=1$, $P<.001$). The participants from Kumla were also more often convicted of instrumental violence (i.e. robbery) (20% vs. 2%, $\chi^2=13.11$, $df=1$, $P<.001$), and more serious violent crimes (i.e. homicide and manslaughter) (45% vs. 21%, $\chi^2=5.14$, $df=1$, $P=.02$). As a consequence of this, victims and motives for offending appeared different across the two groups (see further Table 2).

A total of 173 individuals were initially eligible for participation in the forensic psychiatric group. Twenty-six individuals declined participation. Another 12 individuals with profound language problems that would have required a translator as well as 9 individuals with severely impaired mental status were excluded. Thirteen individuals were unavailable for interview before their transportation from the investigation unit due to lack of time or due to acute transports. Only one subject of the 21 originally approached in the Kumla group declined participation. The number of participants never approached in the Kumla group because of language problems is unknown. Comparison between participants and those declining participation in the forensic psychiatric group ($n=26$) showed a difference with respect to the principal psychiatric diagnosis assigned (according to the DSM-IV; American Psychiatric Association, 1994) at the forensic psychiatric investigation. There was a difference in the prevalence of personality disorder (12% in the participating group vs. 38% among those declining participation; $\chi^2 = 10.06$, $df=1$, $P<.005$) and substance use disorder (24% vs. 8%; $\chi^2 = 3.65$, $df=1$, $P = .05$).

Table 2. *Offender and offence characteristics for criminal violence committed by 133 offenders with varying levels of psychiatric morbidity undergoing a forensic psychiatric evaluation or a risk evaluation at a high security prison in Sweden 2002-2003.*

Variable	Setting	
	FPE n (%)	Kumla prison
Sex		
Male	98 (87)	20 (100)
Female	15 (13)	0 (0)
Mean Age	36 (SD 12)	32 (SD 10)
Ethnicity ^a		
Swedish	69 (61)	-
Other Nordic countries	10 (9)	-
Non-Nordic European countries	11 (10)	-
Non-European countries	23 (20)	-
Educational level		
Not completed primary school	12 (11)	2 (10)
Primary school	38 (34)	8 (40)
High school	27 (24)	2 (10)
Professional with specific education	21 (19)	7 (35)
University diploma	14 (12)	1 (5)
Occupation		
Part- or fulltime job	26 (23)	5 (25)
Sick-leave	23 (20)	2 (10)
Retired (incl disabled pension)	24 (21)	3 (15)
Unemployed	23 (20)	9 (45)
Student	7 (6)	1 (5)
Occupational training	4 (4)	0 (0)
Other types of occupation	6 (5)	0 (0)
Principal psychiatric diagnosis		
Personality disorder	14 (12)	13 (65)
Drug or alcohol use disorder	27 (24)	0 (0)
Adjustment disorder	16 (14)	0 (0)
Schizophrenia	11 (10)	0 (0)
Psychotic disorder other than schizophrenia	15 (13)	0 (0)
Pervasive developmental disorder	7 (6)	1 (5)
Mood disorders	6 (5)	0 (0)
Other diagnosis (pedophilia and pyromania)	12 (11)	0 (0)
No principal diagnosis assigned at time of evaluation	5 (4)	6 (30)
Legal conviction categories		
Assault	33 (29)	3 (15)
Homicide and manslaughter (incl attempts)	24 (21)	9 (45)
Arson	17 (15)	0 (0)
Sexual offence	11 (10)	3 (15)
Serious threats of violence	12 (11)	0 (0)
Serious violation of a woman's right	9 (8)	0 (0)
Robbery	2 (2)	4 (20)
Abduction	2 (2)	1 (5)
Assaulting an officer	3 (3)	0 (0)
Victim of index offence		
Partner or ex-partner	34 (30)	2 (10)
Acquaintance	24 (21)	9 (45)
Relative	20 (18)	0 (0)
Neighbour or landlord	8 (7)	0 (0)
Public servant	9 (8)	1 (5)
Stranger	14 (12)	8 (40)
Primary criminal motive		
Conflict	31 (27)	8 (40)
Provocation	14 (12)	2 (10)
"Cry for help"	12 (11)	0 (0)
Revenge	5 (4)	3 (15)
Self defence	5 (4)	3 (15)
Mental health problems	9 (8)	
Other motives than above	10 (9)	1 (5)
Denies legal charges or motive unknown	27 (24)	3 (15)

Note Table 2. a) Information of country of origin, used here as a proxy for ethnicity, was only possible to obtain from offenders undergoing a forensic psychiatric evaluation ($n=113$).

Procedure

The structured interviews took place at the Department of Forensic Psychiatry in Stockholm and the National Risk Assessment Unit at Kumla prison, respectively. A research assistant carried out the interviews after preparatory training consisting of 12 test interviews under guidance of the first author, where methodological and logistical problems were addressed and discussed before the data collection commenced. Neither the interviewer nor the interviewees were informed about the hypothesized induction times (i.e. the time between cause and effect) of the studied exposures. The interviewer was instructed to pay particular attention to and ask further questions in order to clarify exposure information if the interviewees were inconsistent in their responding or contradictory information was obtained during interview and/or from other sources (e.g. police reports and medical records).

The interview guide was based on the results from semi-structured interviews with repeatedly violent offenders as described in Paper II, an extensive literature search, and interviews with clinicians at the Forensic Psychiatric Evaluation unit in Stockholm. The structured interview covered offence-specific information, social situation at the time of the violent act, psychopathology at the time of investigation, and six domains of hypothesized triggers of violence; 1) psychotropic drugs (such as benzodiazepines, neuroleptics and antidepressants), 2) alcohol, 3) cannabis and other illegal substances, 4) lack of sleep (was not further analyzed due to poor interrater reliability), 5) psychiatric symptoms, and 6) stressful life events (such as current or recent conflicts/disputes, separations, economic and housing problems, and having been denied psychiatric care).

Exposure definitions

Substances (Paper III)

Alcohol intake was tapped with the question “Did you drink alcohol in the year before the violence (beer, wine or spirits)? Information on the latest episode of alcohol intake before the violence, the usual frequency of alcohol intake measured by number of days the year before the violence, and a day-to-day report of alcohol intake the week before the violent act was also collected.

When providing information on the usual frequency it may be easy to make estimations without taking into account periods of unexposure. Therefore, to control for possible overestimation of the usual frequency, we also asked whether there had been periods (measured by weeks) when the person had not been able to use alcohol (being incarcerated or taking disulfiram [Antabus®]).

Narcotics use was addressed with the question “Did you use any forms of narcotic substances in the year before the violent offence? Since the most common illegal drugs used in this population were cannabis, amphetamine and cocaine, detailed information about these substances was collected. We also had one open drug alternative where the informant could provide information of other substances not asked for previously. For each substance, information of the last intake before the violence, the usual frequency

of use, and questions concerning unusual dosage of intake (e.g. how much larger intake than usual, the last unusually high dosage before the violence, and the usual frequency of unusually high doses of the drug) were collected.

Medication use was operationalized as a positive response to the question “Did you use any medication during the year before the violent act?” After the informant had provided information about types of medications, specific follow-up questions about intake of neuroleptics, antidepressants and benzodiazepines were asked.

The purpose of collecting information about neuroleptics, where one cannot expect rapid changes of antipsychotic effects upon an altered (or omitted) dose, was to investigate the effect of (the absence of) its short-term sedative effects. Therefore, only specific information about neuroleptics taken daily (e.g. not by intramuscular injection) was attained. The exposure information about neuroleptics was assembled by asking how often the medicine was taken (per day or week), when taken the last time before the violent act, if it happened that the informant forgot to take the neuroleptic, how often it had happened that the person had forgotten taking his or her medication, and when it happened the last time.

Exposure information of benzodiazepines was covered by the following questions: “How often did you take benzodiazepines?”, “What was the name of the benzodiazepine?”, “When was the last time before violence that you took the medicine?”, and “For how long have you used the medication?” We also asked questions about unusually high doses of benzodiazepines (cf. with narcotics) and if the medication had been combined with alcohol intake within one hour (when was last time, and how often was the alcohol combined with benzodiazepines).

Information about the exposure of antidepressants was collected by asking about the type of intake, last intake before violence and length of exposure. We also asked questions of unusually high doses of antidepressant and the same questions followed for other unusually high doses of exposures.

Psychiatric symptoms (Paper IV)

Acute suicidal ideation/parasuicide was addressed with the following questions: “Have you had death wishes, suicidal thoughts or plans, or hurt yourself?”, “How often have you had these thoughts?” If the informant responded positively to if the thoughts or plans had become more acute, further questions about the last time it had happened, the usual frequency and the reason for the intensification were asked.

If the informant endorsed either of the following questions of psychiatric symptoms, additional information was obtained about the last time before the violent act that they had experienced the symptom and the usual frequency of such symptoms in the past year.

Delusions of grandeur were defined as a positive response to the question “Have you experienced special gifts or powers?”

Paranoid thoughts were identified by asking “Have you experienced that others deliberately are trying to hurt you or are plotting against you?” and the clinically experienced interviewer was instructed to evaluate whether positive responses were indeed delusional or not.

Hallucinations were defined as a positive response to “Have you had the experience of hearing things or voices, or seen things other people couldn’t hear or see?”

Violent ideation was addressed with the question “Have you had thoughts of hurting other people?”

Interpersonal stressors (Paper IV)

Conflicts were tapped with the question “Have you had any conflicts or disputes during the past year?” Information of up to four possible separate conflicts was collected. For each conflict, information of with whom the conflict had occurred, if this person was the victim of the index offence, what the conflict was about and if the conflict had become more acute. If the response to this last question was positive, more detailed information was collected about the last episode of conflict before the violence including the usual frequency of acute conflict, and the reason to why the conflict had become more acute.

Separations were defined as positive answers to the question “Have you experienced any separation due to deaths, divorces, arrests or other types of seclusions?” The number of separations in the last year was also assembled. Specific information of up to three separate events of separation was obtained. Information was acquired in relation to whom the separation took place, and if this person was the victim of the index crime. Each separation was also accompanied by a question of the subjective significance of the separation – rated on a three point scale where the numbers corresponded to: 1) partly serious 2) serious and 3) very serious. Information was collected about the last time before the violent act that the subject had experienced the separation and the usual frequency in the last year.

Being denied care was addressed with “Have you been denied sought care in the last year?” If the informant responded positively to the question, the type of care was asked for. Information of the last two occurrences as well as the usual frequency of being denied care was retrieved.

Housing problems were defined as specific problems related to housing, such as disturbances from neighbours and complaining neighbours. Questions of problems related to temporary housing (e.g. shelters) or total homelessness were also attained, but are not further reported in this thesis. If the informant had experienced such problems in the past year, the type and the last two occurrences were further penetrated, as well as the usual frequency of exposure.

STATISTICS

Case-crossover analyses (Papers III and IV)

The objective of most epidemiologic studies is to detect and estimate the strengths of associations between exposures and outcome (in our case violence). An effect is most commonly viewed as the change in frequency of disease in a population attributable to a specific exposure (Rothman & Greenland, 1998). The relative risk (RR) is an estimate used in cohort studies to measure the relationship between exposure and event. The RR is calculated by dividing the incidence among exposed individuals with the incidence among the unexposed.

$$\text{RR}_{\text{cohort}} = \text{incidence among exposed} / \text{incidence among unexposed}$$

The incidence rate ratio (interpreted as the relative risk) when using the usual frequency approach in the case-crossover design is estimated by the total time of unexposure among those exposed during the case-window divided by the total time of exposure among those not being exposed during the case-window (see also Figure 2).

$$\text{RR}_{\text{case-crossover}} = \text{sum of unexposed time among exposed in the case-window} / \text{sum of exposed time among unexposed in the case-window}$$

The Mantel-Haenszel estimate, recommended for calculations with sparse data (e.g. Maclure, 1991; Greenland & Robins, 1985), was used for calculations of the RRs for the studied exposures.

In the matched-pair analysis (only used when studying exposure of alcohol, Paper IV), the control-window is based on the same length of the time period as for the case-window. The approach of analysis is similar to standard method for matched case-control studies, but instead of comparing cases and controls one compares exposure during the case- and the control-windows. Odds ratios (ORs) are calculated by conditional logistic regression where each individual is treated as one stratum (Maclure, 1991; Rothman & Greenland, 1998).

Power analyses

Only half the sample size is needed in the case-crossover study as compared to the traditional case-control study (Maclure & Mittleman, 2000). This is so because there is no need for a control group, since each individual serves as his or her own control. Power analysis is possible if the researcher uses the matched-pair approach in case-crossover design (Anderson et al., 2003). However, there is still no known statistical method to perform a power analysis when using the usual frequency approach in the case-crossover design. Despite this, we performed a pilot study consisting of ten interviews to determine the frequency of the hypothesized triggers to estimate the sample size needed for the study.

Between groups analyses

The χ^2 -test is an approximation of differences of frequencies of categorical data across groups. In Papers III and IV we used the uncorrected χ^2 -test to investigate differences across groups - for example when examining possible differences in variable frequencies between participants and non-participants. Larger χ^2 values indicate lower agreement.

Interrater reliability

Interrater reliability should be established when some degree of interpretation of observations occur in a study (e.g. Gliner, Morgan, & Harmon, 2001) as in Papers III and IV. In order to test the reliability of the structured interview manual in the case-crossover study, 16 sit-in interviews with two raters were performed. Although one rater did the interviewing, both raters independently completed the scoring of each individual based on the interview data. We used two different measures to assess the agreement between raters after having completed the whole series – Cohen's κ for nominal data (answered with Yes, No, or data missing) (Cohen, 1960) and the Intraclass Correlation Coefficient (ICC) for continuous data (e.g. time from exposure to event) (Shrout & Fleiss, 1979).

The interrater reliability test for nominal data (i.e. for questions phrased as: “Have you combined alcohol intake with intake of benzodiazepines?”) yielded a mean Cohen's κ of .93, ranging from .67 to 1.00, for all exposures included in the study, which is judged to be “good” to “excellent” reliability according to prevailing interpretation standards (Cicchetti & Sparrow, 1981). The two-way Analysis of Variance (ANOVA), random model type ICC was used. The random model was used to permit generalization of the ICCs to other individual raters. The mean ICC for all exposures included in the study was .90, ranging from -.26 to 1.00. The variable rendering a negative ICC (lack of sleep) was not analyzed further due to the poor observed interrater reliability.

METHODOLOGICAL DEVELOPMENT (PAPER V)

To develop a model for structured outcome and community risk monitoring (SORM) we formed a team in 1999 consisting of researchers and clinicians with divergent educational backgrounds and expertise. On the basis of eleven in-depth interviews with former forensic psychiatric patients (described in more detail elsewhere; Ståhle, Grann, Woodhouse, Löfvström, Siverson, & Sturidsson, 2001), we discussed “outcome” from different perspectives. Outcome was divided into three levels; the macro level (i.e. societal economical costs such as hospitalisation, financial and aftercare support, and criminal recidivism), the intermediate level (i.e. social situation and mental health aspects), and the micro level (i.e. the former patient's own perception of his or her quality of life and health). The criterion variables in term of risk assessment and risk management were violence, other criminal acts, and high-risk situations (where the violence risk was imminent, but violence did not occur).

These areas of outcome were transformed into a manual. The final version of the manual eventually consisted of 30 items. The number of variables chosen for the

manual was a compromise between the applicability of the manual and comprehensive inclusion of variables thought to be of importance. This manual, named Structured Outcome Assessment and Community Monitoring, SORM, was a product of discussions within the research team, as well as with the clinicians that ultimately used the manual in the COMET project (COMET is an acronym for Contextual factors that mediate violence risk). COMET is a multi-centre study where 100 forensic psychiatric patients are followed from release from forensic hospital and into the community and where the SORM is being administered every 30 days for two years (for further description of the COMET study, see Sturidsson, 2004).

ETHICAL CONSIDERATIONS

The collection of sensitive information either by face-to-face interviews, from registers or forensic psychiatric evaluation protocols, is a potential violation of a person's integrity. The potential harm to the individual should be weighted against the importance and usefulness of new knowledge. After cost-benefit analyses, we concluded that the increased knowledge on risk and protective factors of violence outweighed the potential harm to personal integrity. The Research Ethics Committees agreed with our assessment (see below).

Perhaps the most delicate ethical analysis in this thesis had to be done for the first study (Paper I). In this study, we used information from a cohort of personality disordered offenders who had previously undergone an FPE, to identify a purposeful sample with respect to individuals with unexpectedly positive outcomes and interviewed them. As is almost always the practice with larger-scale register-based studies, these individuals had not consented to participate in the original study. The decision to not obtain informed consent from each individual included in the original cohort study was following the reasoning: That the gains in terms of increased knowledge would outbalance potential harm, that contacting the individuals for consent would in itself be a violation of their integrity, and that the data would be presented in such a way that identification of a single individual would be impossible. However, when using these data to identify the individuals of interest, and to contact them at a later unknown phase in their lives, it was of utmost importance to minimize potential harm. The least intrusive approach was judged to be to contact them by mail (with a description of the study), where they with minimal effort could decline further contact by returning a preprinted note in a prepaid-postage envelope. If they did not return this letter, they were contacted by telephone and asked if they were interested in being interviewed. Initially, all six subjects were positive to participation, but two declined participation before the interviews had been carried out.

Written and verbal informed consent was obtained for all studies. In cases where we interviewed the individuals when they were undergoing an FPE, were receiving compulsory forensic psychiatric care, or were serving a prison sentence, we clearly stated that participation or non-participation would not in any way affect their present situation in terms of treatment or medico-legal status, and that information from the interviews would be kept confidential. This was especially important in the case-

crossover study considering that the subjects would provide us with information about the circumstances of a violent offence that in some cases they had not confessed to.

It was equally important to only reveal limited information from the interviews, so that readers could not identify any of the informants. Therefore, more detailed information about the crimes or their living conditions was avoided when reporting on the studies, and information was to some extent deliberately distorted to prevent the potential identification of individuals.

All studies included in this thesis were approved by research ethics committees. The cohort study, included in a larger research project used to identify potential informants for Paper I, was approved by the Research Ethics Committee of the Medical Faculty at the University of Umeå (#95-096 and #95-211) and the interview part was approved by the Research Ethics Committee at Huddinge University Hospital (#443-98). The interview study focusing on the violence relapse process (Paper II), as well as the case-crossover study (Paper III and IV) were approved by the same committee (# 23/01 and # 95/02, respectively). The methodological paper (Paper V) was approved by the Regional Research Ethics Committee at Karolinska Institutet (# 99-416).

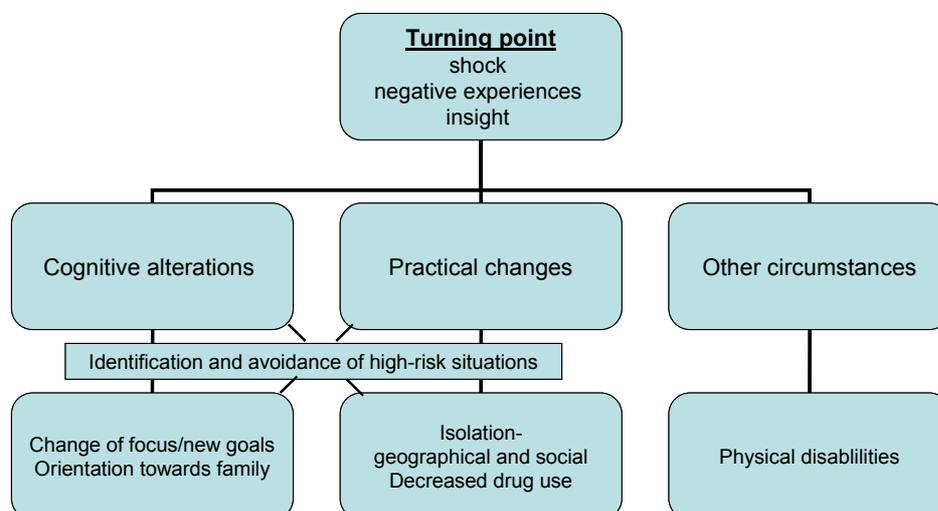
RESULTS

AGAINST ALL ODDS (PAPER I)

The aim of Paper I was to explore extreme and unexpected positive outcomes for the purpose of describing the desistance process and to identify potential protective factors for violence among mentally disordered offenders.

The four participants identified as having unexpectedly positive outcomes lived in rural areas or in smaller cities in Sweden. Even though these four men had not been convicted of new offences (according to the National Crime Register) two reported non-registered minor criminality several years back in time, and one stated that he had re-established the criminal career after many years of leading a non-criminal lifestyle. The desistance process was reported to be a result of a conscious decision to end the criminal career, which was in turn triggered by an experience of shock related to the criminal lifestyle. Insight of the negative consequences of the criminal lifestyle was perceived as an important keystone for success with desistance from criminality. One of the participants claimed that the understanding and trust of a psychiatrist and medication made him able not to recidivate into sexual offending. However, for all four the insight and the decision to stop offending was only the beginning of a long pathway to actual alterations in behaviour. To succeed in the desistance from persistent and severe criminal behaviour, self-imposed restraints and social avoidance strategies were necessary. All but one (the informant who had re-established a criminal career) led an isolated way of life, both socially and geographically. However, their families were important in their socially circumscribed lives. To cut down on consumption or stop abusing alcohol or drugs were also important steps to succeed with desistance. An observation made during the interviews, although not mentioned by the informants, was that two of the men were physically disabled. The model below (Figure 4) tries to illustrate the desistance process in a simplified way.

Figure 4. A schematic illustration of the desistance process in a group of mentally disordered offenders with persistent and severe criminal behaviour.



The present lives of these men, who had “against all odds” ended a criminal career, were highly influenced by their fear of not being able to handle different situations and of how others would react if they knew about their past. Their new life demanded substantial effort by being proactive in identifying possible risk situations and avoiding these.

THE VIOLENCE RELAPSE PROCESS (PAPER II)

The aim of Paper II was threefold: to reconstruct the violence relapse process, to identify high-risk situations as well as communication of violence risk among mentally disordered offenders. Fourteen violent offenders who had relapsed into violent acts were interviewed.

The informants perceived and described their relapses into violence as a series of negative events or a process that directly or indirectly had contributed to the negative outcome. This process was specific for each individual and could differ substantially from one person to the other.

In this study, it seemed as if circumstances described as environmental factors, such as living conditions (i.e. homelessness and compulsory treatment), functioned as antecedents, that is, conditions with a seemingly more distal temporal relationship to the violent act. Circumstances that referred to intra-personal effects of such conditions, such as stress, lack of sleep, and strong emotional states, seemed to have the capacity to work as triggers, that is, risk factors more proximal to the violent act. However, there did not seem to be any clear boundaries between antecedents and triggers.

We could identify several differences related to the violence relapse process among individuals treated in forensic psychiatric inpatient settings when compared to those who recidivated violently in the community. For one, the chain of events leading to violence seemed shorter (on average five weeks) and consisted of fewer circumstances in the inpatient group than in the community group. The relapse process in the community group consisted of several steps and went on during an average of approximately one year. Further, the antecedents of violence seemed more heterogeneous than the triggers across the two groups. Separations, drug problems and homelessness seemed to be important antecedents in the community group, whilst factors related to the compulsory treatment such as feelings of powerlessness, seclusions, involuntary medication and crowding, were commonly mentioned in the inpatient group.

All but one of the informants stated that they had communicated risk (verbally or non-verbally) to others, mostly professionals (such as police officers, mental health professionals or social workers). However, the alleged communication could be presented in virtually any form (direct and indirect verbal communication, direct non-verbal communication such as aggressive behaviours, loud voices). Direct or indirect verbal communication was most common, and consisted of wordings indicating that something would happen if the situation did not change. These messages were in

several cases directed at professionals within agencies that did not have the commission to influence the individual's living conditions. The informants felt disappointed that their communication were not listened to, or did not have the intended effect.

TRIGGERS OF VIOLENCE (PAPERS III & IV)

The aim of Papers III and IV was to identify triggers of violence among offenders with varying levels of psychiatric morbidity by using an epidemiological research design in which each subject serve as his or her own control. One-hundred-and-thirty-three ($n=133$) violent offenders from two different settings – the Kumla prison and the FPE unit in Stockholm – were interviewed with respect to a variety of exposures.

We tried to investigate the independent effect of each exposure by stratifying the analyses. However, this was only possible for a few of the exposures studied given the low base rates of the studied exposures during the case-window. In Paper III, we only stratified the analysis with respect to other substances, and in Paper IV we did only stratify with respect to identified triggering substances (alcohol, unusually high doses of benzodiazepines, and alcohol in combination with benzodiazepines). However, the stratifications made were not optimal since the usual frequency was not collected for the combination of the different exposures (see also limitations). Further, we analyzed the risk effects in two different groups; the Kumla sample and the FPE sample. However, since the Kumla sample was small, these analyses could only be used to see whether the estimates pointed in the same direction, which it seemed to do for substances, psychiatric symptoms (when exposed), and interpersonal stressors (data not shown).

The results are presented as relative risks. The number of exposed individuals during the 24 hours before the violent act and the risk estimates are presented in Table 3.

Substances

Eighty-nine percent of the participants reported alcohol consumption during the past year (i.e. the control-window) and 58% had been drinking alcohol within 24 hours before the violent act (i.e. during the case-window). Alcohol provided a 13.2-fold increase of risk of violence (95% CI; 8.2-21.2). Even when we excluded individuals who had combined alcohol with benzodiazepines (11.4, 95% CI; 7.2-18.1) and other tested substances (13.6, 95% CI; 7.6-24.2), the risk remained high. This increase in violence risk was similar among individuals combining alcohol with benzodiazepines (13.2, 95% CI; 4.9-35.3).

Thirty-four percent reported use of benzodiazepines in the past year. Use of benzodiazepines in regular doses (not necessarily the prescribed dose) lowered the risk for violence (0.6, 95% CI; 0.4-0.9), even when controlling for other substances (0.4, 95% CI; 0.2-0.5). Twenty six percent had been exposed to antidepressants (SSRIs or tricyclics) and the use of antidepressants (0.4, 95% CI; 0.3-0.8) was associated with lowered risk for violence. However, an unusually high dose (compared to their regular dose) of benzodiazepines, which 20% of the participants reported that they had taken the past year, increased the risk of violence (7.0, 95% CI; 3.8-13.2). To miss taking the

regular dose of neuroleptics, and thereby not being exposed to the sedative effect of neuroleptics, did also increase the risk of violence during the following 24 hours (6.1, 95% CI; 2.8-13.2).

Cannabis had been used by 18% of the participants the past year. The effect of cannabis appeared different depending on varying doses. Cannabis in regular doses did not seem to trigger violence (0.9, 95% CI; 0.4-1.8), whilst non-significant effects suggested that unusually high doses of cannabis increased the risk of violence (6.4, 95% CI; 0.9-44.6). Twenty six percent of the participants reported that they had taken amphetamine the past year, and non-significant effects suggested that both regular doses (1.7, 95% CI; 0.8-3.6), and unusually high dose (3.0, 95% CI; 0.8-11.7) increased the risk of acting violently within 24 hours of exposure.

Psychiatric symptoms

More than one fourth of the participants (26%) reported exposure to acute suicidal ideation/parasuicide during the past year. Acute suicidal ideation/parasuicide within 24 hours before the violent act rendered a 9.4 fold risk increase (95% CI; 5.4-16.4). The effect even increased when controlling for triggering substances identified in Paper III (12.5, 95% CI; 5.7-24.4). Hallucinations, which 24% had experienced in the past year, yielded a fourfold increase of violence risk (4.2, 95% CI; 1.6-11.3). The risk related to delusions of grandeur was not possible to calculate since those exposed had been exposed all the time during the past year.

In contrast to the symptoms mentioned above, neither violent ideation nor paranoid thoughts seemed to act as triggers of violence among offenders with varying levels of psychiatric morbidity. Twenty-three percent reported having had thoughts of harming others the past year, and the risk effect of violent ideation was 1.0 (95% CI; 0.4-2.6). Having paranoid thoughts the past year were reported by 44%, but did only provide a small but statistically non-significant risk increase when experienced within 24 hours before the violent act (1.4, 95% CI, 0.7-2.8). However, the risk effect of paranoid thoughts increased when focusing specifically on those diagnosed with severe mental disorders (psychotic states, schizophrenia and bipolar disorder) (3.6, 95% CI; 1.2-11.0).

Interpersonal stressors

Approximately two thirds (68%) of the subjects reported having had interpersonal conflicts that had become acute in the past year. Acute conflicts (with others than the victim[s] of the violent act) increased the risk of acting violently within 24 hours (5.0, 95% CI; 2.6-9.8). The risk effect remained even after controlling for triggering substances (5.9, 95% CI; 1.9-18.3). Non-significant risk increases suggested that separations and housing problems may have a triggering effect on violence (4.7, 95% CI; 0.7-33.5 and 1.7, 95% CI; 0.2-13.0, respectively). Twenty-seven percent reported that they had experienced separations and 25% housing problems in the past year.

Twenty-six percent of the offenders stated that they had sought, but been denied, psychiatric care in the past year. Being denied psychiatric care significantly increased the risk of acting violently within 24 hours (4.7, 95% CI; 1.2-19.6).

Table 3. Case-crossover analysis of the risk of violent offending as a function of exposure to substances, psychiatric symptoms and interpersonal stressors among 133 offenders.

Exposure	No. exposed past 24 hrs	Relative risk (95% CI)
<i>Substances</i>		
Alcohol	78	13.2 (8.2-21.2)
Excluding participants combining alcohol and benzodiazepine(s)	64	11.4 (7.2-18.1)
Excluding participants exposed to any of the substances listed below	43	13.6 (7.6-24.2)
Alcohol and benzodiazepine(s)	14	13.2 (4.9-35.3)
Benzodiazepine(s), regular dose	29	0.6 (0.4-0.9)
Excluding participants combining alcohol and benzodiazepine(s)	15	0.4 (0.2-0.5)
Benzodiazepine(s), high dose	10	7.0 (3.8-13.2)
Cannabis, regular dose	7	0.9 (0.4-1.8)
Cannabis, high dose	1	6.4 (0.9-44.6)
Amphetamine, regular dose	11	1.7 (0.8-3.6)
Amphetamine, high dose	2	3.0 (0.8-11.7)
Antidepressant (SSRI or tricyclic)	21	0.5 (0.3-0.8)
SSRI only	14	0.6 (0.3-1.1)
Neuroleptic (typical or atypical)	12	*
Missed neuroleptic	6	6.1 (2.8-13.2)
<i>Psychiatric symptoms</i>		
Suicidal ideation/parasuicide	15	9.4 (5.4-16.4)
Excluding participants exposed to substances	7	12.5 (5.7-27.4)
Delusions of grandeur	4	*
Paranoid thoughts	26	1.4 (0.7-2.8)
Excluding participants exposed to substances	12	1.3 (0.5-3.7)
Hallucinations	12	4.2 (1.6-11.3)
Excluding participants exposed to substances	6	3.0 (0.4-21.3)
Violent ideation	8	1.0 (0.4-2.6)
<i>Interpersonal stressors</i>		
Acute conflicts	11	5.0 (2.6-9.8)
Excluding participants exposed to substances	5	5.9 (1.9-18.3)
Separations	1	4.7 (0.7-33.35)
Being denied psychiatric care	2	4.7 (1.2-19.6)
Housing problems	3	1.7 (0.2-13.0)

Note Table 3: The relative risk of violence was based on exposure to each tested psychiatric symptom or interpersonal stressor within 24 hours before the violent offence (hazard-period) compared to the usual frequency of exposure during the previous year. Stratified substances were alcohol, unusually high doses of benzodiazepines, and alcohol in combination with benzodiazepines. Those exposed to delusions within the hazard-period were also exposed the entire past year, so periods of exposure could not be compared with periods of unexposure and no risk estimate be calculated.

To illustrate some of the complexity with long-term risk factors and various combinations of triggers of violence we provide three case vignettes below.

- A 48-year-old married man who had recently changed workplaces, had forced his stepdaughter to oral intercourse. The man's own motive for the sexual offence was that he felt bad and that it was an act to get help. At the time of the FPE he was diagnosed with maladaptive stress syndrome and personality disorder NOS, with phobic, paranoid, and compulsive features. Before the offence, he had masturbated repeatedly during several months in the stepdaughter's room while she was sleeping. During the last year he had had several conflicts with his wife and work colleagues. At the time of the index crime he felt stressed and worried, and had sleeping problems, but did not feel comfortable to seek professional help. The day before the crime he reported that he had had acute suicidal thoughts, like he had approximately once every second week during the past year, and had also experienced hallucinations (the usual frequency of experiencing hallucinations during the past year was 90 days).
- A single 23-year-old man on temporary leave from a civil psychiatric ward, where he had been treated for schizophrenia since five months, set fire in the hallway of an apartment after being rejected from a party held there. The motive was revenge for being denied to participate, but also to test his delusional thoughts of being in a fake world. If no-one was hurt in the fire, he argued, that would be a proof of his delusional world. However, one person was killed and two were seriously injured in the arson. At the FPE he was diagnosed with schizophrenia, cannabis dependence, and amphetamine abuse. The day of the index crime, he had not taken his neuroleptic (which had happened once before in the past year), and he had been drinking alcohol (which he had done four times during the past year) and taken amphetamine (never exposed previously) the same night. At the time of violence he experienced delusions (which he had experienced four times during the past year).
- A 28-year-old unemployed man kicked and hit his mother and brother in their home. His explanation for the crime was that he suffered from paranoid delusions that made him aggressive. The diagnoses assigned at the FPE were delusional disorder, alcohol abuse and paranoid personality disorder. His girlfriend, with whom he had lived, had broken up with him two months earlier, after he had accused her of being unfaithful. The separation led to temporary homelessness. He also felt that his mother opposed him. The last year he had constantly suffered from paranoid thoughts and thoughts of harming others. On the day of the index crime he drank alcohol that, according to him, increased his paranoid thoughts. The past year he had consumed alcohol once a month.

THE SORM (PAPER V)

The aim with Paper V was to create a standardized measure of outcome for offenders released into the community from inpatient forensic psychiatry, to provide means to monitor violence risk and evaluate and compare services.

The Structured Outcome and Community Risk Monitoring, SORM, consists of 30 items divided into six domains; current services and interventions (i.e. detention and correctional treatment, psychiatric inpatient treatment, professional support and contacts, somatic health care, occupational training and employment services), social situation (i.e. lack of housing, economy, work, leisure, daily functioning), social network (i.e. family, partner, children, friends), clinical factors (i.e. lack of insight, mood symptoms, anxiety symptoms, psychotic symptoms, instability, suicidal ideation and suicide attempts, homicidal thoughts, lack of treatment motivation, pharmacological treatment, substance abuse), subjective ratings (i.e. health, quality of life, risk of violence), and the criterion variables (i.e. violent acts, other criminal acts, risk situations).

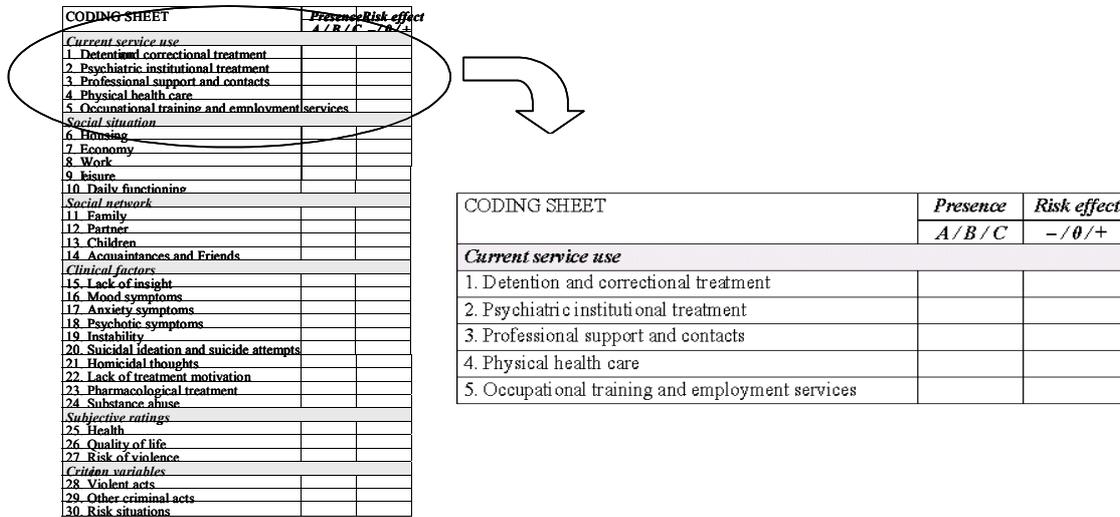
The rating procedure in the SORM consists of two parts; one part assesses the absence or presence of individual items, the other consists of clinician ratings of the risk effect of each item for a specific individual at that time and in that specific context.

The presence or absence of an item is expressed by “No”, “A”, “B”; “C” or “D”, where “No” to denote absence of the circumstances. Each letter stands for different degrees or types of the circumstances. “A” usually denotes presence to a degree, and “C” or “D” usually denotes a low degree of presence. For example, for #3 Professional support and contacts, the clinician should rate it A if “the individual has had an intensive and regular contact, once a week or more”, B if “the individual has had planned contacts, but not as often as once a week” or a C if “the individual has had unplanned or sporadic contacts, for example support during crises, or contacts initiated because of temporary custody or reports against the individual”.

The “risk effect” part (the right hand column of the coding sheet, see Figure 5) is rated differently depending on the purpose of using the SORM; for outcome evaluation or for risk monitoring. This rating is of subjective quality to the individual rater, meaning that no item-specific criteria apply only general coding instructions. For risk monitoring purposes a “+” means that the presence or the absence of an item is believed to increase the risk of recidivism, a “-” that the circumstance is believed to lower the risk, and “0” means that the circumstance does not effect the risk of recidivism. For outcome evaluation purposes these figures are related to improvement, no change, or deterioration of circumstances since the individual entered treatment.

An ideographical module is attached to each item, where the rater is requested to describe in free-text the individual’s specific situation, and to explain the rationale behind the risk effect ratings. To rationalize the rating procedure an interview guide (SORM Interview Guide; Hiscoke, Haggård, & Grann, 2000), and decision trees for coding risk effects were developed.

Figure 5. The Structured Outcome Assessment and Community Risk Monitoring, SORM, coding sheet.



DISCUSSION

The World Health Organization suggested that assessments of risk for disease, including violence, should include a range of protective and risk factors (World Health Report, 2002). However, violence risk assessment instruments provided today are mostly focused on static or historical risk factors, providing little opportunity for clinicians to affect risk factor profiles to decrease violence risk. Only seldom, if ever, is protective factors and acute risk factors (triggers) included in these instruments. Risk communication, in the sense that the violent individual directly or indirectly communicates to mental health professionals or others that something negative was about to happen, is not thoroughly researched within the violence prevention field. In other areas such as suicide prevention, risk communication is a well-established method to detect risks of suicidal behaviour (e.g. Gould & Kramer, 2001; Hultén & Wasserman, 1998; Runeson, Beskow, & Waern, 1996). This thesis points to aspects of clinical violence prevention that may warrant a broadening of the scope of risk assessment.

The first two studies of this thesis took starting points in so-called false positive and false negatives. With the simplistic 4-fold table conceptualisation of violence risk assessment, these are the cases for which clinical judgement or “instruments” predicted that the outcome would be unsuccessful, but follow-up indicated they were not; and conversely, those predicted not to fail during follow-up but who did, respectively. The first two studies set out to qualitatively analyse cases in which predictions failed. Paper I was conducted in an attempt to advance our understanding of the criminal desistance process and to identify protective factors for violence. Paper II was set out to more closely study the violence relapse process in terms of identifying high-risk situations, and whether and how the informants themselves communicated risk in any way.

In the first study we identified unexpected positive outcomes by using a follow-up study including 401 violent and personality disordered offenders who at baseline underwent an FPE. These offenders had been forensically evaluated during the late 1980s and were then followed up. We assumed that by exploring unexpected outcomes, we could increase knowledge about protective factors for violence and a deeper understanding of desistance. Cusson and Pinsonneault (1986, p 15) stated that “Interviews with ex-offenders are essential if we are to understand the decision-making process that puts an end to a criminal career. Very few researchers have done this, and understandably so. It is not easy to trace, contact, and interview ex-prisoners who have been out of the system for several years”. Nonetheless, we succeeded in identifying and interviewing four individuals presenting with unexpected positive outcomes in terms of ending a criminal and violent career, and potential protective factors were identified. These informants had stopped their criminal career at an age at which chronic offenders usually have their most persistent criminal period, between the ages of 30 to 42 (Blumstein, Cohen, & Hsieh, 1982) and it is possible that the “natural” desistance process with aging was accelerated by shocking experiences related to their criminal lifestyle. According to the informants, the desistance process was based on a decision to terminate the criminal career, which is consistent with findings from previous similar studies (Cromwell,

Olson, & Avary, 1993; Cusson & Pinsonneault, 1986, Hughes, 1998; Sommers, Baskin, & Fagan, 1993).

However, this decision alone was not enough to successfully end a long criminal career. In agreement with other studies of desistance we identified stable relationships, care of children and decreased alcohol and substance use as protective factors (Hughes, 1998; Kerner, Weitekamp, Stelly, & Thomas, 1997; Laub, Nagin, & Sampson, 1998). However, some of the findings in this study were unexpected. A common perception among clinicians is that employment and social network is “good” and social isolation is “bad”. This may very well be a correct assumption “on average”. (empirical support for this assumption include e. g. Sampson & Laub, 1993; Sommers et al., 1993). However, for the four interviewees in Paper I, isolation both geographically and socially appeared to be a fruitful step to desist from a criminal career among these high-risk violent offenders. This would imply that the persistent violent offenders who successfully desisted minimised the opportunity structure, in terms of exposure to potential victims and risk situations, with geographical isolation.

Paper I findings confirmed that desistance from criminal careers is an individual process, and that, obviously, there is no single description of the desistance process. Protective factors (as well as risk factors) identified from larger-scale general offender group samples do not necessarily apply to certain offender subgroups. The high-risk violent offenders who had “against all odds” ended their criminal career recognized the importance of professionals providing long-term support and supervision. Professionals working with offenders have an important mission in helping the latter to succeed in their desistance. Offenders often lack adequate coping strategies, and hence, experience problems in handling everyday stressors, such as economic problems and conflicts with others (e.g. Zamble & Quinsey, 1997). Indeed, interpersonal stressors (in particular acute conflicts) were quantitatively confirmed to act as triggers of violence in Paper IV.

In Paper III, we investigated triggers of violence, but did unexpectedly find two potential inhibitors of violence as well. Benzodiazepines and antidepressants (both tricyclics and SSRIs) seemed to act as inhibitors of violence in the studied group. In clinical settings, benzodiazepines have been used as an aggression inhibitor (Citrome & Wolavka, 1997; Currier & Simpson, 2001; Wistedt, Helldin, Omerov, & Palmstierna, 1994). However, it should be noted that the effects of these substances in Paper IV could not be isolated from the possible effects of other concomitantly taken substances due to the low base rates. Considering that unusually high doses of benzodiazepines may increase the risk of violence, this class of substance should also in the future be used with caution in the management of violent offenders. However, this finding was particularly interesting given the vivid debate of the potential negative effects of benzodiazepines, especially flunitrazepam (a benzodiazepine derivate), and its suggested relationship to aggressive acts (Dåderman, 2000). Antidepressants have been suggested to act as a trigger of violence (see Walsh & Dinan, 2001), whilst the results of our study, in agreement with the growing body of research of the effects of antidepressants, supports an inhibitory effect on violence (Brieden, Ujeyl, & Naber, 2002; Lavine, 1997). However, it should be recognized that there is an ongoing debate of the risk of suicide and suicide attempts in young men when taking antidepressants (e.g. Fergusson, Coucette, Glass, Shapiro, Healy, Hebert, & Hutton, 2005; Teicher,

Glod, & Cole, 1990), in particular when taking an overdose of this medication and/or combining it with other drugs (Cheeta, Schifano, Oyefeso, Webb, & Ghodse, 2004).

Nevertheless, the violence-inhibitory short-term effect observed in Paper III needs to be replicated in new samples and/or other settings to increase generalisability, and in larger samples in order to provide means for delineating the separate effect of these substances.

Several potential triggers were identified in Papers II, III and IV, which may be addressed in the management of violence-prone individuals. Alcohol, with or without simultaneous intake of benzodiazepines or other substances, strongly triggered criminal violence. This suggests that interventions aiming at decreasing alcohol consumption constitute could reduce violence. Psychiatric symptoms that may be of importance in the monitoring and treatment of violence-prone individuals were suicide ideation or suicidal acts, hallucinations, and among those suffering from a major mental disorder also paranoid thoughts. We also found an increased risk the following 24 hours among those who forgot or skipped taking their prescribed dose of neuroleptics. This finding may be accounted for by absence of the sedative effects of the drug, but alternative explanations, such as mental distress leading to absent-mindedness (and forgetting to take the medicine) may also account for the finding. Other triggers identified in the qualitative study (Paper II), such as sleep deprivation, feelings of distress, and strong emotional states, were not possible to examine further in the present retrospective case-crossover study (Papers III and IV).

Interestingly, in the violence relapse study (Paper II) almost all subjects claimed having communicated violence risk, in the sense that they directly or indirectly mentioned to mental health professionals that they had a feeling that something was going in the wrong direction or that something bad could happen in the near future. They also reported they were not taken seriously, that communication was directed to the “incorrect” agencies, or they felt that the response was not relevant to the situation. We found that violence itself could at times be a way of communicating. This finding agrees with results from other studies (Arnetz & Arnetz, 2001; Drinkwater & Gudjonsson, 1989). In the study of triggers (Papers III & IV), 11% ($n=12$) of the participants in the FPE sample reported that the violence committed was a “cry for help” and an additional 8% ($n=9$) reported that their mental health condition was the motive or cause for acting violently. Interestingly, none of the participants from the Kumla high security prison, with lower prevalence of severe psychiatric morbidity, reported these criminal motives. This may suggest that communication problems in particular among offenders with more accentuated psychiatric symptoms (i.e. psychotic disorders) can cause violent offending. In one study, communication problems among mentally disordered inpatients were linked to one fourth of all violent acts in a Norwegian psychiatric special secure unit (Bjørkly, 1999).

There have been several highly publicised cases in Sweden (see Background), in some of which it has been speculated that desperation was the motive for acting violently. One of these reports was about a man, who with the help of the police, had been taken to a centre for substance abusers to seek admission for his mental health condition. The clinic did not have the possibility to see him without a pre-booked appointment. Instead

he was requested to seek help at the psychiatric emergency room of the nearest hospital. After receiving this message he left and later, with an iron spit which he found on the way, killed one and severely hurt several others.

This vignette may illustrate two intervention points. First, mental health professionals may not properly interpret communication of risk and based on that communication evaluate risk of violence among clients who seek help. Secondly, there may be a lack of skills and flexibility within different mental health agencies to manage violent-prone individuals who seek care and direct them more actively to the “right” agencies. With our current psychiatric services, it seems as if the responsibility of formulating the problems and identifying the “right” care provider lies with the patient (see also Fries & Milton, 2005). Not all individuals have this ability, nor do they have family or relatives that can help.

Improving knowledge about detecting warning signs and increasing our preparedness to understand communication of risk among mentally disordered individuals, and either providing or actively referring for care, may be one way that might prevent violent acts committed out of desperation for not getting the help. However, it is a delicate balance between complying with the needs of a person who uses violence threats as a mode of communicating distress and to get attention, and not reinforcing this type of potentially manipulative communication. On the other hand, not acting on acute threats of violence towards others should by analogy be equated with ignoring acute suicidal threats. Somehow it seems as if, at least in Sweden, in clinical psychiatric practice there is a difference between how threats to others and threats to oneself are perceived. Whereas suicide risks are an undisputed responsibility of psychiatrists and are seriously and promptly responded to, threats to others in the community is not necessarily taken seriously and is not necessarily regarded a task for psychiatrists or other mental health professionals.

It should be further noted that a growing number of individuals are likely to be denied admission as a consequence of declined resources for psychiatric services. We found (Paper IV) that being sent home when seeking psychiatric care did indeed increase the risk four-fold of acting violently within 24 hours. However, we do not know if the rejection *per se* triggered the violent behaviour, or if the lack of a potentially protective custody was the causal factor.

Despite limitations of this thesis’ studies (see below), they do clearly point to the need to broaden the conceptualisation of clinical risk assessment procedures. These procedures should aid clinicians to improve risk analyses to better *prevent* violence, not just predict them. Most of the risk assessment instruments available today, for example the HCR-20 (Webster et al., 1997), VRAG (Quinsey, Harris, Rice, & Cormier, 1998), and the MacArthur ICT (Banks, Robbins, Silver, Vesselinov, Steadman, Monahan et al., 2004) tend to focus only on prediction. That is, these instruments are meant to help clinicians to determine in which patients extra attention should be paid to violence risk management, but give no information of *how* to manage or reduce risk. Another weakness is that they only identify risk factors and not protective factors, and fail to recognise that a risk factor in one individual might not necessarily be a risk factor of another, but might even be a protective factor. An “expanded” risk analysis should

include: 1) Risk- and protective factors of violence that are unique for the specific individual; 2) Identification of high-risk situations (scenarios) and ideographical accounts of combinations of individual-specific circumstances as an integrated component of relapse prevention (such methods have been successfully used in the treatment of substance abusers and sex offenders; see e.g. Price, 1999); and 3) Risk communication patterns, which may be another way to improve the detection of violence risk.

The SORM assessment scheme (Paper V) may be functional as a comprehensive tool in monitoring changes in risk of serious criminal offending among forensic mental health patients released into the community, or among correctional clients put on probation. For example, in the supervision of offenders the SORM may be used to structure the monitoring of potential downward trends and to elucidate critical risk factors. This, together with the expanded risk analysis, may help the clinicians or supervisors in formulating the clients' needs for interventions or to support their decision to use preventive measures. The measures needed to be undertaken may range from minor, such as additional supportive telephone calls, to more extreme and invasive efforts, ultimately even including involuntarily returning the patient to a secure hospital.

Further, by using the SORM as an instrument for outcome assessment in forensic mental health patients, and by using it continuously during after-care, an increased knowledge of dynamic risk and protective factors unique to that person may be obtained. In an ongoing follow-up study, the COMET project, the relationship between contextual and dynamic risk factors and violence among forensic mental health patients is being examined. The results may yield further support for clinically relevant factors for reoffending that are to be addressed in prevention or treatment.

LIMITATIONS

Qualitative methods, such as interview studies, are usually carried out to provide in-depth and interpretative understanding of the social world. Since most qualitative research involves unknown elements the qualitative research strategies need to be flexible and iterative (Ritchie & Lewis, 2003). However, there are several steps in the qualitative process that may affect and limit the present findings.

One such caveat is the sampling strategy. In Paper I we used a quantitative method to identify a group of individuals with unexpected positive outcomes (so-called purposeful sampling; Ritchie, Lewis, & Elam, 2003). We did not know at the time of the interview if the informants were "true" positive outcomes, or just an artefact of the inclusion criteria; agency-recorded criminality. Qualitative research samples are usually small. However, even though there may have been a wish for a richer data set by including more informants with unexpected positive outcomes contributing to the understanding of the desistance process, this was not possible in Paper I.

Furthermore, when using in-depth interviews for data collection it puts high demand on the quality of the interviewer due to their flexible and interactive nature (e.g. Gorden, 1998). An additional interview with informants may have counter-acted subjectivity and provided means for follow-up questions in unprobed areas.

There have been concerns over the use of data based solely on self-reports (e.g. Brent, Perper, Kolko, & Zelenak, 1988; Fisher & Shaffer, 1984; Pincus & Newman, 2001; Schüz, Spector, & Ross, 2003). The likelihood of bias is probably varying depending of research topic (e.g. sexual behaviour or substance use during pregnancy in contrast to time spent daily on reading newspapers). There may be a willingness to shock, impress, or manipulate the interviewer, or to attribute blame to external causes when talking about socially undesirable outcomes (such as acting violently). For example, one would expect that the persons interviewed about their relapse into violence (Paper II) would attribute more blame for the violent failure on external, rather than internal, factors. This applies also for Papers III and IV.

The validity of qualitative methods is dependant upon the interpretation of the information provided by the informants. There are several approaches to perform reliability and validity checks in qualitative analyses. We used reflexivity for this purpose, that is, to describe the research procedures as far as possible and to show the links between raw data and conclusions (Seale, 1999). In addition, several researchers were involved in the interpreting of raw data at different sequences in the process in an attempt to safeguard for idiosyncratic conclusions. However, it would have been preferable if all the interviews had been coded by two researchers to further improve the reliability of the coding process.

The case-crossover design is novel and has several strengths, but also limitations that restrict its use and interpretation. The major validity threat in Papers III and IV was information bias. The two most important sources for possible misclassification of exposure were outcome-dependent misclassification of exposure (also referred to as recall bias) and the time delay from violent offence to the research interview (i.e. fading memory).

Recall bias may occur if the participant - because of social desirability or other conscious or unconscious mental mechanisms - would provide incorrect information of exposure during the case- or control-windows. Recall bias implies that the character of the outcome or event affects the reporting of exposure. For example, it would be easier to blame the socially undesirable act (violence) on drugs or other exposures with strong potential influence on outcome. If the participants over-reported the exposure of alcohol during case-window, but correctly report the usual frequency, then the relative risk would get inflated. If participants correctly reported exposure during the case-window but underreported the usual frequency, the expected odds of exposure would be underestimated and this would lead to an inflated relative risk estimate. However, neither the participants nor the interviewer knew of the hypothesized induction times of the exposures. This would minimize recall bias due to social desirability, but cannot rule it out completely. The fact that we did not find a constant effect across all exposures tested as hypothetical triggers in the study (see Table 3) indicate that recall bias may not have been a dominant limitation (see also Möller, Hessén-Söderman, & Hallqvist, 2004).

Misclassification may also have occurred if the time between the event and interview was too long and the possibility of remembering what had happened before the event

was limited. In Papers III and IV, the average number of days between index violence and the interview was 81.0 ($SD = 63.9$), which could be considered long from a recall perspective. We discussed prior to study onset the possibility to perform the research interviews at the time of offender arrest. However, this strategy would involve several practical problems. First, our aim was to study triggers of violence in mentally disordered offenders and it would definitely be difficult to identify those suffering from mental disorders at that early stage in the legal process. The risk of including participants who were not subsequently convicted of the violent act would also increase, which would be ethically challenging. We decided to complete the interviews at the later pre-sentence FPE stage. We were informed that a previous study in Sweden, in which information of drug intake before acting violently was thoroughly collected (Holmberg, Dåderman, Jonasson, Ingerloo, Bjerke, Carlstedt et al, 2002), found that the prisoners on remand were unfocused and difficult to interview (personal communication, Eva Bjerke [November, 2001]). This was mainly attributable to their preoccupation with the forthcoming trial and their suboptimal physical and mental conditions due to withdrawal symptoms and lack of adequate medication for psychiatric disorders.

In response to data quality uncertainties, we refrained from conducting refined analyses of induction times (the time between cause and effect). Instead we used the same case-window (i.e. hazard-period; the time after a trigger begins when the population experiences an increased risk of the outcome caused by the trigger) across all exposures (0-24 h). This could be questioned in terms of biological plausibility, since hazard-period for some exposures (e.g. alcohol) could be expected to be shorter than 24 hours, while longer for other exposures (e.g. separations). For triggers investigated in Paper IV (psychiatric symptoms and interpersonal stressors) we hypothetically prolonged the hazard-period to 72 hours, generally providing higher relative risks for the tested triggers (data not shown). This may imply that the hazard times for these exposures are longer than those investigated.

Redundancy of information during the interview may permit validation checks to rule out or investigate recall bias. For example, a person who claims that he or she had been drinking alcohol every day during the past year, may, when asked, recall that he or she had not been drinking one of these 52 weeks because he or she had been at hospital. For this reason, we asked questions of the a) usual frequency and the time since last exposure and for some exposures b) the time of exposure before the last time and c) periods of non-exposure. For example when establishing exposure information of conflicts we asked about the usual frequency of acute conflicts with others, the last time before violence onset that they had an acute conflict, and when they had had an acute conflict before the last time. When using this interview strategy the interviewer could, at least to some extent, detect inconsistencies in the information. For some of the hypothesised triggers, we also had collateral information from police investigations. Reports of intoxication (drugs or alcohol) from witnesses, or objective alcohol and drug serum concentrations supplemented the information retrieved from the interviews. To a limited extent and with uncertain validity, collateral information from police reports and medical records was possible to retrieve for psychiatric symptoms and interpersonal stressors. If there was an inconsistency in the data between records and interviews or exposure information within the interview, clarifying questions were asked.

Additionally, open-ended questions were asked at the beginning and at the end of each section of the interview to determine whether the participants had *a priori* hypotheses of the triggering effects of the investigated exposures. At the end of each interview, the interviewer was instructed to rate the perceived quality of the interview with respect to recall problems or inconsistencies (due to mental health problems, inability to recall exposures correctly, inconsistent response patterns, or a long time between violence and interview). A separate analysis excluding interviews judged to supply low-quality information during either case- or control-windows did not change the risk estimates substantially (data not shown).

Some of the exposures investigated in this thesis were difficult to quantify and may affect the reported usual frequency. Estimates of how often one suffered from hallucinations (e.g. seeing or hearing things that others do not) would probably depend on the intensity, duration and character of the symptom, and obviously also the awareness and willingness to report such symptoms. Bjørkly (2002) found, for example, that patients in psychiatric units in Norway tended to underreport psychiatric symptoms. Additionally, we did not investigate the dose-response gradients of exposures (Redelmeier & Tibshirani, 1997). For example, information of alcohol exposure was only provided as yes or no, without collecting information of the quantity of alcohol intake or perceived level of intoxication. This was not seen as possible considering the memory demands, not only because of the time between the event and the interview, but also because of the need for quantification of how often a certain level of intoxication was reached. There are, however, support that intoxication level accounts for some of the variance in predicting frequency and severity of aggression (Homel & Clark, 1994).

Confounding means that the estimated effect of the exposure is influenced by the effect of another exposure. The case-crossover design eliminates long-term within-individual confounding, but not short-term within-individual confounding. Such confounding would exist if the individual were exposed to several triggering exposures simultaneously. To control for such confounding one must collect information of both the specific exposures (during both control- and case-windows) as well as the exposure information of the simultaneously occurring exposures (during both control- and case-windows). In Papers III and IV we adopted the usual frequency approach, and hence possible confounding between exposures needs to be identified beforehand.

Unknown or unmeasured short-term risk factors may be a potential problem in the studies. Stress or anger, for example, may be potential confounded by triggering substances. The reason for taking substances such as alcohol, high doses of benzodiazepines, cannabis, or amphetamine, may likely include that the person experience distress. The substances may not be the actual cause of violence, rather risk indicators for violence. On the other hand, several experimental studies support that, for example, alcohol intake increase aggressive behaviour (e.g. Bushman & Cooper, 1990; Ito, Miller, & Pollock, 1996).

Lastly, as in traditional case-control and cohort study designs, selection bias may reduce generalisability of the reported findings. We can only generalise the findings to violence leading to convictions (which are typically related to the offender-victim relationship, victim's willingness to report to the police, severity of violence, and the

probability of arrest and conviction). In addition, there is a selection leading from court to FPE. As we used an informed consent procedure, there is a risk that those who declined to participate systematically differ from those who agree to do so, although in our own assessment, these differences would not affect the particular research questions addressed in this thesis.

CONCLUSIONS AND FUTURE DIRECTIONS

- Studying the false positive and false negative cases in prediction studies may be a way of refining risk assessment tools. A fruitful way to identify protective factors of violence in community-based samples may be to identify criminal as well as non-criminal groups with well-known risk factors, and study the presence or absence of potential protective factors in the two groups.
- The case-crossover design can be used to explore proximal causes of violence, and improve our understanding of potential inhibiting and triggering factors.
- The way the patients actually communicate risk themselves to mental health professionals and others need to be further examined. This communication may be direct or indirect, and difficult to detect and reliably measured. The relationship between patients' risk communication and actual violent acts is still unclear.
- Whether and how psychiatrists should assume responsibility for patients' community violence is currently intensely debated in Sweden. If future policy should dictate that psychiatric services are held responsible for psychiatric patients' violent acts in the community, there is a need to address methods for identifying violence-prone individuals, and, more specifically, what to actually do about them. Current prediction instruments and clinical checklists, such as the VRAG, the HCR-20, and MacArthur ICT all fail to recognise that (1) factors that can be used to identify who is at high risk and who is not are not necessarily useful targets for management and prevention, (2) a factor is not necessarily always a risk factors or a protective factor; any given factor (e.g. having a job) may be a protective factor for one person but a risk factors for the other, and (3) previous procedures focus mostly on stable factors, but in order to prevent violence, triggers of violence may be much more important to identify.

ACKNOWLEDGEMENTS

A special thanks to my supervisors who all supported me in different ways along the way. Clara Gumpert for guiding me in the qualitative research field, assisting me with the qualitative analyses, but also by making me overcome psychological and real obstacles at the initial phase of the process. Johan Hallqvist for patiently explaining the intricacies of the case-crossover design, not always providing the answers but instead letting me answer them myself in due time, when my intellect was ready for it (which was sometimes too late for my taste). And finally, the greatest thanks to my very precious friend and supervisor, Niklas Långström, who always had time to answer small as well as bigger-picture questions I had. Niklas is not only a walking updated dictionary of practically almost everything (references, APA writing style, and general knowledge within the violence prevention field, juvenile delinquency, and sexual deviance) – he is always happy, and lightens up the workplace with his laughs, singing and whistling. I would also like to direct a special thanks to Eva Bjerke, my “right hand” during maternity leave, who reliably interviewed all participants in the case-crossover study. Thanks also to Jette Möller, who is not only an admirable statistical genius and a mother of three daughters, but also a very pleasant and witty person.

Moreover, I would also like to thank Marianne Kristiansson, at the Department of Forensic Psychiatry in Stockholm, for pushing me to start this journey. She planted the first seed to what eventually turned out to be this dissertation. Thanks Marianne for believing in me when I was a “green woodpecker”.

Without my pleasant, funny, supportive, and intelligent colleagues and co-workers at the Department of Forensic Psychiatry, Division of Forensic Psychiatry, Division of Psychology and at the Centre for Violence Prevention I would definitely not have made it all along until the end.

With love and admiration to my husband Martin Grann who introduced the idea that I should become a doctoral student in the first place, his enviable ability to come up with brilliant and novel (research) ideas, and his pedagogic skills when explaining complex issues such as statistics.

I would also like to thank my big family, especially “Syrran” Karolina, for believing in me when I myself failed to do so. Heaps of love too to my daughter Nikolina who gave me perspective on what is important in life, and lots of happiness. It is an enormous joy being with you! Thank you Rebekka, for assisting me in the design of the front-page of this thesis. Thanks also to all my friends, especially Ingela, for support and praises.

I received financial support from the National Board of Forensic Medicine, the Söderström-Königska, and the Bror Gadelius’ Memorial Foundations. Thank you for providing means for these studies. Last, but not least, warm thanks to all participants who have contributed with the necessary information that all studies are based upon.

REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders – Fourth edition (DSM-IV)*. Washington DC, USA: Author.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders – Fourth edition, text revision (DSM-IV-TR)*. Washington DC, USA: Author.
- Anderson, C., Mhurchu, C. N., Scott, D., Bennett, D., Jamrozik, K., & Hankey, G. (2003). Triggers of subarachnoid hemorrhage. Role of physical exertion, smoking, and alcohol in the Australasian Cooperative Research on Subarachnoid Hemorrhage Study (ACROSS). *Stroke*, *34*, 1771-1776.
- Arnetz, J. E., & Arnetz, B. B. (2001). Violence towards health care staff and possible effects on the quality of patient care. *Social Science and Medicine*, *52*, 417-427.
- Arseneault, L., Moffit, T. E., Caspi, A., Taylor, P. J., & Silva, P. A. (2000). Mental disorders and violence in a total birth cohort: Results from the Dunedin study. *Archives of General Psychiatry*, *57*, 979-986.
- Banks, S., Robbins, P. C., Silver, E., Vesselinov, R., Steadman, H. J., Monahan, J., Mulvey, E. P., Appelbaum, P. S., Grisso, T., & Roth, L. H. (2004). A multiple-models approach to violence risk assessment among people with mental disorder. *Criminal Justice & Behavior*, *31*, 324-340.
- Barbone, F., McMahon, A. D., Davey, P. G., Morris, A. D., Reid, I. C., McDevitt, D. G., & MacDonald, T. M. (1998). Association of road-traffic accidents with benzodiazepine use. *The Lancet*, *352*, 1331-1336.
- Berlin, F. S., & Malin, H. M. (1991). Media distortion of the public's perception of recidivism and psychiatric rehabilitation. *American Journal of Psychiatry*, *148*, 1572-1576.
- Björkly, S. (1996). Report form for aggressive episodes: preliminary report. *Perceptual & Motor Skills*, *83*, 1139-1152.
- Björkly, S. (1999). A ten-year prospective study of aggression in a special secure unit for dangerous patients. *Scandinavian Journal of Psychology*, *40*, 57-63.
- Björkly, S. (2002). SCL-90-R profiles in a sample of severely violent psychiatric inpatients. *Aggressive Behavior*, *28*, 446-457.
- Blum, R. W., & Ireland, M. (2004). Reducing risk, increasing protective factors: Findings from the Caribbean Youth Health Survey. *Journal of Adolescent Health*, *35*, 493-500.
- Blumstein, A., Cohen, J., & Hsieh, P. (1982). *The duration of adult criminal careers* (Final report to the National Institute of Justice). Washington, DC: National Institutet of Justice.
- Boer, D.P., Hart, S.D., Kropp, P.R., & Webster, C. D. (1997). *Manual for the Sexual Violence Risk-20: Professional guidelines for assessing risk of sexual violence*. Vancouver, BC, Canada: British Columbia Institute on Family Violence.
- Brent, D. A., Perper, J. A., Kolko, D. J., & Zelenak, J. P. (1988). The psychological autopsy: Methodological considerations for the study of adolescent suicide. *Journal of American Academy of Child Adolescence Psychiatry*, *27*, 362-366.
- Brieden, T., Ujeyl, M., & Naber, D. (2002). Psychopharmacological treatment of aggression in schizophrenic patients. *Pharmacopsychiatry*, *35*, 83-9.

- Brugal, M. T., Barrio, G., de la Fuente, L., Regidor, E., Royuela, L., & Suelves, J. M. (2002). Factors associated with non-fatal heroin overdose: Assessing the effect of frequency and route of heroin administration. *Addiction*, *97*, 319-327.
- Bushman, B. J., & Cooper, H. M. (1990). Effects of alcohol on human aggression: An integrative research review. *Psychological Bulletin*, *107*, 341-354.
- Cheeta, S., Schifano, F., Oyefeso, A., Webb, L., & Ghodse, A. H. (2004). Antidepressant-related deaths and antidepressants prescriptions in England and Wales, 1998-2000. *British Journal of Psychiatry*, *184*, 41-47.
- Cicchetti, D. V., & Sparrow, S. S. (1981). Developing criteria for establishing Interrater reliability of specific items: Applications to assessment of adaptive behaviour. *American Journal of Mental Deficiency*, *86*, 127-137.
- Citrome, L., & Volavka, J. (1997). Psychopharmacology of violence: Part I: Assessment and acute treatment. *Psychiatric Annals*, *27*, 691-695.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, *20*, 37-46.
- Cooke, D. J., & Michie, C. (2002). Towards valid cross-cultural measures of risk. In R. Corrado (Ed). *Multi-problem violent youth: A foundation for comparative research on needs, interventions and outcome*. Series I: Life and behavioral sciences, vol. 324. Amsterdam, Netherlands Antilles: IOS Press.
- Cromwell, P., Olson, J. N., & Avary, D. W. (1993). Modeling decisions by residential burglars. *Studies on Crime and Crime Prevention*, *2*, 113-121.
- Currier, G. W., & Simpson, G. M. (2001). Risperidone liquid concentrate and oral lorazepam versus intramuscular haloperidol and intramuscular lorazepam for treatment of psychotic agitation. *Journal of Clinical Psychiatry*, *62*, 153-157
- Cusson, M., & Pinsonneault, P. (1986). The decision to give up crime. In D. Cornish & R. Clarke (Eds.), *The reasoning criminal: Rational choice perspectives on offending* (pp. 72-82). New York, USA: Springer-Verlag.
- Denzin, N. K., & Lincoln, Y. S. (2003). *Collecting and interpreting qualitative materials*. London, UK: Sage Publications.
- Dernevik, M. (2004). Structured clinical assessment and management of risk of violent recidivism in mentally disordered offenders. Thesis ISBN 91-7140-095-8. Stockholm, Sweden: Karolinska Institutet.
- Douglas, K. S., & Cox, D. N. (1999). Violence risk assessment: Science and practice. *Legal and Criminological Psychology*, *4*, 149-184.
- Douglas, K. S., Ogloff, J., Nicholls, T., & Grant, I. (1999). Assessing risk for violence among psychiatric patients: The HCR-20 Violence Risk Assessment Scheme and the Psychopathy Checklist: Screening version. *Journal of Consulting and Clinical Psychology*, *67*, 917-930.
- Douglas, K. S., Poythress, N. G., Spain, S., Falkenbach, D., & Epstein, M. (2002, March). *The HCR-20 violence risk assessment scheme: A synthesized, quantitative review of research and recommendations for future research directions*. Paper presented at the second annual meeting of the International Association of Forensic Mental Health Services, Munich, Germany.
- Drinkwater, J., & Gudjonsson, G. H. (1989). The nature of violence in psychiatric hospitals. In K. Howells & C. R. Hollin (Eds.), *Clinical approaches to violence*. Chichester, UK: Wiley.

- Dåderman, A. M. (2000). *Flunitrazepam and violence – psychiatric and legal issues*. Licentiate Thesis. ISBN 91-630-9574-2. Stockholm, Sweden: Karolinska Institutet.
- Eronen, M., Hakola, P., & Tiihonen, J. (1996). Schizophrenia and homicidal behavior. *Schizophrenia Bulletin*, 22, 83-89.
- Ennis, B. J., & Litwack, T. R. (1974). Psychiatry and the presumption of expertise: Flipping coins in the courtroom. *California Law Review*, 62, 693-752.
- Fazel, S., & Danesh, J. (2002). Serious mental disorder in 23000 prisoners: a systematic review of 62 surveys. *Lancet*, 359, 545-50.
- Fazel, S., & Grann, M. (2004). Psychiatric morbidity among homicide offenders: A Swedish population study. *American Journal of Psychiatry*, 161, 2129-2131.
- Fazel, S., & Grann, M. (in press). The population impact of severe mental illness on violent crime. *American Journal of Psychiatry*.
- Fergusson, D., Doucette, S., Glass, K. C., Shapiro, S., Healy, D., Hebert, P., & Hutton, B. (2005). Association between suicide attempts and selective serotonin reuptake inhibitors: systematic review of randomized controlled trials. *British Medical Journal*, 330, 1-7.
- Fisher, P. H., & Shaffer, D. (1984). Methods for investigating suicide in young children and adolescents: An overview. In H. S. Sudak, A. B. Ford, & N. B. Rushforth (Eds.) (pp. 139-257), *Suicide in the young*. Littleton, MA, USA: John Wright PSG.
- Fitzpatrick, K. (1997). Fighting among America's youth: A risk and protective factors approach. *Journal of Health and Social Behavior*, 38, 131-148.
- Fries, B., & Milton, A. (2005, March 9). Kräv böter av lagtrotsande kommuner och landsting [Debate article]. *Dagens Nyheter*, p. A6.
- Gliner, J. A., Morgan, G. A., & Harmon, R. J. (2001). Measurement reliability. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40, 486-8
- Gorden, R. J. (1998). *Basic interviewing skills*. Prospect Heights, IL, USA: Waveland Press.
- Gould, M. S., & Kramer, R. A. (2001). Youth suicide prevention. *Suicide and Life-Threatening Behavior*, 31, 6-30.
- Grann, M. (1998). *Personality disorder and violent criminality. A follow-up study with special reference to psychopathy and risk assessment*. Thesis. ISBN: 91-628-3126-7. Stockholm, Sweden: Karolinska Institutet.
- Grann, M. (2002, September). Managing and monitoring risk in the community. Keynote address to the "Towards a safer society" conference, Glasgow, Scotland.
- Grann, M., Belfrage, H., & Tengström, A. (2000). Actuarial assessment of risk for violence: Predictive validity of the VRAG and the historical part of the HCR-20. *Criminal Justice & Behavior*, 27, 97-114.
- Grann, M., & Fazel, S. (2004). Substance misuse and violent crime: Swedish population study. *British Medical Journal*, 328, 1233-1234.
- Grann, M., & Långström, N. (in press). Actuarial risk assessment: To weigh or not to weigh? *Criminal Justice & Behavior*.
- Greenland, S., & Robins, J. M. (1985). Estimation of a common effect parameter from sparse follow-up data. *Biometrics*, 41, 55-68.
- Grove, W. M., & Meehl, P. E. (1996). Comparative efficiency of informal (subjective, impressionistic) and formal (mechanical, algorithmic) prediction procedure: The clinical-statistical controversy. *Psychology, Public Policy, and Law*, 2, 293-323.

- Grubin, D., & Wingate, S (1996). Sexual offence recidivism: prediction versus understanding. *Criminal Behaviour and Mental Health*, 6, 349-359.
- Gunn, J. (1996). Let's get serious about dangerousness. *Criminal Behavior and Mental Health*, 6, 51-64.
- Haegebaert, S., Duche, L., & Desenclos, J. C. (2003). The use of the case-crossover design in a continuous common source food-borne outbreak. *Epidemiology & Infection*, 131, 809-813.
- Haggård-Grann, U. (in press). Assessing violence risk: A review and clinical recommendations. *Journal of Counseling & Development*.
- Hanson, R. K. (1998). What do we know about sex offender risk assessment? *Psychology, Public Policy, and Law*, 4, 50-72.
- Hanson, R. K., & Harris, A. J. R. (2000). Where should we intervene? Dynamic predictors of sexual offence recidivism. *Criminal Justice and Behavior*, 27, 6-35.
- Hare, R. D. (1991). *The Hare Psychopathy Checklist-Revised*. Toronto, Ontario, Canada: Multi-Health Systems.
- Hare, R. D., Clark, D., Grann, M., & Thornton, D. (2000). Psychopathy and the predictive validity of the PCL-R: An international perspective. *Behavioral Sciences & the Law*, 18, 623-645.
- Hare, R. D., McPherson, L. M., & Forth, A. E. (1988). Male psychopaths and their criminal careers. *Journal of Consulting & Clinical Psychology*, 56, 710-714.
- Harris, G. T, Rice, M. E., & Cormier, C. A. (2002). Prospective replication of the Violence Risk Appraisal Guide in predicting violent recidivism among forensic patients. *Law & Human Behavior*, 26, 377-394.
- Hart, S. (1998). Psychopathy and risk for violence. In D. Cooke, A. E. Forth & R. D. Hare. *Psychopathy: Theory, Research and Implications for Society* (pp. 355-375). Dordrecht, The Netherlands: Kluwer.
- Hart, S. (2000). Violence risk assessment in forensic mental health: Conceptual and professional issues. In: *Riskbedömning vid rättspsykiatrisk undersökning* [Risk assessments at forensic psychiatric evaluation] (pp. 25-36). National Board of Forensic Medicine. RMV-rapport 2000:1.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112, 64-105.
- Heilbrun, K. (1997). Prediction versus management models relevant to risk assessment: The importance of legal decision-making context. *Law & Human Behavior*, 21, 347-359.
- Hemphill, J. F., Hare, R. D., & Wong, S. (1998). Psychopathy and recidivism: A review. *Legal and Criminological Psychology*, 3, 139-170.
- Hiscoke, U. L., Haggård, U., & Grann, M. (2000). *The Structured Outcome Assessment and Community Risk Monitoring, SORM: Intervjuguide*. [The Structured Outcome Assessment and Community Risk Monitoring, SORM: Interview Guide: In Swedish]. Stockholm: Karolinska Institutet, Centre for violence prevention.
- Hodgins, S. (2001). The major mental disorders and crime: Stop debating and start treating and preventing. *International Journal of Law & Psychiatry*, 24, 427-446.
- Holmberg, G., Dåderman, A. M., Jonasson, B., Ingerloo, L.-E., Bjerke, E., Carlstedt, A. et al. (2002). *Lugnande läkemedel som oroar*. [Sedatives that makes us anxious.

- In Swedish]. Rapport 2002:1, The National Board of Forensic Medicine, RMV, Stockholm, Sweden: Elanders Gotab.
- Homel, R. & Clark, J. (1994). The prediction and prevention of violence in pubs and clubs. *Crime Prevention Studies*, 3, 1-46.
- Hughes, M. (1998). Turning points in the lives of young inner-city men foregoing destructive criminal behaviors: A qualitative study. *Social Work Research*, 22, 143-151.
- Hultén, A., & Wasserman, D. (1998). Lack of continuity - A problem in the care of young suicides. *Acta Psychiatrica Scandinavica*, 97, 326-333.
- Ito, T. A., Miller, N., & Pollock, V. E. (1996). Alcohol and aggression: A meta-analysis on the moderating effects of inhibitory cues, triggering events, and self-focused attention. *Psychological Bulletin*, 120, 60-82.
- Jessor, R. (1991). Risk behaviour in adolescence: A psychosocial framework for understanding and action. *Journal of Adolescent Health*, 12, 597-605.
- Kerner, H. J., Weitekamp, E., Stelly, V., & Thomas, J. (1997). Patterns of criminality and alcohol abuse: Results of the Tuebingen criminal behaviour development study. *Criminal Behaviour & Mental Health*, 7, 401-420.
- Kraemer, H. C., Kasdin, A. E., Offord, D. R., Kessler, R. C., Jensen, P. S., & Kupfer, D. J. (1997). Coming to terms with the terms of risk. *Archives of General Psychiatry*, 54, 337-343.
- Kroner, D. G., & Mills, J. F. (2001). The accuracy of five risk appraisal instruments in predicting institutional misconduct and new convictions. *Criminal Justice and Behavior*, 28, 471-489.
- Kropp, P. R., Hart, S. D., Webster, C. D., & Eaves, D. (1995). *Manual for the Spousal Assault Risk Assessment Guide (SARA)* (2nd edition). Vancouver, BC, Canada: British Columbia Institute on Family Violence.
- Kullgren, G., Grann, M., & Holmberg, G. (1996). The Swedish forensic concept of severe mental disorder as related to personality disorders. An analysis of forensic psychiatric investigations of 1498 male offenders. *International Journal of Law & Psychiatry*, 19, 191-200.
- Kvale, S. (1996). *InterViews: An introduction to qualitative research interviewing*. Thousand Oaks, CA, USA: Sage Publications.
- Laub, J., Nagin, D. S., & Sampson, R. J. (1998). Trajectories of change in criminal offending: Good marriages and the desistance process. *American Sociological Review*, 63, 225-238.
- Lavine, R. (1997) Psychopharmacological treatment of aggression and violence in the substance using population. *Journal of Psychoactive Drugs*, 29, 321-329.
- Loeber, R., & Farrington, D. P. (1998). *Serious and violent juvenile offenders. Risk factors and successful interventions*. California, USA: Sage Publications.
- Lidz, C. W., Mulvey, E. P., & Gardner, W. (1993). The accuracy of predictions of violence to others. *JAMA*, 269, 1007-1011.
- Lindqvist, P., & Allebeck, P. (1990). A longitudinal follow-up of 644 schizophrenics in Stockholm. *British Journal of Psychiatry*, 157, 345-350.
- Litwack, T. R. (2001). Actuarial versus clinical assessments of dangerousness. *Psychology, Public Policy, and Law*, 7, 409-443.
- Långström, N. (2004). Accuracy of actuarial procedures for assessment of sexual offender recidivism risk may vary across ethnicity. *Sexual Abuse: Journal of Research & Treatment*, 16, 107-120.

- Maclean, U. (1969). Community attitudes to mental illness in Edinburgh. *British Journal of Preventive and Social Medicine*, 23, 45-52.
- Maclure, M. (1991). The case-crossover design: A method for studying transient effects on the risk of acute events. *American Journal of Epidemiology*, 133, 144-153.
- Maclure, M., & Mittleman, M. A. (2000). Should we use a case-crossover design? *Annual Review of Public Health*, 21, 193-221.
- Maxwell, J. A. (1996). *Qualitative research design. An interactive approach*. Applied Social Research Methods Series, vol 41. Thousands Oaks, CA, USA: Sage Publications.
- Menzies, R., Webster, C. D., McMains, S., Staley, S., & Scaglione, R. (1994). The dimensions of dangerousness revisited. Assessing forensic predictions about violence. *Law & Human Behavior*, 18, 1-28.
- Metalsky, G., & Joiner, T. (1997). The hopelessness depression symptom questionnaire. *Cognitive Therapy & Research*, 21, 359-384.
- Miles, A. (1981). *The mentally ill in contemporary society*. Oxford, UK: Robertson.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis. An expanded sourcebook*. (2nd ed.). Thousands Oaks, California, USA: Sage Publications.
- Mittleman, M. A., Maclure, M., & Robins, J. M. (1995). Control sampling strategies for case-crossover studies: An assessment of the relative efficiency. *American Journal of Epidemiology*, 142, 91-98.
- Monahan, J. (1984). The prediction of violent behavior: Toward a second generation of theory and policy. *American Journal of Psychiatry*, 141, 10-15.
- Monahan J. (1992). "A terror to their neighbors": beliefs about mental disorder and violence in historical and cultural perspective. *Bulletin of the American Academy of Psychiatry & the Law*, 20, 191-195.
- Monahan, J. (1997). Actuarial support for the clinical assessment of violence risk. *International Review of Psychiatry*, 9, 167-169.
- Monahan, J., & Steadman, H. (1994). *Violence and mental disorder: Developments in risk assessment*. Chicago, USA: University of Chicago Press.
- Morse, J. M., & Field, P. A. (1995). *Qualitative research methods for health professionals*. (2nd ed.). Thousands Oaks, CA, USA: Sage Publications.
- Mossman, D. (1994). Assessing predictions of violence: Being accurate about accuracy. *Journal of Consulting and Clinical Psychology*, 62, 783-792.
- Mulvey, E. P., & Lidz, C. W. (1995). Conditional prediction: A model for research on dangerousness to others in a new era. *International Journal of Law & Psychiatry*, 18, 129-143.
- Möller, J. (2003). Case-crossover studies of the triggering of disease. Myocardial infarction and Ménière's disease. Thesis ISBN 91-7349-488-7. Stockholm, Sweden: Karolinska Institutet.
- Möller, J., Hessén-Söderman, A-C., & Hallqvist, J. (2004). Differential misclassification of exposure in case-crossover studies. *Epidemiology*, 15, 589-596.
- National Board of Health & Welfare (2004). Riskbedömningar inom den specialiserade psykiatriska vården. En kartläggning. [Risk assessments in the specialised psychiatric care. A survey. In Swedish]. Retrieved 2005-03-20 from <http://www.socialstyrelsen.se/Publicerat/2004/8603/2004-109-20.htm>
- National Council for Crime Prevention (2004). Criminal statistics, part of Sweden's Official Statistics. Retrieved 2005-04-01 from

http://www.bra.se/statistics/extra_view.

- Nicholls, T. L., Douglas, K., & Ogloff, J. R. (1997). Risk assessments with female psychiatric patients: Utility of the HCR-20 and PCL:SV. *Canadian Psychology*, 38, 111-112.
- Nijman, H., Merckelbach, H., Evers, C., Palmstierna, T., & Campo, J. (2002). Prediction of aggression on a locked psychiatric admissions ward. *Acta Psychiatrica Scandinavica*, 105, 390-395.
- Otto, R. K. (2000). Assessing and managing violence risk in outpatient settings. *Journal of Clinical Psychology*, 56, 1239-1262.
- Palmstierna T., & Wistedt, B. (1987). Staff observation aggression scale, SOAS: presentation and evaluation. *Acta Psychiatrica Scandinavica*, 76, 657-663.
- Phelan, J. C., & Link, B. G. (1998). The growing belief that people with mental illnesses are violent: the role of the dangerousness criterion for civil commitment. *Social Psychiatry & Psychiatric Epidemiology*, 33 (Suppl 1), 7-12.
- Philo, G. (1997). Changing media representations of mental health. *Psychiatric Bulletin*, 21, 171-172.
- Pincus, T., & Newman, S. (2001). Recall bias, pain, depression and cost in back pain patients. *British Journal of Clinical Psychology*, 40, 143-156.
- Pollard, J. A., Hawekins, J. D., & Arthur, M. W. (1999). Risk and protection: Are both necessary to understand diverse behavioral outcomes in adolescence? *Social Work Research*, 23, 145-158.
- Price, R. (1997). On the risks of risk prediction. *The Journal of Forensic Psychiatry*, 8, 1-4.
- Price, R. (1999). Relapse prevention and risk reduction: Results of client identification of high risk situations. *Sexual Addiction and Compulsivity*, 6, 221-252.
- Quinsey, V. L., Harris, G. T., Rice, M. E., & Cormier, C. A. (1998). *Violent offenders: Appraising and managing risk*. Washington, DC, USA: American Psychological Association.
- Rasmussen, J., & Höijer, B. (2005, March). Hur skilrades psykisk sjukdom, psykiskt sjuka människor och psykvården av Aftonbladet, Dagens Nyheter och Rapport i samband med de så kallade vansinnesdåden 2003 [How were major mental disorders, mentally disordered individuals, and psychiatric care reported by Aftonbladet, Dagens Nyheter and Rapport at the time of the so-called insanity deeds in 2003?]. Oral presentation at the conference "Major mental disorders in media" in Stockholm, Sweden.
- Reed, J. (1997). Risk assessment and clinical risk management: The lessons from recent inquiries. *British Journal of Psychiatry*, 170, 4-7.
- Redelmeier, D. A., & Tibishirani, R. J. (1997). Interpretation and bias in case-crossover studies. *Journal of Clinical Epidemiology*, 50, 1281-1237.
- Resnick, M.D., Ireland, M., & Borowsky, I. (2004). Youth violence perpetration: What protects? What predicts? Findings from the National Longitudinal Study of Adolescent Health. *Journal of Adolescent Health*, 35, 424.e1-10.
- Ritchie, J., & Lewis, J. (2003). *Qualitative research practice. A guide for social science students and researchers*. London, UK: Sage Publications.
- Ritchie, J., Lewis, J., & Elam, G. (2003). Designing and selecting samples. In J Ritchie & J. Lewis (Eds.), *Qualitative research practice. A guide for social science students and researchers*. London, UK: Sage Publications.
- Rothman, K. J., & Greenland, S. (1998) Causation and causal inference. In K. J.

- Rothman, & S. Greenland, (Eds.), *Modern epidemiology* (pp. 7-28). Philadelphia, USA: Lippincott Raven Publishers.
- Runeson, B. S., Beskow, J., & Waern, M. (1996). The suicidal process in suicides among young people. *Acta Psychiatrica Scandinavia*, *93*, 35-42.
- Salekin, R. T., Rogers, R., & Sewell, K. W. (1996). A review and meta-analysis of the Psychopathy Checklist and Psychopathy Checklist-Revised: Predictive validity of dangerousness. *Clinical Psychology: Science and Practice*, *3*, 203-215.
- Sampson, J. H., & Laub, R. J. (1993). Turning points in the life course: Why change matters to the study of crime. *Criminology*, *31*, 301-325.
- Schüz, J., Spector, L. G., & Ross, J. A. (2003). Bias in studies of parental self-reported occupational exposure and childhood cancer. *American Journal of Epidemiology*, *158*, 710-716.
- Seale, C. (1999). *The quality of qualitative research*. Oxford, UK: Blackwell.
- Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, *86*, 420-448.
- Silver, E. (2000). Race, neighborhood disadvantage, and violence among persons with mental disorders: The importance of contextual measurements. *Law & Human Behavior*, *24*, 449-456.
- Sjöstedt, G., & Grann, M. (2002). Risk assessment: What is being predicted by actuarial prediction instruments? *International Journal of Forensic Mental Health*, *1*, 179-183.
- Sjöstedt, G., & Långström, N. (2002). Assessment of risk for criminal recidivism among rapists: A comparison of four different measures. *Psychology, Crime & Law*, *8*, 25-40.
- Skeem, J. L., Mulvey, E. P., & Lidz, C.W. (2000). Building mental health professionals' decisional models into tests of predictive validity: the accuracy of contextualized predictions of violence. *Law & Human Behavior*, *24*, 607-628.
- Sommers, I., Baskin, D. R., & Fagan, J. (1993). Getting out of the life: Crime desistance by female street offenders. *Deviant behavior: An Interdisciplinary Journal*, *15*, 125-149.
- Stattin, H., Romelsjö, A., & Stenbacka, M. (1997). Personal resources as modifiers of the risk for future criminality: An analysis of protective factors in relation to 18-year-old boys. *British Journal of Criminology*, *37*, 198-223.
- Steadman, H. J., Monahan, J., Appelbaum, P. S., Grisso, T., Mulvey, E. P., Roth, L. H. et al. (1994). Designing a new generation of risk assessment research. In J. Monahan, & H. J. Steadman, (Eds.), *Violence and Mental Disorder: Developments in Risk Assessment* (pp. 297-318). Chicago, IL, USA: University of Chicago Press.
- Steadman, H. J., Silver, E., Monahan, J., Appelbaum, P. S., Robbins, P. C., Mulvey, E. P., Grisso, T., Roth, L. H., & Banks, S. (2000). A classification tree approach to the development of actuarial violence risk assessment tools. *Law & Human Behavior*, *24*, 83-100.
- Sturidsson, K. (2004). SORM. *Utvecklandet av en klinisk modell för riskhantering i rättspsykiatrisk öppenvård*. [SORM. Development of a clinical model for risk management in forensic psychiatric care. In Swedish]. Licentiate Thesis. ISBN 91-7349-990-0. Stockholm, Sweden: Karolinska Institutet.
- Ståhle, B., Grann, M., Woodhouse, A., Lövsström, L., Siverson, E., & Sturidsson, K. (2001). *Fördjupad uppföljning av rättspsykiatrisk vård vid regionvårdsenheten*

- Sätters sjukhus*. [A follow-up study of forensic psychiatric care at the special ward unit at Sätters Hospital. In Swedish]. Säter, Sweden: Rättspsykiatriskt centrum.
- Swanson, J. W., Holzer, C. E., Ganju, V. K., & Jono, R. T. (1990). Violence and psychiatric disorder in the community: Evidence from the Epidemiologic Catchment Area surveys. *Hospital & Community Psychiatry, 41*, 761-770.
- Taylor, P. J. (1998). When symptoms of psychosis drive serious violence. *Social Psychiatry & Psychiatric Epidemiology, 33*, 47-54.
- Teicher, M. H., Glod, C., & Cole, J. O. (1990). Emergence of intense suicidal preoccupation during fluoxetine treatment. *American Journal of Psychiatry, 147*, 207-210.
- Tengstrom A. (2001). Long-term predictive validity of historical factors in two risk assessment instruments in a group of violent offenders with schizophrenia. *Nordic Journal of Psychiatry 55*, 243-249.
- Tiihonen, J., Isohanni, M., Rasanen, P., Koironen, M., & Moring, J. (1997). Specific major mental disorders and criminality: A 26-year prospective study of the 1966 northern Finland birth cohort. *American Journal of Psychiatry, 154*, 840-845.
- Walsh, M-T., & Dinan, T. G. (2001). Selective serotonin reuptake inhibitors and violence: a review of the available evidence. *Acta Psychiatrica Scandinavica, 104*, 84-91.
- Webster, C. D. (1995). Violence and mental illness. *Psychiatric Services, 46*, 406-407.
- Webster, C. D., Douglas, K. S., Eaves, D., & Hart, S. D. (1997). *The HCR-20 scheme: The assessment of dangerousness and risk (Version 2)*. Burnaby, British Columbia, Canada: Simon Fraser University and Forensic Psychiatric Services Commission of British Columbia.
- Webster, C. D., Eaves, D., Douglas, K. S., & Wintrup, A. (1995). *The HCR-20 scheme: The assessment of dangerousness and risk*. Burnaby, British Columbia, Canada: Simon Fraser University and Forensic Psychiatry Services Commission of British Columbia.
- Weinehall, K. (1997). Att växa upp i våldets närhet. Ungdomars berättelser om våld i hemmet. [To grow up with violence. Youths stories of violence in the home. In Swedish]. Umeå University, Department of Pedagogics: Umeå University Press.
- Wistedt, B., Helldin, L., Omerov, M., & Palmstierna, T. (1994). Pharmacotherapy for aggressive and violent behaviour: A view of practical management from clinicians. *Criminal Behaviour & Mental Health, 4*, 328-340.
- World Health Organization (2002). *World report on violence and health*. Geneva, Switzerland: Author.
- World Health Report (2002). *Reducing risks, promoting healthy life*. Geneva, Switzerland: World Health Organization.
- Zamble, E., & Quinsey, V. L. (1997). *The criminal recidivism process*. Cambridge, UK: Cambridge University Press.