

Vanha Vaasa Hospital, Vaasa, Finland

and

Department of Mental Health and Alcohol Research, National Public Health Institute, Helsinki, Finland

and

Department of Forensic Psychiatry, University of Helsinki, Finland

HOMICIDAL WOMEN IN FINLAND

1982 – 1992

Hanna Putkonen

ACADEMIC DISSERTATION

To be publicly discussed, with the permission of the Medical Faculty of the University of Helsinki in the Main Auditorium of the Department of Psychiatry, on May 9, 2003 at 12 noon.

Helsinki 2003

Publications of the National Public Health Institute
KTL A5/2003

Copyright National Public Health Institute

Julkaisija-Utgivare-Publisher

Kansanterveyslaitos (KTL)
Mannerheimintie 166
FIN-00300 Helsinki, Finland
puh. (09) 4744 1, fax (09) 4744 08

Folkhälsoinstitutet
Mannerheimvägen 166
FIN-00300 Helsingfors, Finland
tel. (09) 4744 1, fax (09) 4744 08

National Public Health Institute (NPHI)
Mannerheimintie 166
FIN-00300 Helsinki, Finland
tel. +358-9-4744 1
fax +358-9-4744 08

ISBN 951-740-346-1
ISSN 0359-3584
ISBN (pdf) 951-740-347-x
ISSN (pdf) 1458-6290

Hakapaino, Helsinki 2003

Supervised by

Docent Marja-Liisa Honkasalo, MD., Ph.D.
Department of Cultural Anthropology
University of Helsinki

and

Professor Jouko Lönnqvist, M.D., Ph.D.
Department of Mental Health and Alcohol Research
National Public Health Institute

and

Professor Matti Virkkunen, M.D., Ph.D.
Department of Forensic Psychiatry
University of Helsinki

Reviewed by

Professor Riittakerttu Kaltiala-Heino, M.D., Ph.D.
Tampere School of Public Health
University of Tampere

Professor Pirkko Räsänen, M.D., Ph.D.
Department of Psychiatry
University of Oulu

The meaning of life is to acquire a morality which respects humans and animals, and to practice it.

(Elämän tarkoitus on hankkia ihmistä ja eläimiä kunnioittava moraali ja harjoittaa sitä.)

-Aki Kaurismäki-

To Helvi
Mummolle

CONTENTS

TIIVISTELMÄ	8
ABBREVIATIONS	10
I LIST OF ORIGINAL PAPERS	11
II INTRODUCTION	12
1. Homicide	12
1.1. Definition of homicide	12
1.2. Epidemiology of homicide	12
1.3. Risk factors of homicide	14
1.4. Child homicide	17
1.5. Neonaticide	17
2. Female perpetrated homicide	18
3. Re-offending	20
4. Mortality	21
5. Forensic psychiatric organization in Finland	21
5.1. Introduction	21
5.2. Forensic psychiatric examination	22
5.3. Criminal responsibility	22
5.4. Involuntary psychiatric care	23
6. Summary of the reviewed literature	23
III AIMS OF THE STUDY	25
IV MATERIALS AND METHODS	26
1. General information	26
2. The circumstances of the index crime (Study I)	28
3. The diagnostic distribution (Study II)	29
4. Re-offending (Study III)	29
5. Mortality (Study IV)	29
6. Statistical methods	30
V RESULTS	31
1. An overview of the results	31
2. The circumstances of the index crime (Study I)	31
3. The diagnostic distribution (Study II)	34
4. The rate of criminal re-offending (Study III)	35
5. Mortality (Study IV)	38
VI DISCUSSION	40
1. General	40

2.	The circumstances and diagnoses	40
3.	The follow-up	43
4.	Methodological aspects	46
4.1.	Strengths	46
4.2.	Limitations	47
5.	Conclusions	50
VII	SUMMARY	54
VIII	ACKNOWLEDGEMENTS	57
IX	REFERENCES	59
X	APPENDIX: LEGAL DEFINITIONS	68

TIIVISTELMÄ

Henkirikokseen syyllistyneet naiset Suomessa 1982–1992

Henkirikokseen syyllistyvät naiset ovat usein persoonallisuushäiriöisiä, kuten vastaavat miehetkin. He tarttuvat useimmiten puukkoon riidassa elämäkumppaniaan vastaan. Kuten miestenkin, naisten rikollisuutta ennustaa aikaisempi rikollisuus. Henkirikollisten naisten kuolleisuus on jopa korkeampaa kuin vastaavien miesten.

Läheiset vaarassa

Tässä väitöskirjatutkimuksessa tutkittiin naisia, jotka syyllistyivät henkirikokseen tai sen yritykseen vuosina 1982–1992 ja määrättiin oikeuspsykiatriseen mielentilatutkimukseen. Heidän uhreinaan oli yli puolessa tapauksista entinen tai nykyinen elämäkumppani. Ystävä oli uhrina neljänneksellä ja oma lapsi 13 %:lla. Näiden lisäksi aineistossa oli seitsemän lapsensurmaa eli vastasyntyneen tappoa. Kaksi kolmasosaa puukotti uhriaan. Riita oli motiivina lähes 60 %:lla. Lapsen surmaamisen yhteydessä naiset usein suunnittelivat myös itsensä surmaamista. Persoonallisuushäiriöisten uhrin olivat enemmän aikuisia kuin lapsia, psykoottisilla oli enemmän lapsiuhreja. Tutkituista lähes kolme neljästä oli päihtyneenä syytteenalaisen tekonsa aikana.

Väkivaltaiset naiset ovat useimmiten persoonallisuushäiriöisiä

Tutkituista lähes kolmella neljästä oli persoonallisuushäiriö ja vajaan kolmanneksen katsottiin sairastavan varsinaista mielisairautta. Selvästi yli puolet oli ollut psykiatrisessa hoidossa joskus ennen tekoaan ja neljänneksen katsottiin olevan vastentahtoisen hoidon tarpeessa teon jälkeen.

Henkirikokseen syyllistyneissä naisissa toistuvasti rikollinen ja aikaisin kuoleva riskiryhmä

Tutkittavia seurattiin toukokuuhun 1999 asti. Heistä neljännes oli tehnyt jonkin uuden rikoksen seurannassa, 15 % väkivaltarikoksen. Näistä uusijoista kahdeksalla kymmenestä oli persoonallisuushäiriö, joka kymmenes oli mielisairas ja yhdeksän kymmenestä oli syyllistynyt jo ennenkin rikoksiin. Enemmän kuin yhden henkirikoksen tehneitä oli 3 %. Kaikki henkirikoksen uusijat olivat persoonallisuushäiriöisiä. Uusiminen tapahtui heti seurannan alussa: uusijoista puolet syyllistyi uuteen rikokseen jo kahden ensimmäisen vuoden sisällä indeksirikoksesta. Uusiminen oli yhtä yleistä muiden väkivaltaisten naisten keskuudessa. Uusimista ennusti parhaiten aikaisempi rikollisuus.

Lähes 17 % naisista oli kuollut seuranta-aikana. Kahdeksan naista kuoli tautiin, kuusi itsemurhaan, kuusi

onnettomuuteen, yksi henkirikokseen sekä lisäksi oli yksi epäselvä kuolemanluokka. Kuolleisuus oli siis selvästi kohonnut: alle 40-vuotiailla jopa yli 200-kertaiseksi normaaliväestöön verrattuna, itsemurhariski oli yli 400-kertainen.

Hoitoa tarvitseva ryhmä

Koska henkirikokseen syyllistyneet naiset selvästi ovat riski niin itselleen kuin ympäristölleen, tulisi heidän hoitoonsa kiinnittää parempaa huomiota niin vankilassa kuin sairaaloissa ja avohoidossakin. He vaikuttavat hyvin samankaltaiselta ryhmältä kuin väkivaltaiset miehet eikä tätä ryhmää pitäisi jättää miesten varjoon.

Tilastokeskuksen tietojen mukaan Suomessa naiset ovat syyllistyneet joka kymmenenteen henkirikokseen vuosina 1977–2000 ja 1990-luvulla täällä tehtiin keskimäärin 140 henkirikosta vuodessa, vuonna 2001 tehtiin 155. Tämä tutkimus on epidemiologinen ja tehty yhteistyössä Helsingin yliopiston, Kansanterveyslaitoksen ja Vanhan Vaasan sairaalan kanssa.

ABBREVIATIONS

APA	American Psychiatric Association
CI	Confidence Interval
df	Degrees of Freedom
PD	Personality Disorder
DSM	Diagnostic and Statistical Manual of Mental Disorders
ICD	International Classification of Diseases
NOS	Not Otherwise Specified
OR	Odds Ratio
SCID	Structured Clinical Interview for DSM
SD	Standard Deviation
SMR	Standardized Mortality Ratio
WHO	World Health Organization

I LIST OF ORIGINAL PAPERS

This doctoral thesis is based on the following original papers which are referred to in the text by Roman numerals I - IV.

I. Hanna Putkonen, Jutta Collander, Marja-Liisa Honkasalo, Jouko Lönnqvist. Personality disorders and psychoses form two distinct subgroups of homicide among female offenders. *The Journal of Forensic Psychiatry* 2001; 12:300-312.

II. Hanna Putkonen, Jutta Collander, Marja-Liisa Honkasalo, Jouko Lönnqvist. Finnish female homicide offenders 1982-1992. *The Journal of Forensic Psychiatry* 1998; 9:672-684.

III. Hanna Putkonen, Erkki J. Komulainen, Matti Virkkunen, Markku Eronen, Jouko Lönnqvist. Risk of Repeat Offending Among Violent Female Offenders With Psychotic and Personality Disorders. *American Journal of Psychiatry* 2003; 160:1-5.

IV. Hanna Putkonen, Erkki J. Komulainen, Matti Virkkunen, Jouko Lönnqvist. Female homicide offenders have greatly increased mortality from unnatural deaths. *Forensic Science International* 2001; 119:221-224.

II INTRODUCTION

1. Homicide

1.1. Definition of homicide

The dictionary definition of homicide is the killing of one human being by the act or omission of another (Nolo 2003). Finnish law defines murder, manslaughter, and neonaticide, and their attempts, as intentional and life threatening (Finnish Law 1998). In practice, the Finnish definition of murder is close to the US definition of first-degree murder (CriminalDefense.com 2003). Murder is defined as killing with clear deliberation, with particular cruelty or with otherwise exceptional ruthlessness. Manslaughter is defined as unlawfully causing the death of another intentionally, but without malicious premeditation (Finnish Law *ibid.*).

There has been some debate in several studies about the inclusion of attempted homicides and the problems involved (Pajuoja 1995, Kivivuori 1999). Attempted homicides are less explicitly defined and there are international differences in their registering as well as the police practice involved, rendering international comparison less reliable (Kivivuori *ibid.*). Conversely, attempted homicides can be seen as part of the same phenomenon as completed homicides, phenomena on the same spectrum (Haapasalo & Petäjä 1999). From the medical point of view, it is often blind chance and circumstance which determine the outcome of the crime. Finnish homicide and attempted homicide offenders have been found to be part of the same demographic group with, e.g., alcohol related disorders; hence, the spectrum hypothesis seems valid (Kivivuori *ibid.*). Attempted homicide has been included in several studies on homicidal crime (Steadman 1980, Robertson et al 1987, Maden et al 1994a-b, Kivivuori *ibid.*).

1.2. Epidemiology of homicide

Homicide is a major public health problem in many countries, although there are substantial differences in the rates worldwide. Countries like those of South and Central America are considered high-risk countries, whereas, e.g., the Nordic countries are countries of low risk. Table 1 shows countries at both ends of this comparison. Moreover, among the low-risk countries, Finland has a relatively high rate of homicide, 3.3/100,000 for the year 1996 (World Health Organization, WHO 1997–1999).

Table 1: Age-standardized death rates for homicide worldwide ¹⁾

Country	Homicides/ 100 000 standard population	Country	Homicides/ 100 000 standard population
1. Brazil, South, SE & Mid-West ²⁾	25,8	39. Sweden ³⁾	1,2
2. Russian Federation ⁴⁾	22,2	41. Denmark ³⁾	1,1
3. Kazakhstan ⁴⁾	18,7	44. Norway ²⁾	1,0
4. Estonia ⁵⁾	16,4	45. Germany ⁴⁾	0,9
5. Republic of Moldova ³⁾	13,6	Ireland ³⁾	0,9
6. Latvia ⁵⁾	11,9	47. Spain ²⁾	0,8
7. Belarus ⁵⁾	11,5	48. United Kingdom ⁴⁾	0,7
8. Ukraine ⁵⁾	11,3	49. Japan ⁴⁾	0,6
9. Kyrgyzstan ⁵⁾	8,9	50. Luxembourg ⁴⁾	0,5
10. Lithuania ⁴⁾	8,6	UK: England and Wales ⁴⁾	0,5
11. United States of America ⁴⁾	7,6	52. Malta ⁴⁾	0,4
...		53. Iceland ²⁾	0,0
18. Finland ³⁾	3,3		

1) Source: WHO/World Health Statistics Annual 1997-1999 (online edition)

Most recent rates in descending order for the countries with publicized information

2) 1995

3) 1996

4) 1997

5) 1998

Homicide in Finland

The typical Finnish homicide is that committed by a drunken man in a fight with his drunken friend. A quite recent study of Finnish homicide showed that the rate of homicide has been slowly increasing during the past 20 years, but there is considerable variation between single years (Kivivuori 1999). Table 2 shows the rates for 1970-2001. Homicide offenders in Finland are typically 20-50 year-old men, social outcasts, for whom violence is part of keeping a "tough" reputation and life style. Sexual and drinking group conflicts were the most common types; 72% of the perpetrators were under the influence of alcohol. Another Finnish study found 85% of homicide offenders to have been drunk (Pajuoja 1995). Stabbing has been the most common method of operation, 70% of the victims have been male, most often they have been friends or acquaintances, and sexual partners has been the second most common group (Kivivuori *ibid.*). In Finland, only a small number of homicides remain unsolved as shown in the mean of 97% clearance rate in the statistics for 1982-1992 (Statistics Finland, Criminology 1980-2000).

Table 2: Homicides in Finland 1970–2001 ¹⁾

	1970	1980	1990	1995	1996	1997	1998	1999	2000	2001
Manslaughter, murder; homicide	56	111	145	146	153	139	113	142	146	155

1) Offenses recorded by the police. Statistics Finland.

Homicide in the United States

In this introduction, some figures from The United States are also presented, because of the numerous forensic psychiatric studies performed there and the readily available statistics. Nevertheless, Finnish study results may not be directly applicable to the US and vice versa. With increasing cultural globalization, however, violent crime may become more similar. According to the US Department of Justice, the rate of homicide has varied in the United States from a 1991 peak (9.8 per 100,000) to a 1999 decline (5.7 per 100,000). Almost half of the offenders have been under the age of 25; African Americans have been disproportionately represented, and males have represented nearly ninety percent of offenders. The homicides are most often felony-, sex-, or drug-related, with those involving adult or juvenile gang violence increasing five-fold since 1976. The most common method has been shooting. About one third of the victims were acquaintances of the assailant; in 14% of all murders the victim and the offender were strangers and in about one third the victim/offender relationship was undetermined (US Department of Justice; Bureau of Justice Statistics 1999).

1.3. Risk factors of homicide

When discussing violence, especially during the present times, it has to be remembered which aspect the focus is on. Violence and, hence, homicide almost certainly have their cultural, social, religious and psychological aspects. This chapter focuses on the risks of homicide from the point of view of psychiatric disorders. Since most of the studies on this subject have been performed in Western cultures, their applicability to countries outside this sphere is undetermined. Furthermore, most studies focus on men and gender differences are rarely discussed.

Psychotic disorders

It is now considered true that a relationship between homicide and psychiatric disorders exists and this has been extensively discussed (Hodgins 1992, Hodgins et al 1996, Angermeyer et al 1998, Eronen et al 1998, Hodgins 1998, Tehrani et al 1998, Shaw 1999). This relationship has been proven similar for both women and men although few studies on female subjects are available (Hodgins et al *ibid.*, Shaw *ibid.*).

A Finnish study calculated the risks of homicide by means of odds ratios for different diagnoses. The age-adjusted odds ratio for men with schizophrenia was 8.0 (95% CI 6.1–10.4) and for women 6.5 (2.6–16.0) and for other psychoses 1.3 (0.8–1.9) for men, 0.6 (0.08–4.2) for women (Eronen et al 1996b). Similar risks have been calculated in other countries (Hodgins et al 1996).

Violent behavior is considered liable to arise during psychotic symptoms (Taylor et al 1993, Taylor 1998). Perpetrators driven by delusions have been found to be most seriously violent (Taylor 1985, Taylor et al 1998). On the other hand, it has been found that delusions or command hallucinations, per se, might not be sufficient to increase the threat of violence (Hellerstein 1987, Taylor 1998, Appelbaum et al 2000). Hence, this is a matter of debate. The above studies covered a mostly, if not completely, male material.

There has been some general anxiety about an increase in mentally disordered people committing homicides but, at least in England and Wales between 1957 and 1995, there has been little fluctuation in the number of mentally ill people committing homicide (Taylor & Gunn 1999). Even though the risk ratios show moderate risks, most of the people suffering from schizophrenia or other psychotic disorders do not commit homicides. The characteristics of maleness, youth, low social class, and alcohol- or other substances-abuse continue to pose still larger risks of violent behavior than major mental disorders in general (Monahan 1992). The dangerousness of the latter must not be over-emphasized and the threat of stigmatization must be avoided as it is too strong already (Arboleda-Flórez et al 1998, Phelan & Link 1998, Taylor & Gunn *ibid.*). Moreover, strangers seem not to be at risk from the schizophrenic patient (Angermeyer 2000). Hence, general fear of the psychotic patients is inappropriate.

Personality disorders

Certain personality disorders, principally cluster B (histrionic, narcissistic, antisocial and borderline personality disorders) and particularly antisocial personality, are associated with the risk for homicide. The combination of impulsivity with the use of alcohol and drugs is common to both personality disorders and homicide. Hence, the connection is obvious. Indeed, personality disorders show up frequently in homicide offenders (Eronen et al 1996b, Shaw et al 1999).

Calculations on personality disorders and risk of homicide have been done. In a Finnish study, the odds ratio for men for all personality disorders was 10.0 (95% CI 8.7–11.5) and for women 10.5 (6.7–16.4), and for antisocial personality disorder 15.8 (12.9–19.4) for men and 75.7 (40.1–142.7) for women (Eronen et al 1996b). Also, in a Danish birth cohort in the 1980's the relative risk of violent offending showed a high relationship to antisocial personality disorder among women: 12.2 (95% CI 8.8–16.9) as well as men: 7.2 (6.5–8.0) (Hodgins et al 1996).

Substance use disorders

It has been shown that "mental patients" do not form a homogenous group in relation to violence; the presence or absence of a comorbid substance use disorder affects the risk of violence crucially, raising the risk significantly when present (Hiday et al 1998, Steadman et al 1998, Wallace et al 1998, Soyka 2000, Walsh et al 2001). Comorbidity in alcohol dependency was found quite high on both axes I and II, reaching 72% in a study of hospitalized male patients (Driessen et al 1998). Comorbidity, therefore, increases the violence risk of both psychotic and personality disordered patients.

Concurrent diagnoses of substance use disorders have been reported in both homicide offenders and general hospitalized psychiatric patients (Côté & Hodgins 1992, Mueser et al 2000). Alcoholism is highly prevalent in personality-disordered male homicide perpetrators in Finland (Tiihonen et al 1993). Finnish alcoholic and impulsive male offenders have been found to have characteristics of the so-called type 2 alcoholism: e.g. low 5-hydroxyindoleacetic acid concentration in the cerebrospinal fluid, high free testosterone concentration, aggressiveness, reduced socialization (Virkkunen et al 1994). The offense frequently occurs during alcohol intoxication among homicide perpetrators of both sexes (Jurik & Winn 1990, Muscat & Huncharek 1991, Kivivuori 1999). In fact, alcohol sales have been associated with the homicide rate in Finland and several other European countries, with the association stronger in men than in women (Rossow 2001).

The odds ratios of risks for homicidal behavior increase significantly when a comorbid diagnosis of alcohol dependency is added: for women with schizophrenia and comorbid alcohol dependency 77.0 (95% CI 24.4–242.6); personality disorders with alcoholism 84.1 (95% CI 57.0–124.2) (Eronen 1995) whereas for men with schizophrenia and comorbid alcohol dependency 17.2 (95% CI 12.4–23.7) (Eronen et al 1996c). The ratios are obviously affected by the fact that female perpetrated homicide is a rare phenomenon; risk ratios depict relative risk and since women in the general population offend rarely, the risk ratios become high.

Earlier violent behavior

A history of violence often predicts future violence (Monahan 1988, Widom 1989, Bonta et al 1998). Compared with the general male population, Finnish male homicide offenders had a ten-fold risk of homicidal behavior if they had committed an earlier homicide. The repeated offense also tended to happen soon after release from prison (Eronen et al 1996a).

Violent behavior of parents may predict not only their own future violence but also that of their children. The offspring of recidivistic homicide offenders have been found to have an increased risk of criminal and

violent offending themselves in a study with 97% male data (Putkonen et al 2002). Physical abuse was found to be a risk factor for later aggressive behavior in a prospective, representative study with 53% of the subjects male. The results were similar for both girls and boys. The authors further speculated that abused children tend to acquire deviant patterns of processing social information and this, in turn, may mediate the development of aggressive behavior (Dodge et al 1990). Although studies comparing the genders are largely preliminary, the cycle of violence tendency might be even stronger in women than men (Fagan 2001). In any case, childhood trauma may reap long-term negative consequences: abused girls may become abusive women (Siegel 2000).

1.4. Child homicide

A quite recent study investigated all recorded 292 child homicides in Finland 1970–1994 (Vanamo et al 2001). The perpetrators were mothers in 41% of the cases and fathers/stepfathers in 27%. Out of the total number of victims, 60% were four years or younger. The younger the victim was, the higher the probability of the mother as perpetrator. In contrast, there were more father perpetrators (59%) among the 5–14 years group. Of the filicide-suicide perpetrators, 29% were mothers, and 69% fathers.

In the US, the rate of children murdered under the age of five increased over the past two decades but has declined recently; in 1999, 593 children under the age of five were killed. Of these young children, mothers killed 30% and fathers 31%. Of those children killed by someone other than a parent, males killed 82%. Through the early 1990s, the number of infanticides of children aged one and younger, increased while the number for older children remained relatively constant. Recently, the number of infanticides of ages one and younger has declined (US Department of Justice; Bureau of Justice Statistics 1999).

An American study suggests that women who kill their children are non-addicted, married, low-income, mentally ill, and young (McKee & Shea 1998). The same study found that 80% of the filicidal women had a psychiatric diagnosis, half of which were psychotic or paranoid disordered. In addition, childbearing at an early age has been found to be a risk factor for infant homicide (Overpeck et al 1998).

Furthermore, murder-suicides often involve children. Fathers tend to kill their children and wives, mothers only their children (Lecomte & Fornes 1998, Byard et al 1999). Murder-suicides, however, are more likely to be committed by males (Lindqvist & Gustafsson 1995, Lecomte & Fornes *ibid.*).

1.5. Neonaticide

In Finnish legal terminology, neonaticide is the killing of a new-born in a postpartum "state of weakness"

(Finnish Law 1998). Finnish legislation does not define boundaries of time after delivery and implies that it is a crime committed only by women. Research has most often defined neonaticide as the killing of a newborn within 24 hours of its birth. A recent study points to a decrease in the number of neonaticides in Finland: the number decreased from 20 cases during 1970–1974 to five cases in 1989–1994 (Vanamo et al 2001). On the other hand, another study implied that there are quite a few hidden cases (Collander 2002).

Neonaticide is a special entity with specific psychiatric as well as social features and circumstances distinguishing them from other homicides (Resnick 1970). In neonaticide both the perpetrator and the victim are explicit. The most usual motives for neonaticide have traditionally been extramarital paternity among married women and “illegitimacy” among unmarried women (Resnick *ibid.*). Those killing an infant, may be less mature and younger than other homicide offenders (Silverman & Kennedy 1988, Green & Manohar 1990, Haapasalo & Petäjä 1999). In addition, it has been hypothesized that they may suffer from psychotic disorders less frequently than other homicide offenders (Resnick *ibid.*, Haapasalo & Petäjä *ibid.*). A common pattern of childlike demeanor, denial, depersonalization, dissociative hallucinations and “good girl” status, without sociopathic tendencies, has emerged in studies done in this field (Spinelli 2001). It has been suggested that neonaticides might be under-reported even in hospitals, where they could be preventable (Mendlowicz et al 2000).

2. Female perpetrated homicide

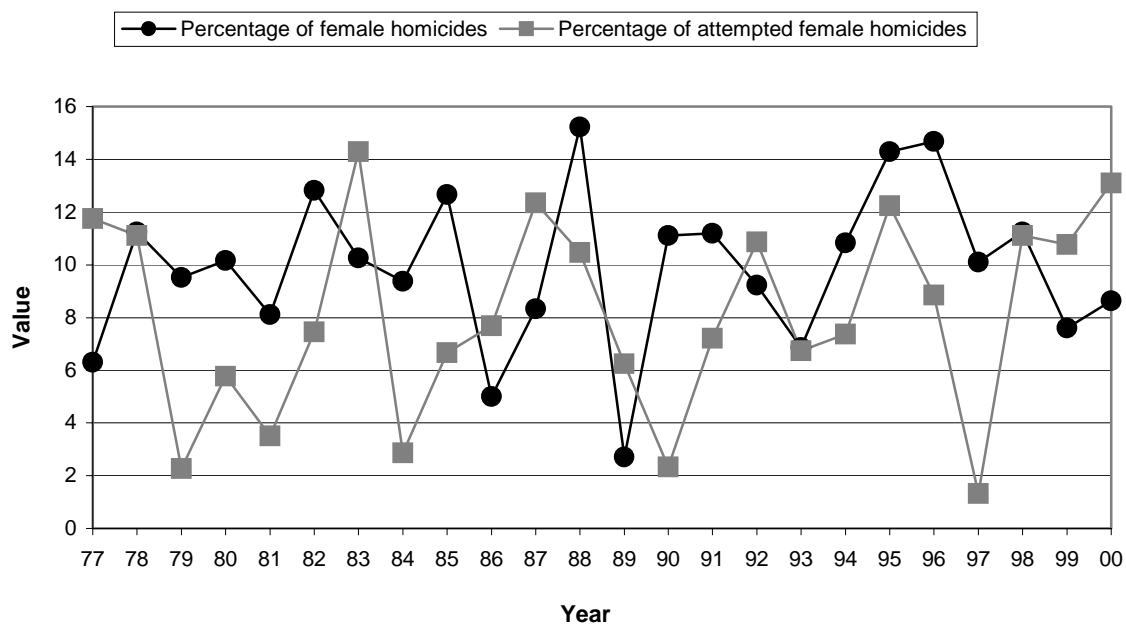
There are several theories of female violence. The psychoanalytic view focuses on, e.g., female perversions and projective identification (Welldon 1991, Motz 2001); feminist theorists discuss social conditioning and response to oppression; biological views stress the importance of hormones while attachment theorists point to early relationships, parenting etc. But the question arises: why should the theories differ for women and men? What answer can forensic psychiatry offer?

It is accepted fact that women commit far fewer homicides than men. This is one of the reasons why most studies have focused on men. Although women are less often intoxicated during the homicide, they have been diagnosed with a psychiatric disorder more often than men. Even though female homicide offenders have not received equal attention in research, there are some studies which have confirmed the above notions (Gottlieb et al 1987, Yarvis 1990, Spunt et al 1996). Yet, a number of authors have speculated that psychiatric disorders among criminal women seem to be neglected to a larger extent than among men (Tuninger et al 2001).

During the twenty-three year period (1977–2000), 9.9% of those convicted for fulfilled homicide in Finland (N=2,253) were women (Statistics Finland, Criminality 1980–2000). The percentage of female-committed homicides has varied a great deal but perhaps slowly increased (Figure 1). This finding was

also presented in a comprehensive study of Finnish homicide comparing the years 1988 and 1996 (Kivivuori 1999). During this period, the percentage of women out of the total number of offenders had increased from 5% to 14%, and the absolute number of female homicides increased from six to 24. The study reported rates for only two years but the increasing tendency seems valid. The same study showed women attack children as well as men, using both knives and guns. The author speculated that the homicides by women have begun to resemble those by men.

Figure 1: Convictions in district courts for homicide ¹⁾ as main offense



1) including fulfilled and attempted murder, manslaughter, homicide and neonaticide
 Source: Niskanen T. *Criminal Statistics Database. Statistics Finland, Helsinki, 1977-2000*

Between 1976 and 1999, 12.3 % of the homicide offenders in the US were female. Since the early 1980s, however, the offending rate (per 100,000 population) for females has somewhat declined. Women homicide offenders are more likely to commit murder within a family relationship or murder by poison (US Department of Justice; Bureau of Justice Statistics 1999).

Although studies tend to portray female homicide as the result of interpersonal conflicts, with women defending themselves (Jurik & Winn 1990, Masle et al 2000), usually by killing family members (Husain et al 1983), a Scandinavian study found that women who kill their children are both psychotic and non-psychotic. Those who kill their spouses are mainly non-psychotic (Gottlieb et al 1987). Women use stabbing and shooting as the most frequent methods of homicide in several countries (Mattila 1988, Kellerman & Mercy 1992, Masle et al 2000). Intoxication at the time of homicide appears to be prevalent in female perpetrated homicides, although less so than in men (Spunt et al 1996). Alcohol-related female

homicides have been classified under domestic or non-domestic, and as a result of a dispute or not, with non-domestic disputes the most common type. In this study of 35 subjects (Spunt et al 1998), the women's motives for killing children differed from those for killing adults. Maternal salvation fantasies, altruistic motives, and extended suicide (murder-suicide) may underlie most female filicides (Bourget & Bradford 1990, Somander & Rammer 1991, Marzuk et al 1992).

The risk of offending among both the female psychiatric patients and the diagnostic distribution of female homicide offenders has been researched, resulting in several convincing conclusions. Women with a history of psychiatric hospitalization or major disorders commit violent offenses more frequently than women in the general population (Hodgins 1992, Wessely 1998). Further, female homicide offenders have been found to have a ten-fold higher odds ratio than the general female population for having schizophrenia or a personality disorder (Eronen 1995). In a Danish study, 44% of homicidal women were psychotic (Gottlieb et al 1987). Likewise, antisocial personality disorder with drug abuse has been found prevalent in the young (35 years old or younger) female homicide offenders, alcoholism and affective disorder in the middle-aged (40 years old or older) (Husain et al 1983, Robertson et al 1987).

3. Re-offending

Probably one of the best predictors of future violence is a history of violence (Monahan 1988, Eronen et al 1996a, Bonta et al 1998). Furthermore, there seems to be an association between mental disorders and homicide recidivism (Tiihonen & Hakola 1994, Eronen et al 1996a, Tehrani 1998). Some researchers have gone so far as to say homicide recidivists in Finland are almost always mentally ill, with schizophrenia, severe alcoholism, paranoid psychosis, and paranoid personality disorder being the prevalent conditions (Tiihonen & Hakola *ibid.*).

Violent recidivism, homicide included, has been associated with antisocial personality disorder and psychopathy in men (Harris et al 1991, DeJong et al 1992). Among the best predictors of both general and violent recidivism is the Hare Psychopathy Checklist Revised, a 20-item scale for assessment of psychopathy (Hare 1991, Hemphill et al 1998). Psychopathy in female offenders, however, might be less pronounced and less predictive of later recidivism, both general and violent (Salekin et al 1998). Hence, redefinition of the checklist criteria has been proposed for gender-neutrality (Rutherford et al 1999, Vitale et al 2002).

A Canadian study found female criminal offenders to be repeaters in 73% of cases and alcohol or drug problems to be associated with recidivism (Robertson 1987). Homicide recidivism studies on women are, unfortunately, sparse; most study subjects have been men.

4. Mortality

Increased mortality rates have been found in both criminal and psychiatric populations (Martin et al 1985, Joukamaa 1998). A Swiss study found an increased death rate in released prisoners: the rate was over four times higher than the age-adjusted rate in the general population, with the majority due to drug overdose (Harding-Pink 1990). Studies on personality-disordered male criminal offenders, especially violent male offenders as well as prison studies, have found increased rates of death, particularly for suicide (Robertson 1987, Kullgren et al 1998, Joukamaa 1997, *ibid.*, Pérez-Cárceles et al 2001). Habitually violent Finnish male offenders have been found to have an almost five-fold increase in death rates compared to the general population of men (Paanila et al 1999).

In a study on 500 psychiatric outpatients of both sexes, alcoholism, antisocial personality and drug addiction were found highly predictive of unnatural death (Martin et al 1985). Other studies have repeated this finding: personality disorders and psychoactive substance use disorders predict premature death, especially suicide (Black et al 1996, Baxter & Appleby 1999, Kjelsberg & Dahl 1999). Not only personality disorders but schizophrenia and depression have also been associated with an elevated risk of death (Joukamaa et al 2001).

A mortality study among psychiatric patients found that women not only have increased mortality rates, especially in the 25–29 year age group, but also in the rate of suicides (Sohlman & Lehtinen 1999). I have not succeeded in finding studies concentrating on the mortality of female homicide offenders.

5. Forensic psychiatric organization in Finland

5.1. Introduction

Four national laws apply to the forensic psychiatric services in Finland: the criminal law on forensic psychiatric examinations (1889), the mental health law (1990), mental health act (1990), and the law on state mental hospitals (1987 and 1997) (Finnish Law 1998). The mental health law outlines the general principles concerning mental health services and supplies basic guidelines for the work in state mental hospitals. State mental hospitals perform forensic psychiatric evaluations and treat patients who either have been found not guilty by reason of insanity or who are too dangerous or difficult to treat in regional hospitals. In addition, the mental health law lays down principles for the forensic psychiatric examinations.

5.2. Forensic psychiatric examination

In Finland, the court decides whether or not a forensic psychiatric examination is required to assess the criminal responsibility of homicide perpetrators. The examination may be requested by the offender, by her/his attorney or by the prosecutor. It can be ordered when the criminal offense can lead to at least a one-year prison sentence (Finnish Law 1998). In practice, however, almost all forensic psychiatric examinations are performed on offenders who have committed serious violent offenses, e.g. murder or other very serious offenses, e.g. serial property offences. Most homicide offenders in Finland are, therefore, thoroughly examined (Pajuoja 1995).

The National Authority of Medicolegal Affairs arranges the evaluation through special hospitals with forensic psychiatrists who conduct the actual forensic psychiatric evaluation. The examination is an extensive, hospital-based psychiatric study of the offender lasting a maximum of two months (Finnish Law 1998). It consists of extensive data gathering from various sources, standardized psychological tests, physical examinations, laboratory tests, constant observation, and repeated interviews by a forensic psychiatrist and a multi-professional team. Using the examinations as a basis, a forensic psychiatrist assesses the level of criminal responsibility and makes a psychiatric diagnosis (National Agency for Welfare and Health 1992). Diagnoses were made according to ICD-8 (WHO 1967) and DSM-III (American Psychiatric Association, APA, 1980) criteria before 1987 and according to DSM-III-R (APA 1987) criteria thereafter. ICD-10 (WHO 1992) became the official classification in 1996, but DSM-IV (APA 1994) has been used widely in addition to it, especially in research. The examining forensic psychiatrist formulates a detailed written statement for the National Authority of Medicolegal Affairs, which then prepares its own statement for the court. The court makes the final decision on criminal responsibility (Finnish Law *ibid.*).

5.3. Criminal responsibility

The court assigns the culpability of the accused to one of three categories: full responsibility, diminished responsibility, and no criminal responsibility. The level of responsibility depicts the evaluated psychiatric state of the offender at the time of the crime - to what degree the offender is "in possession of her/his faculties". Offenders with full responsibility are deemed mentally healthy and sentenced normally. The second group receives a prison sentence shortened by 25%. They may suffer from serious psychiatric disorders but not actual psychotic disorders - not at least during the index offense - or they may be mentally retarded. Offenders with no responsibility are not sentenced at all, but are usually committed to a hospital as criminally insane patients (Finnish Law 1998, Eronen et al 2000). Theoretically, it is possible that an offender is deemed irresponsible at the time of the offense but later recuperates so that hospital care is no longer indicated.

The concept of criminal responsibility has been a controversial one throughout its history, and both the legal and the medical professions have debated it. A Finnish Ph.D. thesis, which discussed the categorizations of criminal accountability, concluded that linking the legal concept of responsibility with psychiatric terms is appropriate (Pajuoja 1995). The category of diminished responsibility has received most criticism but has been retained in Finnish legislation. On the one hand, it is believed that a (personality) disordered offender has little power to control her/his behavior; on the other hand, it is seen as a difficult-to-assess and vague category. It was originally argued on psychiatric grounds but has no psychiatric consequences; i.e. no care is implicated by the assessment of diminished responsibility (Pajuoja *ibid.*).

5.4. Involuntary psychiatric care

During the examination, the forensic psychiatrist must also estimate whether or not the offender fulfills the criteria for involuntary psychiatric care. On the basis of the mental health law, provided that the necessary conditions for forced care are fulfilled, the offender can be hospitalized against her/his own will. For an involuntary commitment, the conditions are: 1) the person has to suffer from a psychotic disorder, and 2) due to this psychosis, she/he has to be a) in need of immediate psychiatric care in a way that the patient's condition would worsen without proper care, or b) be dangerous to her/his own health or welfare, or c) be dangerous to the health or welfare of others, and 3) alternative treatment facilities are not capable of giving the patient the required treatment (Finnish Law 1998).

6. Summary of the reviewed literature

Mental disorders and homicide seem associated; the connection is strongest for substance use problems and personality disorders. Violence also appears to perpetuate itself and mortality is increased in criminal and psychiatric populations. The association of homicide with mental disorders, the increased likelihood of re-offending, and the offenders' increased mortality have been frequently documented for men. Data on homicidal women is seriously lacking.

Female perpetrated homicide is traditionally portrayed as either an interpersonal conflict with a (battering) lover or extended suicide (murder-suicide) with a child as the victim. This might imply that in a follow up, female homicide offenders may not drastically differ from that of the general population women – at least if they receive good post-crime care. Then again, substance use and personality disorders are both risk factors of homicide and are both enduring, difficult-to-treat conditions – in women as well as in men. This would imply that homicide offenders are a vastly troubled group regardless of gender.

Finland is a country with a relatively high rate of homicide, but with an excellent percentage of solved homicides and comprehensive registers. Women commit ca 10 % of homicides in Finland, and this rate seems to be increasing. Important forensic psychiatric studies on homicide have been performed in Finland, but thus far they have concentrated mainly on men; quantitative knowledge on female offenders is lacking. This defect cannot be allowed to continue. Because women should receive equal attention in studies, and because scientific studies can offer solutions for the development of preventive measures and better mental health care, it is important to form a comprehensive picture of the female homicide offender.

III AIMS OF THE STUDY

The purpose of the present study was to form a comprehensive picture of the Finnish female homicide offender by studying those women who underwent a forensic psychiatric examination. The specific aims were:

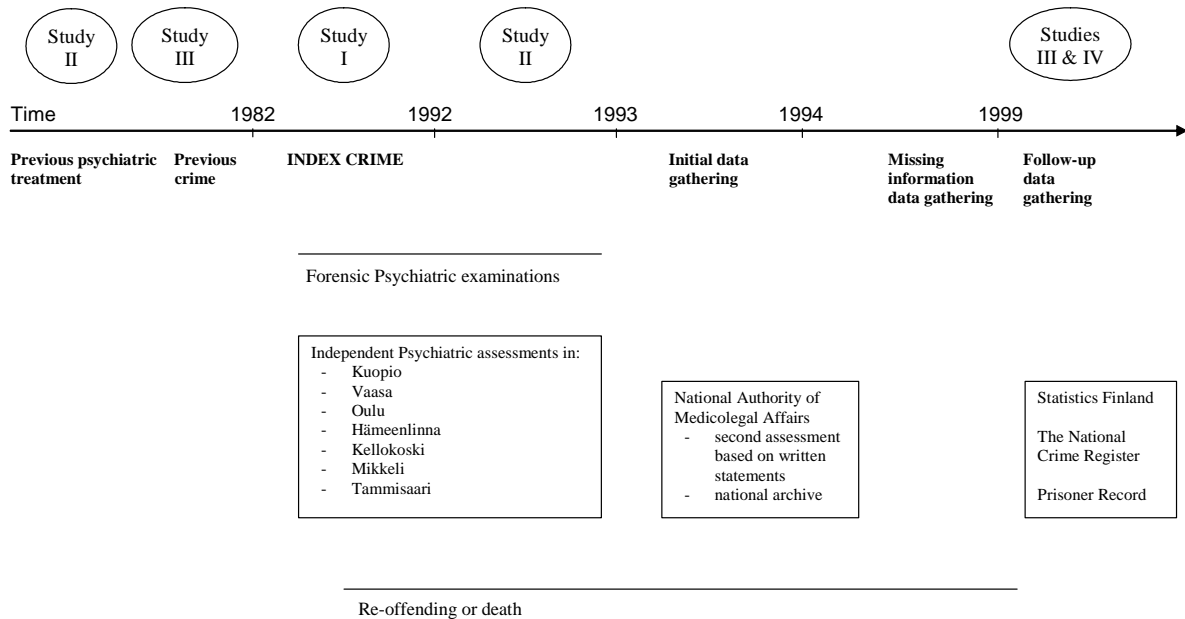
- I To describe the general nature of the homicide or attempted homicide: victims, methods of operation, motives and the rate of offenders' intoxication during the index crime.
- II To examine the diagnostic distribution of the homicidal women, the rate of psychiatric care, the need of involuntary psychiatric care and, by separate analysis, the neonaticide-offenders in comparison with the other female homicide offenders.
- III To investigate the degree of criminality in the homicidal women, who had undergone forensic psychiatric examinations, to compare the violent offense rate with that of other female violent offenders, and to analyze the associations of re-offending with explanatory variables such as psychiatric diagnoses and previous offending.
- IV To assess the mortality of the homicidal women up to 1999.

IV MATERIALS AND METHODS

1. General information

The general study design is depicted in Figure 2.

Figure 2: An overview of the material



Definitions

For the purposes of this study, volition was emphasized as a criterion of inclusion, and therefore the crimes of murder, (voluntary) manslaughter, attempted murder, attempted manslaughter and neonaticide were included. In this research, the term homicide was used broadly to include all the aforementioned crimes, even though this is not an exact norm. Involuntary manslaughter (involuntarily or unintentionally causing the death of another) was not included, because it does not fit the criterion of intention. Neonaticide was defined as the killing of a newborn according to the Finnish legislation (Finnish Law 1998), though all cases also fulfilled the research criterion of within 24 hours after birth.

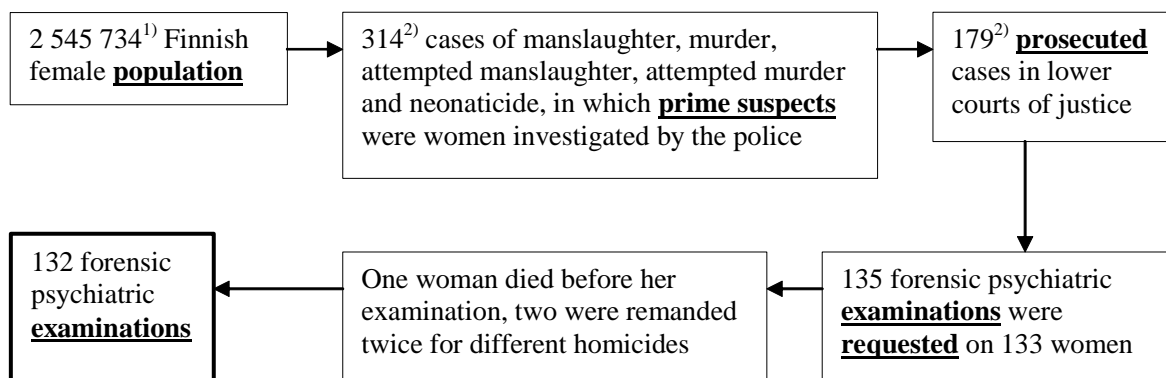
This research included attempted murder and manslaughter because they were thought to be part of the same phenomenon and, also, to allow augmentation of the study population to avoid extending the time involved and the problems related to prolonged periods of study. The absence of any significant differences between the fulfilled and attempted acts regarding all studied variables was verified to ensure the reliability of analyzing all the crimes together. Violent offenses (Study III) were defined as homicide (murder, voluntary manslaughter, and neonaticide), attempted homicide, or any assault.

The study procedure

This study was approved by the Ethics Committees of the University of Helsinki, National Public Health Institute and the National Authority of Medicolegal Affairs of Finland. Two researchers (Collander and Putkonen) went to the archives of the National Authority of Medicolegal Affairs with the appropriate permits to obtain all the statements of forensic psychiatric examinations in Finland. Both researchers went through all the statements in order to recheck the data for reliability. Follow-up information was collected from Statistics Finland, The National Crime Register, the Prisoner Record, and the National Death Register at Statistics Finland.

During the study period, there were 314 cases of homicide or attempted homicide investigated by the police, in which the prime suspects were women (Figure 3). The police report cases, not persons, and therefore several cases can be recorded for a single person. Of the total 314, 179 cases were prosecuted in the district courts. The rest were dismissed because of a verdict of “not guilty”, or insufficient evidence to prosecute, no crime had actually occurred, the offense title changed into something else (e.g. attempted manslaughter into aggravated assault), the suspect was a minor, or she had died. Of the women prosecuted in the district courts from 1982–1992, the offender had been sent for a forensic psychiatric examination in 75% of the cases (135/179). The remaining 25% had either committed suicide, were exonerated, of obvious, diminished criminal responsibility, or no examination was otherwise considered necessary. Of the 135 subjects studied, one died before examination and two were remanded for two different crimes. Hence, the final number of subjects was 132.

Figure 3: Finnish homicidal women 1982–1992: Formation of material



1) Female population of 1987 (Statistics Finland 1998)

2) Statistics Finland, Criminality and offenses recorded by the police, data for years 1982–1994

This study was based on official written records and statistics of the 132 women who had undergone a forensic psychiatric examination subsequent to committing homicide or attempted homicide during the

years 1982–1992. The subjects' ages during the index offense followed almost normal distribution with a slight positive skew, and the mean age of the group was 33 years (SD 13, range 16–77). All subjects were Finnish, white Caucasian. At the time of the index crime, 28% were classified as working women, housewives, or students; 21% pensioned and 51% were unemployed. Marital status was divided into 51% married or in common-law marriage, 36% single, and 13% divorced or widowed. Because diagnostic classifications changed in Finland in 1987, it was necessary to assure that no statistically significant differences in diagnostic frequencies existed both pre- and post 1987. It was confirmed that there were no statistically significant differences: before 1987 there were 33% psychotic, 50% personality disordered women and after 1987 there were 25% psychotic, 68% personality disordered women (Chi square=4.9, df=2, p=0.09). Yet, a trend was observed.

Original studies I and II reported 37 women with a psychotic disorder, 81 with a personality disorder (excluding those with a comorbid psychotic disorder) and 14 women with neither. After completing these studies, in the process of re-checking material and method, it was noticed that one of the "personality disordered" was in fact just below that diagnosis but did not fulfill all the necessary criteria and hence belonged to the group of "neither". Studies III and IV therefore show the figures of 37, 80 and 15, respectively. This did not affect the results of studies I and II.

2. The circumstances of the index crime (Study I)

To depict the circumstances of the homicide, all victims, methods of operation, and motives were recorded exactly as they appeared in the statements of the forensic psychiatric examinations. A child victim was, by definition, under 18 years of age, though only three children were over seven years old. The victims were grouped according to their relationship to the offender. Past or present husbands, common-law husbands, or long-term intimate relationships were categorized as former or present intimate partners. Methods of operation followed police report classifications (battering, drowning, hitting with a blunt object, poisoning, shooting, stabbing, strangulation, or suffocating). Motives were categorized as the offender herself admitted both during the police investigations and the forensic psychiatric examination (extended suicide or murder-suicide i.e. a plan to commit suicide after the homicide; impulsive act; jealousy; long-term violence by the victim; quarrel; self-defense; sexual reasons; victim's provocation; other; or none). The reports explicitly stated alcohol intoxication as present or absent. The situation was further analyzed by grouping the subjects according to the diagnostic categories of psychotic and personality disorders according to clinical convention (DSM-III-R).

Because neonaticides are a specific entity with explicit victim-perpetrator relationship and specific features of circumstance, Study I excluded the seven women who had committed neonaticide. Hence, the number of subsequent subjects was 125.

3. The diagnostic distribution (Study II)

The point of Study II was to describe the frequency of all psychiatric diagnoses, legal responsibility, and previous psychiatric care. All the diagnoses were recorded minutely as they appeared in the statements of the forensic psychiatric examinations. The diagnoses were made by impartial, independent forensic psychiatrists. Disorders were categorized respectively into psychotic and personality disorder groups according to established convention (DSM-III-R) in order to simplify the interpretation of results. Furthermore, the age of 33 (mean age of the study group) was used to divide the group into two subgroups for further analysis.

4. Re-offending (Study III)

Study III focused on the offending of the homicidal women both before and after the index offense was perpetrated. Information on the offenses committed by the 132 subjects before the index offense, was collected from forensic psychiatric examination reports. Material on crimes enacted both before and after the index offense was taken from the National Crime Register of May 1999. The aforementioned data were supplemented using the Prisoner Record. The combined information was analyzed as a lifetime variable to produce an overview of the subjects' offending and the survival statistics. All offenses were included and coded according to severity. In this thesis, severe violent offenses include homicide, attempted homicide, or any assault.

Follow-up time was recorded within one month's accuracy from the time of the index offense (1982–1992) until the re-offense, death, or the conclusion of the study in May 1999. Five of the deceased subjects had committed a new offense and were therefore included in the re-offender group. The mean follow-up time for re-offenders was four years (SD 4, range 1 month–14 years), and for the rest, excluding the deceased subjects, 12 years (SD 3, range 6–17 years).

5. Mortality (Study IV)

Accurate information on all the 132 subjects' mortality was collected in May 1999 from the National Death Register at Statistics Finland including the death certificates, containing the official classification of death. Statistics Finland publishes annual data (at five-year intervals) on general population death rates by age and sex, which were used for the age-adjusted ratios (Population statistics 1982–1999).

Follow-up time was recorded within one month's time limit from the date of the index crime until death or the end of follow-up, May 1999. The mean follow-up time for deceased subjects was 7 years (SD 4, range

1–16 years), and for live subjects 11 years (SD 3, range 6–17 years).

6. Statistical methods

In comparing different groups (psychotic vs. personality disordered, younger vs. older women, different levels of responsibility) with regard to frequencies of different victims, methods of operation, motives, intoxication, or different diagnoses, the Chi square and Fisher's exact tests were used as appropriate. All statistical tests were two-tailed with alpha set at 0.05. SPSS 8.0 or 10.0 statistical software was used in all the analyses.

Odds ratio

Odds ratios (Hosmer & Lemeshow 1989, Rudas 1998) available directly from binary logistic regression, were used to compare the number of re-offenders in the study group with that in the general population. Statistics Finland collects data on the rate of offending in the general population. For the calculation of odds ratios a specific statistic was ordered: the target population was the group of women recorded as committing a violent offense between Jan. 1st 1982 and May 31st 1999. The prevalence of violent re-offending after the index offense was analyzed for the original study group of 132 homicidal women as well as for all other violent female offenders.

Survival analysis

Cox regression (Norušis 1999) was used to examine the association of explanatory variables with the rate of further offending and mortality. After initial screening the following background variables were used: age at index offense (continuous scale), psychiatric diagnosis (nominal scale, reference group - those with neither psychotic nor personality disorders), alcohol or drug dependency (binary), and offenses before the index crime (binary). The variables were calculated with Cox regression analysis using the forward stepwise likelihood ratio method.

Standardized Mortality Ratio

The SMR, Standardized Mortality Ratio, (Clayton & Hills 1993) was calculated as the observed number of deaths divided by the expected number.

The expected value = Number of patients x $\frac{\text{Deaths in age group}}{\text{Total in age group}}$

The 95% confidence interval was obtained as follows: SMR / error factor to SMR x error factor.

Error factor = $\exp(1.96 \sqrt{1/D})$

V RESULTS

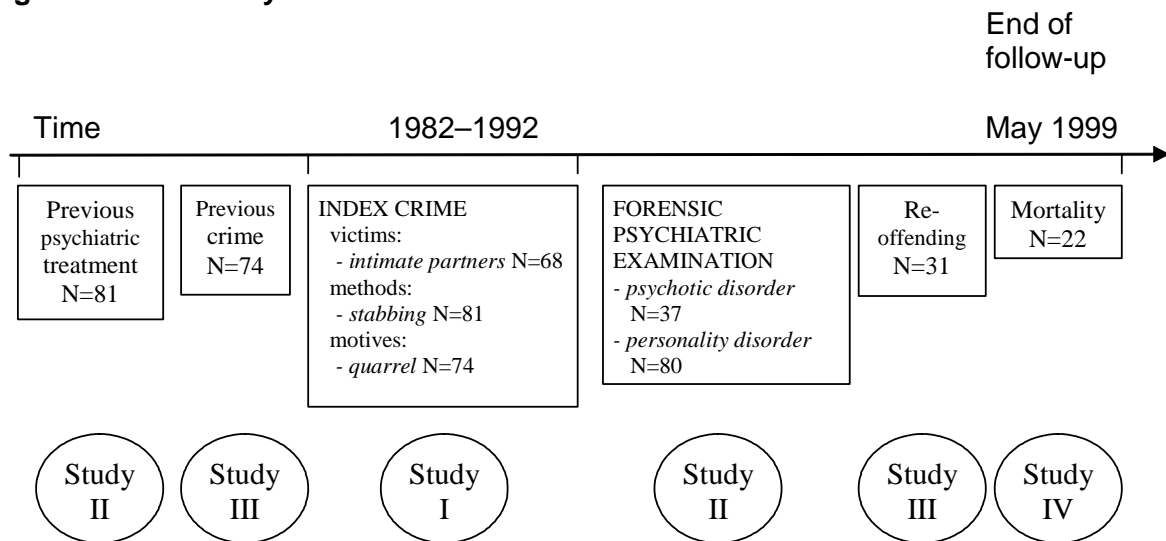
1. An overview of the results

Of the 132 studied women, twenty-two had committed murder, six attempted murder, 55 manslaughter, 42 attempted manslaughter, and seven women had committed neonaticide (Table 3). An overview of the results is shown in Figure 4.

Table 3: Offenses and levels of responsibility of female homicide offenders 1982–1992

Offense	Responsibility			Total
	no	diminished	full	
Murder	9	8	5	22
Attempted murder	2	3	1	6
Manslaughter	12	20	23	55
Attempted manslaughter	16	20	6	42
Neonaticide	3	4	0	7
Total	42	55	35	132

Figure 4: A summary of the results



2. The circumstances of the index crime (Study I)

Victims

The 125 perpetrators accounted for 136 victims; seven women killed more than one victim. There were 19 cases (15%) of child victims. In addition to these, there were seven neonaticides, which were not included in the analyses of this study. The children were young; only three were over seven years of age. Of the 108 offenses against adult victims, 25 involved female and 105, male victims.

The most frequent victim comprised an intimate partner, former or present (68/125, 54%), and the second most prevalent group was friends or acquaintances (30/125, 24%). Seventeen (14%) offenders attacked their own children, the third largest victim group, and eight (6%) attacked a parent or other relative. Two (2%) perpetrators attacked total strangers.

Methods of operation

Stabbing was the most frequent (81/125, 65%) method of operation, followed by strangulation (15/125, 12%) and hitting with a blunt object (14/125, 11%). Nine (7%) women drowned their victims; five (4%) battered and three (2%) suffocated them. Four (3%) used poison or a gun. Eighteen women (14%) used more than one method.

Motives

The most frequent (59%) motive was quarrelling with the victim and almost a third of all the homicidal women claimed to have acted impulsively (Table 4).

Table 4: Finnish homicidal women 1982–1992: Motives ^{a)}

Motive	Cases (N=125)
Quarrel with victim	74 (59%)
Impulsive act	38 (30%)
Victim's provocation	38 (30%)
Long-term violence by the victim	36 (29%)
Extended suicide ^{b)}	14 (11%)
Sexual motives	14 (11%)
Jealousy	12 (10%)
Self-defense	11 (9%)
Other ^{c)}	18 (14%)
Multiple motives	91 (73%)
None ^{d)}	10 (8%)

a) Motives were recorded as the offenders reported them. Because 91 offenders reported several motives, the sum of presented figures exceeds the total number of cases.

b) Homicide accompanied by suicidal intentions

c) Financial motives, revenge, other crime involved, delusional motives

d) No obvious reason, reluctance to reveal reasons; two simply wanted to kill someone

Motives differed for different groups of victims. In the friends and acquaintances group quarrels accounted for 14/30 (47%) with 11 of the perpetrators claiming to have acted impulsively. An intimate partner was the most frequent victim attacked for sexual reasons (11/14), but this was never the only motive.

Eleven women claimed self-defense. Ten of the victims were past or present intimate partners and one

was merely a male friend. These 11 perpetrators alleged the victim had attacked violently, five using a knife and three attempting strangulation. Out of 14 victims of extended suicide, 13 were the perpetrators' own children and one a grandchild. Delusional motives were reported for extended suicides; the perpetrator thought that dying would be better for the child as well. Six other cases with delusional motives included: two women who thought their child was being taken away, one thought getting rid of her child would relieve her own anxiety, one heard commanding voices, one thought death was arriving anyway and one thought she would be able to quit drinking by stabbing the victim.

Diagnostic subgroups

The psychotic or personality disordered groups differed in 12 variables (Table 5). The personality disordered women killed more adults than the psychotic women, and the motive was more often a quarrel. In 68% of the cases with child victims, the perpetrator was psychotic. The psychotic as well as the personality-disordered women claimed similar motives for killing children.

Table 5: Finnish homicidal women 1982–1992: Comparison of groups with psychotic or personality disorders ^{a)}

	Psychotic disorders	Personality disorders	P-value
<u>Victim ^{b)}</u>			
Adult	22 (65%)	72 (94%)	0.000
Child ^{c)}	13 (38%)	4 (5%)	0.000
Own child	11 (32%)	5 (7%)	0.001
Partner or ex-partner	12 (35%)	45 (58%)	0.039
<u>Method of operation ^{d)}</u>			
Stabbing	16 (47%)	55 (70%)	0.018
Drowning	8 (24%)	1 (1%)	0.000
Suffocation	3 (9%)	0 (0%)	0.027
<u>Motive ^{e)}</u>			
Quarrel	9 (27%)	54 (70%)	0.000
Victim's provocation	3 (9%)	29 (38%)	0.002
Long-term violence by the victim	4 (12%)	24 (31%)	0.034
Extended suicide	10 (29%)	4 (5%)	0.001
Delusional motive ^{f)}	5 (15%)	1 (1%)	0.010
Total of cases	34	76	

a) Other diagnostic groups are excluded. Only variables with significant differences between the groups are shown.

Percentages within the psychotic or personality disordered groups are shown. Variables are in the order of decreasing difference in percentages. Fisher's exact test, two-tailed, was used.

b) Because in six cases there was more than one victim, the percentages exceed 100%.

c) No newborns (i.e. neonaticides) included.

d) Because in 15 cases there were more than one method, the percentages exceed 100%.

e) Because 81 perpetrators reported more than one motive, the percentages exceed 100%.

f) Delusional motives not otherwise categorized

Intoxication

Intoxication was reported at the time of the crime for 89/125 (71%) of the women, 84 (67%) with alcohol. Comparing personality-disordered women with psychotic women revealed the former to have been more often drunk: 86% to 27% ($p < 0.000$, Fisher's exact test).

3. The diagnostic distribution (Study II)

A psychotic disorder was diagnosed in 28% of the women studied (Table 6). A personality disorder was diagnosed in 71% and alcohol or drug dependence in 45%. Only one diagnosis was reported for 51 women (39%).

Although most of the offenders studied had previously been in psychiatric treatment (81/132, or 61%), eight of the 37 women with a psychotic disorder had never been under psychiatric care. A further 31 (24%) were considered in need of involuntary psychiatric care. Of these 31, 29 had psychotic disorders and two had personality disorders.

Table 6: Finnish homicidal women 1982–1992 (N=132): DSM-III-R Disorders

I Axis	N	%	II Axis	N	%
Schizophrenia, psychotic mood disorders or other psychosis	37	28	Mental retardation ⁶⁾	10	8
Schizophrenia or other psychosis	32	24	All PD ⁷⁾	94	71
Schizophrenia	15	11	Cluster A ⁸⁾	7	5
- with alcohol abuse / dependence	3	2	- Schizotypal PD	3	2
- without alcohol abuse / dependence	12	9	- Paranoid PD	3	2
Other psychosis ¹⁾	17	13	- Schizoid PD	1	1
- puerperal psychosis	4	3	Cluster B	43	33
Other ²⁾	9	7	- Antisocial PD	21	16
Mood disorders ³⁾	10	8	- Borderline PD	19	14
Alcohol abuse / dependence ⁴⁾	58	44	- Narcissistic PD	2	2
- with personality disorder	51	39	- Histrionic PD	1	1
- without personality disorder	7	5	Cluster C	15	11
Psychoactive substance abuse / dependence ⁵⁾	10	8	- Dependent PD	13	10
			- Obsessive-Compulsive PD	1	1
			- Avoidant PD	1	1
			Passive aggressive PD	8	6
			PD NOS ⁹⁾	31	23
Several diagnoses ¹⁰⁾	81	61			
No diagnoses ¹⁰⁾	8	6			

1) Paranoid-, unspecified-, puerperal- or organic psychosis

2) Reactive disorders, organic syndromes, identity disorders

3) Bipolar disorder, depression with and without psychotic features and dysthymia

4) Alcoholism was the regular term used for alcohol dependence.

5) All psychoactive substances except alcohol

6) Set verbally by the physician

7) Personality disorder

8) Clusters according to the DSM-system

9) Not otherwise specified. Persona immatura was a frequent (N=16) diagnosis placed in the modern classification under PD NOS.

10) Regarding both axes I + II

Table 7: Finnish homicidal women 1982–1992: Criminal responsibility and diagnosis

Diagnosis	Prevalence among female homicide offenders (N=132)					
	¹⁾ A	B	C	Chi-square	df	p-value
Schizophrenia, psychotic mood disorders or other psychosis	0	0	37	110.2	2	0.000
Alcohol abuse / dependence	21	30	7	18.9	2	0.000
Any personality disorder	24	51	19	26.4	2	0.000
Cluster B	13	24	6	9.8	2	0.007
- <i>Antisocial PD</i> ²⁾	10	11	0	12.8	2	0.002
- <i>Borderline PD</i>	2	12	5	4.8	2	0.090
Cluster C	8	4	3	6.2	2	0.044
PD NOS ³⁾	6	22	3	15.4	2	0.000

1) A = full responsibility, B = diminished responsibility, C = no responsibility

2) Personality disorder

3) Not otherwise specified

Statistically, the diagnoses impinged significantly on criminal responsibility or lack thereof (Table 7). None of the women with psychotic disorders was held responsible; consequently, the statistical significance was most pronounced for the psychotic disorders.

The homicidal women were also grouped according to diagnoses to facilitate further analysis: psychotic disorders (28%), personality disorders (61%), and neither (11%). Of the 37 women with psychotic disorders, 14 also had a comorbid personality disorder diagnosis but were only classified under psychotic disorders, following conventional methodology. The homicidal women were also divided into two age groups; the dividing line at 33 years (the study group's mean age). Each age sector was divided on diagnostic grounds with differences surfacing due to age. Psychoactive substance dependence was more frequent in the younger group (12%) than the older one (2%) ($p < 0.05$, Fisher's exact test); personality disorders were more frequent in the younger women (68%) than in the older (51%) (Chi square=7.2, df=2, $p=0.03$).

The neonaticide offenders differed from the other homicide offenders. All seven neonaticide offenders were diagnosed with a personality disorder (one borderline personality, six personality disorder NOS) and 3/7 with a psychotic disorder. None had schizophrenia or mood disorders and none was deemed fully responsible for her act. Furthermore, 4/7 had previously been in psychiatric treatment and two were in need of involuntary psychiatric care. Finally, the mean age of this group was 25 years (21–34 years), six women were under 28 years, and one was 34 years old.

4. The rate of criminal re-offending (Study III)

After the index offense, 31/132 were committed to involuntary and one to voluntary hospital care. The

mean time of initial hospitalization was four years (SD 3, range 9 months–12 years). The mean time of imprisonment was three years (SD 2, range 3 months–10.4 years).

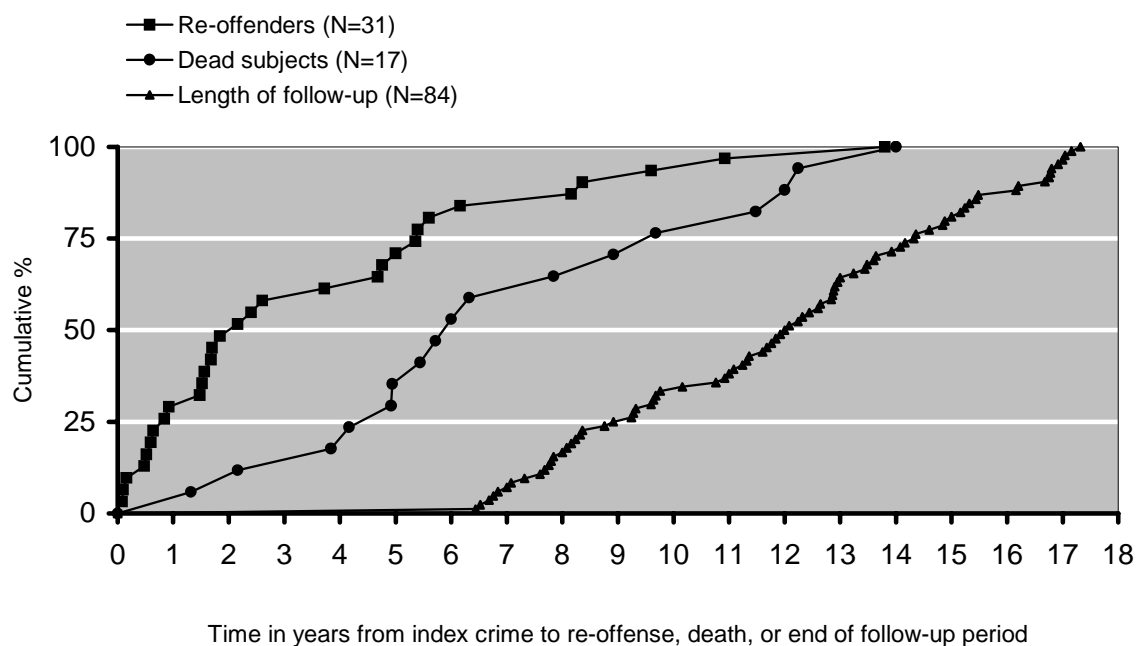
Offense rates

Of all the female homicide offenders, 56% (74/132) had committed some offense before the index offense, 33% with violence. Of these, 78% (58/74) were diagnosed with a personality disorder and 18% with a psychotic disorder. After the index offense 23% (31/132) had re-offended, 15% violently. Of these, 81% (25/31) were personality disordered, 10% with a psychotic disorder, and 90% had also offended before the index offense.

Two women had already committed homicide before their index homicide and two did so after it. All were personality disordered and one was a neonaticide repeater. Four other women committed attempted homicide before the index offense and five after, and 35 further women had committed a violent offense before the index offense and 13 after it.

Follow-up revealed that re-offending occurred soon after the index offense; 48% re-offended within the first two years of the index event (Figure 5). There were two clusters of re-offending: one soon after the offense and the other soon after release from prison. Eighty per cent of the re-offenders offended within the first two years after release from prison or hospital.

Figure 5: Finnish homicidal women 1982–1992: Cumulative re-offense and death rates by follow-up groups



Risk of re-offending in comparison to other violent women

The odds ratio (Table 8) for violent re-offending was not significantly increased in the study population (the 132 homicidal women who underwent forensic psychiatric examinations) in comparison to other violent female offenders. The older women re-offended significantly less often than the young.

Table 8: Odds ratios (OR) and 95 % Confidence Intervals (CI) for violent re-offending in different age groups of violent female offenders in Finland ¹⁾

Age group (years)	Study group ²⁾	Violent offenders in general population ²⁾	Wald	df	OR	p	CI 95%	
							Lo	Hi
1. <25	14/23	194/515	1.89	1	1.62	.169	0.82	3.20
2. 25-39	14/53	141/612	0.19	1	1.15	.664	0.62	2.12
3. >40	0/28	22/252	-	-	-	-	-	-
Total	28/104	357/1379	0.03	1	1.04	.859	0.67	1.60
N	132	1736						

Age group and study/population groups used simultaneously

1. Age group (2 vs 1)	18.10	1	0.60	.000	0.47	0.76
2. Study group vs general population group	1.52	1	1.33	.218	0.84	2.10

1) The figures were obtained from Statistics Finland for violent offenses (homicides, attempted homicides, assaults) regarding both the index crime and the re-offense. The study group was not included in the violent offenders in the general population.

2) Re-offenders/non-re-offenders.

Factors raising the risk of re-offending

According to the Cox regression (Table 9), offending before the index offense predicted re-offending most accurately. The risk was nine-fold. Youth and alcohol/drug dependency also significantly raised the risk of re-offending. The analyses further suggested that personality disorders increased, while psychotic disorders decreased, the risk of re-offending. Of the personality-disordered, 31% re-offended. Examining the variables together, youth and offending before the index offense retained their predictive power.

Table 9: Finnish homicidal women 1982–1992 (N=132): Cox regression ¹⁾ of selected explanatory variables predicting re-offending

Variables	Wald	df	OR	p	CI 95%	
					Lo	Hi
Separately						
1. Age at index offense	7.69	1	0.94	.006	0.90	0.98
2. Alcohol/drug dependency	7.74	1	2.92	.005	1.37	6.21
3. Psychiatric diagnosis	6.40	2		.041		
none (reference) ²⁾						
psychotic disorder	1.16	1	0.42	.282	0.08	2.06
personality disorder	0.96	1	1.83	.325	0.55	6.07
4. Offending before index offense	13.53	1	9.36	.000	2.84	30.84
Jointly						
1. Age at index offense	3.87	1	0.96	.049	0.92	1.00
2. Offending before index offense	11.08	1	7.73	.001	2.32	25.76

- 1) The explanatory power of the variables was first examined separately. Then only those variables are presented which jointly had statistical significance above $p=.05$.
- 2) Neither psychosis nor personality disorders.

5. Mortality (Study IV)

Of the total 132 women, 22 had died by May 1999. The classes of death were distributed as follows: eight diseases, six suicides, six accidents, one homicide, and one undetermined. Three of the suicides were violent and three by intoxication. The undetermined death was by poisoning with an antipsychotic substance and a benzodiazepine. All six accidents happened while the subjects were under the influence of alcohol or drugs. Of the deceased subjects, 15 had been diagnosed with a personality disorder, five with psychotic disorders, and two with neither.

Table 10: Finnish homicidal women 1982–1992 (N=132): Standardized mortality ratios (SMRs) for natural and unnatural causes of death

	Observed deaths	Deaths per 1000 population ¹⁾	Expected	SMR	95% confidence interval
Natural	8	9.0	1.2	6.7	3.4 - 13.5
Unnatural	14	0.5	0.1	225.7	133.7 - 381.0
<i>Suicides</i>	6	0.1	0.0	424.8	190.9 - 945.6

1) Female population rate is for 1996 (Statistics Finland, 1998)

The SMR was significantly increased for unnatural causes of death (226), and especially for suicide (425) (Table 10). The SMRs were higher in the younger women (Table 11). The mean age of death was 45 years (SD 20, range 19–83).

Table 11: Finnish homicidal women 1982–1992 (N=132): Standardized mortality ratios (SMRs) in different age groups

Age group	Observed deaths	Deaths per 1000 population ¹⁾	Expected	SMR	95% confidence interval
19-34	6	0.4	0.0	223.1	100.2 - 496.5
35-39	5	0.9	0.0	247.5	103.0 - 594.7
40-59	5	2.8	0.1	48.3	20.1 - 116.1
60-	6	39.4	0.3	19.1	8.6 - 42.4
Total	22	9.6	1.3	17.4	11.4 - 26.4

1) The population rate is the mean of the rates for 1986–1997 and for corresponding age groups. (Statistics Finland, 1998)

Cox regression analysis was used to examine the association of background variables (age at index offense, psychiatric diagnosis, alcohol or drug dependency, and offenses before the index crime) with the death rate. No statistically significant associations appeared among any background variables. However, among those with an index offense of attempted homicide, there was a trend toward an increased risk of death (2.2) at the significance level of 0.07.

VI DISCUSSION

1. General

The preceding presentation of homicidal women was a retrospective, register-based follow-up study based on nation-wide, representative material. The women studied had most often killed, or attempted to kill, men with whom they were familiar by stabbing them in a quarrel. Psychotic and personality disorders as well as alcohol dependence were prevalent. The women were prone to commit new offenses, including violent ones. Mortality among the women was very high, especially from unnatural causes.

Most (61%) of the homicidal women studied had previously been in psychiatric care, a high percentage in comparison to general population studies. One Finnish study showed that less than 8% of the general adult population were receiving treatment (Lehtinen et al 1990).

2. The circumstances and diagnoses

We recorded all the victims, motives, methods, and diagnoses because to have done otherwise would have given only a limited picture. Examining all the concurrent diagnoses has been successfully used in previous studies (Côté & Hodgins 1992, Maden et al 1994a-b, Teplin et al 1996).

Victims

Men and intimate partners were the most frequent victims of the homicidal women. This is in agreement with other findings (Husain et al 1983). The second largest group of victims consisted of friends and acquaintances; previous studies have produced varying proportions of this group (Husain et al *ibid.*, Jurik & Winn 1990). Furthermore, a vast amount of research has shown that women rarely kill strangers (Robertson et al 1987, Mann 1990), as proved true in the present study as well. Finnish men attack friends and acquaintances more often than partners, and strangers more often than women do (Kivivuori 1999).

Methods of operation

Stabbing was the most common method of operation used by the homicidal women. This mode is frequent for female offenders in other countries as well (Kellerman & Mercy 1992, Masle et al 2000). In Finland, it has been the most common method used by both sexes (Mattila 1988, Kivivuori 1999). The unavailability of guns, strict gun control laws and a lack of training in the use of weapons probably restrict the frequency of shooting as a method in Finland, whereas in the US, e.g., it is the most usual method for both sexes (Kellerman & Mercy *ibid.*).

Motives

Quarrels were the most frequent motives of the female homicides reported in the present study, similar to previous findings for Finnish women as well as for men (Kivivuori 1999). Eleven women pleaded self-defense as a motive. Some earlier studies reveal that battering husbands have sometimes become victims themselves (Husain et al 1983). Extended suicide was reported as a feasible reason to kill children. Maternal salvation fantasies are thought to be associated with such cases (Marzuk et al 1992). Most of the women in the present study claimed several motives. The declared motives may have been self-serving or downright falsehoods. They may be aware that females are supposed to be weak, tender, and kind (or they may be playing the part) whereas males are traditionally competitive and dominating. Violence is, in the last analysis, part of a discourse about gender difference (Moore 1994). These women, in committing their crime, had not only broken the law, but they had fundamentally violated their gender role. Therefore they may have felt the need to present several motives for their offense.

Differences between psychotic and personality disordered offenders

A psychotic disorder was diagnosed in 28% of the women studied and a personality disorder in 71%. Antisocial personality disorder was the most prevalent, specific personality disorder; a result reported in previous studies as well (Husain et al 1983).

The clearest difference between the psychotic and personality disordered women to emerge in the present study was that the former killed proportionally more children. Of the child homicides, 68% were perpetrated by a psychotic woman. This is almost the same percentage as reported in a 1969 international review (Resnick 1969) but much higher than in a 1979 study in Great Britain, which found only 16% of the perpetrators of child homicide to have psychotic illnesses (D'Orban 1979). In the present study, motives for killing a child were quite similar in both diagnostic groups (psychotic and personality disorders), with the most frequent being extended suicide. Altruistic motives and extended suicide have been associated with filicide in Canadian and Swedish studies (Bourget & Bradford 1990, Somander & Rammer 1991). In the present research, the differences between the diagnostic groups regarding motives and methods corresponded to the different groups of victims. Children were attacked for different reasons and were killed using methods different from those for adults.

The personality-disordered women of the present study more often attacked an adult, most often the intimate partner. The personality-disordered women were more likely to be drunk than the psychotic at the time of the crime. Impulsiveness and proneness to alcohol abuse are common features of some personality disorders. Alcohol intoxication is frequently associated with homicide perpetrators in a number of

countries (Jurik & Winn 1990, Muscat & Huncharek 1991, Eronen 1995). Alcoholism is also prevalent in personality-disordered male homicide perpetrators in Finland (Tiihonen et al 1993). American studies have reported that 34.5% to 61.7% of female homicide perpetrators were drunk (Mann 1990, Muscat & Huncharek *ibid.*). The low incidence of narcotics in the intoxication figures may reflect not only the low level of the narcotics problem in Finland at the time of the study, but also the methods of investigation in the 1980s: the verification of alcohol-intoxication has long been routine, but other substances might have been overlooked. Because of this discrepancy in checking, differences among the groups were analyzed only for intoxication with alcohol. Comorbidity problems may be more prevalent in the future, though. A recent American study found that 58% of hospitalized psychiatric patients have a lifetime substance use disorder (Mueser et al 2000).

The women under 33 years of age had more personality disorders and psychoactive substance abuse/dependence than the older ones, a finding recorded previously (Husain et al 1983). It is axiomatic that personality disorders and substance abuse disorders are more prevalent in the younger population than in the old. The result, therefore, was hardly surprising.

The diagnoses were associated with the levels of criminal responsibility (definitions in chapter II 5.3). Factually, a diagnosis should not automatically determine the level of criminal responsibility. Rather, the level of responsibility should be an analysis of the offender's state of mind at the precise moment of the crime. Practically, however, mental illness is a long-lasting phenomenon apparent both at the time of the crime and at the time of the examination. Not being in "full possession of one's faculties", i.e. not legally responsible, can also be defined as being psychotic, a psychiatric term. This interchange between one discourse and another has been seen as expected and constant in a study of law (Pajujoja 1995).

The neonaticides tested out as a clearly distinct group. They evidenced a variety of symptoms quite differentiated from the other groups. Although no evidence of schizophrenia nor affective disorders appeared in this group, in agreement with earlier findings (Bourget & Labelle 1992), three were considered psychotic and all seven were diagnosed with a personality disorder. Intriguingly, neonaticide has been associated with psychological stress and immaturity (Silverman & Kennedy 1988), which may be related with the diagnoses of personality disorders. In addition, personality disordered individuals prove apt candidates for stress-related paranoid and dissociative symptoms (DSM-III-R), possibly fertile soil for committing neonaticide. Furthermore, the noticeably young age of this group substantiated other studies (Silverman & Kennedy *ibid.*). Besides the fact that younger women tend to become pregnant more often than older ones, certain characteristics, such as a childlike demeanor typical of youth, were reported (Spinelli 2001). Most perpetrators were seen as "good girls" without sociopathy (Spinelli *ibid.*). Youth might be another reason for the distinctive differences of neonaticides in that it explains the small occurrence of schizophrenia, a disease that tends to peak later

in women. A final point to ponder is the reliability of diagnosing; underdiagnosing of depressive disorders may have occurred. In the present study, no one from this category was considered fully responsible for her crime. It has been claimed that when a woman does not maintain the traditional maternal role and kills her children, she might easily be perceived as mentally ill by investigating authorities, who hold stereotypical views of motherhood (Silverman & Kennedy *ibid.*). This “conclusion” must remain mere speculation because the scope of the present study precludes any scrutiny of the views of investigators, as outside its parameters. Furthermore, stereotypical views are bound to change over time.

3. The follow-up

During follow-up, the target women were prone to commit new offenses and mortality was high. The study group of homicidal women clearly proved to be a distinct one. Previous offending, youth, substance dependency and, probably, personality disorders were associated with re-offending. It seemed that the violent re-offense rate of the homicide offenders studied did not differ from that of other violent female offenders. Mortality was especially high from unnatural deaths, suicide in particular. Intriguingly, the mortality was even higher in the present study than in an earlier study on similar male offenders (Paanila et al 1999).

Re-offending

After the index offense 3% of the studied women had committed homicide. In corresponding male data, there were 2% homicide recidivists (Eronen et al 1996a). Among the women of the present study, 23% committed some re-offense, which is comparable to the finding of 26% for Finnish violent male offenders (DeJong et al 1992). Furthermore, there was a significant trend among the subjects to re-offend either soon after the index offense, or not at all. This early re-offending has also been reported in males (Eronen et al *ibid.*). It thus seems that when a woman is violent, her recidivism might be similar to that of a violent man. Within a mentally disordered group, the probability of female violent behavior has not been predicted as successfully as male violence (Lidz et al 1993, McNiel & Binder 1995). However, it has been observed that within this set, women and men are probably equally likely to be violent (Lidz et al *ibid.*) and that the psychopathology might be similar, i.e. no differences in the frequencies of psychotic or personality disorders (Linaker 2000). Based on the figures of the present study and similar-type previous ones, one concludes that women and men are quite alike in relation to serious violence.

Mortality was a preventive factor to offending in the present study; high mortality patently obviates the chance of offending. This has been taken into account in a Finnish study only (Paanila et al 2000). The risk analyses of re-offending in previous studies, therefore, might change were mortality accounted for.

Previous criminality of the subjects in the present study increased their future risk of offending nine-fold. Finnish male homicide offenders were found to have a ten-fold risk of homicidal behavior if they had committed an earlier homicide (Eronen et al 1996a). Other authors, too, have found that a history of violence provides an accurate predictor of future violence (Husain et al 1983, Monahan 1988, Bonta et al 1998).

Young age and alcohol or drug dependency, looked at separately in the statistical analysis, showed an increase in the subjects' risk of re-offending. In contrast, one study found no differences in this area, in the criminal history between younger and older female homicide offenders (Husain et al 1983), though the number of subjects examined was quite small. In the present study, examining the variables together, alcohol or drug dependency lost its predictive power because it correlated with other explanatory variables, mainly previous offending and personality disorders.

All the homicide recidivists were personality disordered. Of the personality disordered women, 31% re-offended. The Cox analysis reinforced the findings that personality disorders might increase the risk of re-offending. Personality disorders did not achieve statistical significance as a separate risk factor. This was caused by the choice of the reference group – neither psychotic nor personality disordered. A significant difference did arise from the comparison between psychotic and personality disorders with personality disordered women re-offending more, thus confirming that violent recidivism, homicide included, is associated with personality disorders (DeJong et al 1992). The role of psychiatry and “renewable sentences” for antisocial personality have been discussed as possible preventives (Eastman 1999).

Only three (8%) of the psychotic subjects re-offended. Previous studies have not fully substantiated the effect of psychosis on criminality (Appelbaum et al 2000). Most of the psychotic offenders may have been in hospital care for a major part of the follow-up. One was still in hospital at the end of follow-up. Hospitalization would decrease the rate of offending, although one of the re-offenders was a woman who attacked a fellow patient. Nevertheless, it cannot be definitely stated that psychosis poses a great risk when compared with other factors such as previous criminality or personality disorders.

The rate of violent re-offending in our study group was very similar to that of the other violent female offenders (N=1,736) in the data acquired from Statistics Finland. This implies that conclusions drawn from research on homicidal women in forensic psychiatric examinations, at least the non-psychotic group, may also be valid for other criminally violent women. This, of course, should be further analyzed.

Mortality

In the present study, the death rate from unnatural causes was 64% of total deaths among the subjects,

whereas in the Finnish general population in 1997, only about 5% of female deaths were from accidents or violence (Population Statistics 1982–1999). During this period, suicides accounted for 27% of all deaths, which is also very high; in 1997, only about 1% of female deaths were suicides (Population Statistics *ibid.*). Poisoning was the method in half of the suicides in the present study. Likewise, in the Finnish population, poisoning appears to be the most common method of suicide among women, accounting for about half of the cases (Öhberg et al 1995). Furthermore, a study in a forensic psychiatric setting found suicide to be the cause of death in 94% of cases (Batten 1992).

The fact that all the women who died in accidents were intoxicated highlights the significance of substance abuse problems in this group. A Finnish study found that 15% of the female deaths in the 15–49 age bracket were alcohol-related in the general population (Mäkelä 1998). Another study on all deaths in Sweden found the largest absolute number of alcohol-related deaths in the suicide group (Sjögren et al 2000).

The SMRs were very high among the younger female offenders, while the mortality of the older women was closer to that of the general population, yet, even that was significantly increased. This accords with studies on psychiatric patients of all diagnostic groups (Licht et al 1993, Baxter 1996). The highest SMRs were found for suicides, which is in line with studies on personality-disordered male criminal offenders and prison studies (Joukamaa 1997, 1998, Kullgren et al 1998, Pérez-Cárceles et al 2001). However, substance-dependent female and male suicide victims differ from each other, e.g. the women die younger (Pirkola et al 1999). The risk of death for homicidal women was, in fact, higher than that of habitually violent Finnish men (Paanila et al 1999). A mortality study among psychiatric patients found that women in the 25–29 year age group, as well as, the suicide group have peaking SMRs (Sohlman & Lehtinen 1999). Violent behavior, *per se*, has been shown to be a significant predictor of suicide (Conner et al 2001). Furthermore, schizophrenia and depression are associated with an elevated risk of natural and unnatural deaths (Joukamaa et al 2001). Finally, the finding of a modest excess of natural deaths is in accordance with studies on psychiatric patients (Martin et al 1985).

There were no statistically significant associations with the death rate among any of the background variables, even though there was a clear trend of increased mortality among the attempted homicides. One might speculate that the attempted homicide was already a suicidal outcry later completed. This would, of course, need more analyses to be confirmed. Regarding the diagnostic groups, the findings of the present study were similar to those in another Finnish study on the association between mortality, criminality, and mental disturbances among young adults. That study found no significantly higher mortality risks for any major mental disorder groups of adolescent and young adult women (Räsänen et al 1998). However, other studies have found that personality disorders and psychoactive substance use disorders predict death, especially suicide (Baxter & Appleby 1999, Kjelsberg & Dahl 1999). Personality-disordered suicide

victims have been found to have at least one concurrent axis I diagnosis, 95% of which were a depressive syndrome, a psychoactive substance use disorder, or both (Isometsä et al 1996). It may be that the subjects of the present study are such a special group that the personality-disordered did not differ from the rest regarding mortality. Then again, depressive symptoms might have been overlooked or “hidden” beneath personality and substance use disorders.

Women who have committed a homicide or attempted one are a risk not only to others but also to themselves. This seems to be a group of women more “dangerous” than is often admitted, maybe even as dangerous as comparable men are and maybe even a bigger risk of death to themselves. For women, violence, and homicide in its extreme form, may be seen as an ultimate violation of gender roles and may lead to desperation and, hence, be associated with the increased death rate.

4. Methodological aspects

4.1. Strengths

Finland provides a unique base for study material. The police have an exceptionally high clearance rate for homicides and the established practice demands that almost all homicide offenders undergo a detailed forensic psychiatric examination, or are at least evaluated by a psychiatrist to help the court decide whether a further examination is needed (Pajuoja 1995, Eronen et al 2000). Considering this high representativeness, the Finnish courts presumably demand forensic psychiatric evaluation for the most obviously disturbed offenders. A Finnish study using similar material and method concluded that less serious illnesses might be overlooked in preliminary examinations and, as a result, those studied may be more seriously ill than the average perpetrator (Eronen 1995).

Finland has exceptionally reliable and complete registers for studies of the present kind. All the reports of Finnish forensic psychiatric examinations are stored in the archives of the National Authority of Medicolegal Affairs, and all available reports have been utilized for this study. There are very few missing persons in Finland and no such cases were identified in this material. As all deaths in Finland are recorded and death certificates issued, the relevant material could be easily located and causes of deaths recorded.

This study had access to a nation-wide database, which is a definite strength. It could retrieve data on all female homicide offenders, except the few who did not undergo a forensic psychiatric examination. Those offenders, who promptly committed suicide, explain some of the loss (Marzuk et al 1992). In Finland, the suicide rate among males soon after homicide has been estimated at 8% (Mattila 1988). In a recent Finnish study, the female rate for suicide or attempted suicide was 5 % for both homicides and attempted homicides (Kivivuori 1999). A review of murder-suicide studies found depressed mothers to be heavily

predisposed (Marzuk et al *ibid.*). The present study covered all female perpetrated homicides or attempted homicides during 1982–1992, in which the perpetrator was sent for forensic psychiatric examination. Most perpetrators with severe personality disorders, and almost all with psychotic disorders, were included in the data. The present study method did not allow analysis of the rest of the perpetrators.

4.2. Limitations

Limitations related to the diagnoses

The reliability and validity of the diagnoses may have imposed limitations on this study. All the diagnoses of the forensic psychiatric examinations were based on exhaustive clinical examinations, and if diagnostic criteria had not been fulfilled, the examiner would not have made a psychiatric diagnosis. Furthermore, the results of the forensic psychiatric examinations were assessed twice: by the independent investigating psychiatrist and by The National Authority of Medicolegal Affairs, where a board scrutinizes all forensic psychiatric examinations in Finland (Figure 2). The diagnoses in Finland, and therefore also in this study, were based on two different criteria during 1982–1992: 1a) DSM-III criteria and 1b) ICD-8 codes during 1982–1986, and 2) DSM-III-R criteria thereafter. This change did not affect the basic categorization of “psychotic” and “personality disorders” or “neither”, which can be considered adequate for the presented analyses.

A possible complication is that the examining psychiatrists might have been lenient toward the women, as there is a general tendency to handle women differently from men (Herjanic et al 1977, Maden et al 1994b). A violent, aggressive woman is not the “ideal woman”. The psychiatrist might therefore have medicalized her problems and this, in turn, may produce some “false-positives” in the personality-disordered group. Alcoholism and depressive symptoms might also be underestimated in these cases. Furthermore, gender weighting has been acknowledged in the DSM-III-R diagnostic criteria for personality disorders (Sprock et al 1990). The reliability of personality disorder diagnoses in general has not been found very rigorous (Mellsop et al 1982, Zimmerman 1994). Antisocial personality disorder is believed to possess the strongest inter-rater reliability of personality disorders (Mellsop et al *ibid.*, Jackson & Pica 1993). Yet, even the criteria for antisocial personality disorder might need redefinition to achieve gender neutrality (Rutherford et al 1999).

In the situation of the index offense, the studied women might have perceived danger and therefore reacted “normally”. In some cases this feeling was psychotic, hence this group is clearly distinct from the rest. The others might have personality disorders and problems with impulse control as psychiatrists tend to see. A caveat may be appropriate at this stage of explication on the research. The assessment of personality disorders is not an exact science. This is a topic of significant discussion in psychiatry in

general (Adler et al 1990, Widiger & Corbitt 1993, First et al 1997, Hill et al 2000). With that caution in mind, this study must be read as representing the diagnostic procedures of the forensic psychiatric examinations in Finland during the time of study - as accurate and reliable as possible. To my knowledge, there is no published study comparing structured, standardized diagnoses, e.g. SCID-diagnoses, with Finnish forensic psychiatric diagnoses to confirm validity and reliability.

The diagnoses of Finnish forensic psychiatric examinations have been used as study material before this study (e.g. Tuovinen 1973, Räsänen et al 1995, Eronen et al 1996b, Repo & Virkkunen 1997, Repo et al 1997). While Eronen, however, considered the figures accurate for the most severe mental disorders, such as schizophrenia, he suggested that those for some personality disorders, alcoholism, and neuroses, may actually be underestimated (Eronen et al *ibid.*).

The so-called halo-effect, i.e. the effect of the index offense on the diagnostic assessment, might also bias the diagnoses, but probably does not invalidate the diagnoses since several criteria must be met in order to set a diagnosis (DSM-III-R). The examining psychiatrists are instructed to assess the mental state of the perpetrator at the time of the offense. In a register-based nation-wide study of 11 years with examinations performed in several hospitals, inter-rater reliability of the diagnoses is impossible to assess for obvious reasons. The diagnoses were made on the basis of the exhaustive forensic psychiatric examinations and should, therefore, be at least as accurate as general clinical diagnoses (Repo 1997). The reliability of Finnish clinical diagnoses has been discussed (Keskimäki & Aro 1991) and considered sound, especially for schizophrenia (Hovatta et al 1997, Cannon et al 1998).

In conclusion, the grouping of diagnoses can be considered adequate for a comparison of the violent women of this study. The results show distinct grouping and, hence, diagnostic reliability can be considered sufficient. The finer diagnostic nomenclature of study II might not be exactly to the point because of the reasons discussed above.

Statistical limitations

Firstly, one has to remember that the presented results must be seen as associations, and do not allow conclusions of direct causality. Diagnoses, or mental disorders, per se, do not directly cause people to be violent.

Female homicide is a relatively rare phenomenon. This fact points to one of the methodological weaknesses of this study, the inevitable, small sample size, which diminishes statistical power. This was a minor problem, however. It caused wide confidence intervals for the SMRs and also explains why the data could not be divided into further subgroups. Furthermore, rarity complicates generalizability of study

results, which has been discussed before: generalizability is achieved for countries with similar criminal justice, psychiatric and social systems as Finland (Daniel & Harris 1982, Hodgins et al 1986, 1996). The p-values should be considered suggestive.

A retrospective follow-up study using archive data produces problems known as censoring, i.e., working with cases where the event has not yet taken place, and simultaneously possessing different follow-up times. Before the Cox analysis, parallel methods (ANOVA, binary logistic regression) were used to avoid possible artifacts due to the statistical method. In addition to this cross-checking, the living subjects with no re-offenses were further divided into three groups according to the time of follow-up: < 10 years, 10–13 years, and 13–17 years. These procedures confirmed that the varying follow-up times did not pose a problem.

The follow-up time for the subjects in the present study varied from seven to 17 years. This relatively short monitoring period raises some problems. Obviously, if one is institutionalized the risk of dying of unnatural causes and the opportunity to commit new offenses are lower, and thus the results of the follow-up might be underestimations. On the other hand, offenses are recorded more accurately in institutions than in other venues. As sharply increased SMRs emerged, even over the current study period, the results seem clearly indicative of an increased risk of mortality. In addition, the conclusions on criminal recidivism were slightly limited by the fact that the study was not a lifetime follow-up, although the mean follow-up time for the non-offenders was as high as 12 years. Moreover, the greatest risk of re-offending occurs early after the index crime. The ideal would be to follow all subjects until death, but a longer period would escalate the problems related to registers.

Limitations related to the registers

The national crime register is reliable for serious crimes, and the follow-up period in this study revealed at least all offenses with a maximum of at least two years unconditional sentence. According to Finnish law, unless another offense is committed before the statutory time has elapsed, records of offenses are deleted from the crime register after five, 10 or 20 years, depending on the level of sentencing (Ministry of Justice 2003). In addition, subjects' entries are deleted immediately upon death. Missing data were completed by the prisoner record, which revealed eight subjects with missing data. Two of the aforementioned had hospital records, leaving six with missing information. The lack of current documents implies, however, that no further offending occurred. All told, the figures presented on re-offending should probably be considered under-estimated and suggestive. Furthermore, the crime register's essence described led to the limits of what constitutes severe violent offense for the purpose of this thesis: homicide, attempted homicide, or any assault. Since lesser crimes are deleted from the register after a short period, inclusion of these lesser crimes would skew

the results of this aspect of the study, giving the impression that these lesser crimes had been committed toward the end of the follow-up, rather than at the beginning.

In real time, registering the crimes and the court process cover an extended period, and the figures might not therefore depict the exact same crimes. It may take time for the victim's body to be discovered or for the police to solve the crime, etc. The figures in the registers represent those cases entered annually at each point of the process from the commission of the crime until the completion of the forensic psychiatric examination. The figures might also vary slightly among sources, mainly because of different registering policies (Niskanen 2000), e.g. the police report cases, not persons; resulting in the possibility of several cases being recorded for a single person. Consequently, the figures must be considered estimates.

5. Conclusions

With regard to violent and homicidal behavior, women are far more similar to men than is often admitted. Both women and men attack those close to them (spouses, friends, or children) with any weapon available to them (knives or guns). They do so in anger or desperation, and frequently when intoxicated. Psychotic, personality and substance use disorders are associated with homicide in both genders. Conversely, women are more prone to attack young children and fewer total strangers than men do.

Neonaticide is decidedly a female crime. In most of the world, Finland included, girls are brought up to be "pretty" and "kind", boys to be "strong" and "competitive" (Brooks 1992). Homicide, however, is far from pretty or kind; rather it proclaims "strength", aggression, competition – usually considered male characteristics. This is certainly associated with the female perpetrators' views of themselves and hence affects their future perhaps to the point of cutting their own lives short.

The reasons behind the gender differences in violent crimes with regard to choices of victims and the rates of offenses may be staring researchers in the face, a case of not seeing the obvious, the mores and customs of society; namely, that women spend more time with young children than men do and women have historically abused alcohol and drugs less than men. Gender, per se, may not be the primary explanation and the theories explaining violence should focus on the differences among other grouping factors such as psychotic or non-psychotic violence. Women and men with severe mental illness may be very similar in their violence, homicide included (Lidz et al 1993, Hiday et al 1998).

When stating that some group is involved in violence, be it the "poor" or the "ill", it must always be remembered that most of the population are not involved, though a fair number do suffer from a psychotic disorder or poverty. Stigmatization is already hard on the mentally ill; the studies on violence must not

increase popular prejudices, not least because a specific causal relationship between mental illness and violence is yet to be substantiated (Arboleda-Flórez et al 1998). Whereas the media tend to sensationalize the perpetrators of violence as mentally ill; the psychiatric profession should portray the mentally ill as they truly are – generally not very dangerous.

Finland is a homogenous country both racially and socially. Illicit drug use, gang violence and organized crime have been less common in Finland than in most other countries, though globalization is bound to change the Finnish situation (The National Research and Development Centre for Welfare and Health 2002, Europol 2002). The findings herein stated may therefore not be directly applicable to countries with higher crime rates as well as different social and criminal justice systems.

Implications for future studies and prevention of homicide

In the future, it could prove compelling to study homicidal women in a more detailed approach to assess information on diagnostic comparisons, the circumstances of the incidents, and the follow-up. A structured clinical interview might produce further information on the diagnoses, especially depressive disorders. A total birth cohort study would be expensive and strenuous to undertake but would lead to invaluable information as prospective studies usually do. A Finnish 1966 birth cohort has reported useful information on female criminality (Kemppainen et al 2002) but comparing the subjects in a younger cohort would prove worthwhile to gauge the possible effect of societal changes and globalization.

Treatment studies are clearly needed for better understanding on what truly helps. Though it has been stated that improved risk assessment has only a limited role in reducing homicides (Munro & Rungay 2000), in my opinion, this is a matter in need of further study. The present study showed personality and substance use disorders to be basic problems of homicidal women as well as a distinct subgroup of psychotic women who kill children. Further exploration of both groups would be needed to get a more in-depth picture and hence to find better ways of prevention.

When discussing violence, one must remember that psychiatry is not omnipotent; psychiatry does not improve, e.g., general social conditions. Psychotic violence can largely be dealt with by general and forensic psychiatry. Prevention can be effected by early detection combined with sufficient psychiatric care for the psychotic disorders, prevention of re-offending by sufficient forensic psychiatric care, and proper risk assessment and therefore future work should focus on these aspects (Monahan 1992, Steadman 1998, Monahan et al 2000). A previous study showed that though violent criminal men were often hospitalized as a result of a psychiatric diagnosis, they were frequently treated at an inappropriate health care level (Timonen et al 2000). This might be true of women also (Maden 1997). Furthermore, it has been shown that the reduction of psychiatric beds has resulted in increasing inpatient treatment in non-

specialist institutions (Kaltiala-Heino et al 2000). Obviously, this is totally unacceptable with the specific group of violent women. In addition, substance abuse problems should receive proper attention within the psychotic group of patients, as they are clearly associated with less successful outcome measures, including violent behavior (Swartz et al 1998, Taylor et al 1998, Dixon 1999).

An end to the victimization of children is a definite objective of primary prevention. Since it has been found that the young women, who lack adequate resources with which to cope with stressors, are at risk of committing violent acts toward their children (McKee & Shea 1998), pre- and postnatal care can intervene to prevent these incidents. Maternity wards and the health care system for children should devote even more special attention to the young, high risk mothers and provide additional resources to them. Special programs, funding, and home visits should have high priority for young single mothers since home visits have been found to prevent child abuse (Olds et al 1986, Overpeck et al 1998, Wissow 1998, Kemppainen et al 2002). Although the present study demonstrated that personality disorders are an important factor in homicides, the psychotic women killing their children evolved as a definite subgroup. Extended suicide (murder-suicide) was the most frequent motive reported for killing a child, but the element of depression might have been overlooked in these women. If the cycle of child maltreatment and molestation by abusive adults could be broken, maybe the next generation would not become abusers themselves. The endless circle of violence could likewise be lessened. Designated personnel should devote the highest level of care to psychotic and depressive mothers.

Since the present study reported personality and substance use disorders as the major problems of homicidal women, non-psychotic violence can probably be reduced by proper safeguards, by improved care of those suffering from substance abuse disorders and by enlightened treatment programs for the personality-disordered. This is a multifarious subject and therefore difficult to assess scientifically (Paris 1996, Reed 1996). In addition, children and adolescents, both girls and boys, exhibiting behavioral problems as well as psychoactive substance misuse should be adequately treated, as this target group cries out for early intervention (Kjelsberg & Dahl 1999). A total-birth cohort study in New Zealand found alcohol and marijuana dependence as well as schizophrenia linked to violence. The authors concluded that adulthood difficulties may be rooted in childhood and adolescent conduct problems suggesting this as a possible point of primary prevention (Arseneault et al 2000). There should be no reason why this would not apply to girls just as well as boys. However, the above factors affect only a portion of violent behavior. Violence stems from politics, society, culture, and inequality among many other elements of life. Availability of weapons and illegal drugs etc. has a decidedly debilitating effect.

Furthermore, the results of the current study indicate that prevention of suicide is also an issue that must be addressed with regard to violent women. Special treatment programs should be planned and administered for the offenders after release from hospital or jail and, preferably, start already in prison.

Perhaps a sufficiently long, mandatory, and strictly monitored outpatient phase would be effective treatment after release, since both re-offending and mortality were frequent early on. Some research would be needed to affirm the efficacy of such programs.

It is self-evident that prevention of all violence is for the good of all society: perpetrators, victims, and bystanders alike. Likewise, it should be needless to point out that violence is always wrong. The present world is a violent one and one can only hope to make at least a small contribution toward a more peaceful planet.

VII SUMMARY

This was a retrospective, register-based follow-up study of homicidal women using nation-wide, representative material. The purpose of this thesis was to configure a comprehensive grid of the Finnish female homicide offender. The aim was to describe the general nature of the crime, to group the studied women diagnostically, and to investigate the subjects' rate of criminality, in order to compare the violent offense rate of the study group with that of other violent offenders, as well as to assess the mortality of the subjects.

This study was based on official records of all the 132 women who underwent a forensic psychiatric examination subsequent to committing homicide or attempted homicide during the years 1982–1992. Twenty-two had committed murder, six attempted murder, 55 manslaughter, 42 attempted manslaughter and seven women had committed neonaticide. The official documents comprised all the 132 reports of the forensic psychiatric examinations, information from Statistics Finland, The National Death Register, The National Crime Register, and The Prisoner Record.

There were 19 cases with children as victims plus the seven neonaticides. Seven of the women studied claimed more than one victim. The most frequent victim was an intimate partner, former or present (54%), and the second largest group consisted of friends or acquaintances (24%). Seventeen (14%) offenders attacked their own children, the third largest victim group. Stabbing was the most frequent (65%) method of operation, followed by strangulation (12%) and hitting with a blunt object (11%). A quarrel with the victim was the most frequent (59%) motive. Eleven women reported self-defense, only one of whom was not intoxicated at the time of the crime. Ten of these victims were past or present intimate partners and one was a male friend. Of the victims of extended suicide 13/14 were the perpetrators' own children, and the fourteenth was a grandchild. Delusional motives were reported for extended suicides; the perpetrator thinking that dying would be better for the child as well.

A psychotic disorder was diagnosed in 28% of the homicidal women, a personality disorder in 71% and alcohol or drug dependence in 45%. Most of the offenders studied had previously been in psychiatric treatment (61%), while 24% were considered in need of involuntary psychiatric care after the forensic psychiatric examination. Psychoactive substance dependence was more frequent in the younger group (12%) than in the older (over 33 years) one (2%) and personality disorders were also more frequent among the younger women (68%) than in the older (51%). All seven neonaticide offenders were diagnosed with a personality disorder and 3/7 with a psychotic disorder. No offender of neonaticide had schizophrenia or mood disorders and none was deemed fully responsible for their act (Study II). The presence of depression might have been overlooked in these women. The personality disordered killed more adults than the psychotic women, and the motive was more often a quarrel. In 68% of the cases with

child victims (excluding the neonaticides), the perpetrator was psychotic. Intoxication was reported for 71% of the women at the time of the crime. Personality-disordered women were more often drunk than were the psychotic women (Study I).

Of all the women studied, 56% had committed some offense before the index offense, 33% violently. Of these, 78% were diagnosed with a personality disorder and 18% with a psychotic disorder. After the index offense, 23% of the subjects had re-offended, 15% violently. Of these, 81% were personality disordered, 10% had a psychotic disorder, and 90% had also offended before the index offense. Re-offending happened early during follow-up; 48% re-offended within the first two years of the index event. Furthermore, two women had committed homicide before their index homicide and two after. All were personality disordered and one was a neonaticide repeater. Four other women committed attempted homicide before the index offense and five after. The odds ratio for violent re-offending was not significantly increased in the study population in comparison to other violent female offenders (female offenders of homicide, attempted homicide or any assault, other than the study group of 132 women). In the Cox regression, offending before the index offense was a prime predictor of re-offending. The analyses suggested that personality disorders increased whereas psychotic disorders decreased the risk of re-offending (Study III).

Of the total 132 women, 22 had died by May 1999. The classes of death were distributed as follows: eight diseases, six suicides, six accidents, one homicide, and one undetermined. Fifteen of the deceased had been diagnosed with a personality disorder, five with psychotic disorders, and two with neither. The SMR was very high for unnatural causes of death (226), and especially for suicide (425). The SMRs were higher in younger women. The mean age of death was 45 years (SD 20, range 19–83). Cox regression analysis showed no statistically significant associations among any background variables, though there was a trend among offenders of attempted homicide toward increased mortality (Study IV).

In conclusion, most of the homicidal women studied suffered from one or a combination of the following: psychotic, personality, or substance use disorders. They attacked people close to them and posed a future threat to themselves as well as to others. From the results of the present study, one might conclude that women are far more similar to men regarding violent behavior than is often admitted. This leads to the theory that violence among women and men is similar. More essential differences could be found among grouping factors such as psychotic or non-psychotic violence. Finally, it is vital that stigmatization of the mentally disordered be avoided to allay baseless fears among the public since the majority of the mentally ill are not prone to violence.

Psychiatrists do have some responsibility in dealing with the prevention of violence. The present study leads to the conclusion that skills of early detection need to be more fine-tuned and that sufficient

psychiatric care of psychotic disorders, sufficient forensic psychiatric care, as well as proper risk assessment need to be advanced. In addition, substance abuse problems should receive proper attention and the drive to halt victimization of children is a inarguable point of primary prevention. Furthermore, children and adolescents showing behavioral problems and psychoactive substance misuse should be treated adequately and without delay. The results of this study indicate that instant and more accessible care is needed for the prevention of suicide among violent women. Perhaps a sufficiently long, mandatory, and strictly monitored outpatient phase would be effective after release since both re-offending and mortality were frequent in the early stages of the post-incarceration period.

VIII ACKNOWLEDGEMENTS

This work was carried out at the Department of Mental Health and Alcohol Research of the National Public Health Institute of Finland, at the Departments of Psychiatry and Public Health at the University of Helsinki, and at Vanha Vaasa Hospital. I wish to express my gratitude to the directors of these institutes: Professor Jussi Huttunen, Professor Jari Tiihonen, Professor Seppo Sarna, and Docent Markku Eronen. I also express my appreciation to all those behind the scenes at these institutes who gave their help so generously; you are far too numerous to name.

I am most grateful to my supervisors Docent Marja-Liisa Honkasalo, Professor Jouko Lönnqvist and Professor Matti Virkkunen. With even one of them missing, this work would not be.

This thesis was reviewed by Professors Riittakerttu Kaltiala-Heino and Pirkko Räsänen, both of whom offered valuable insight and razor-sharp comments to this work. You are truly great professionals. Thank you.

Jutta Collander has been an invaluable part of this work. "One dark and stormy night" it hit us that a study on homicidal women must be begun. It was.

I was blessed with the best possible secretaries in each institute I worked. Tiina Hara and Sirkka Laakso in the National Public Health Institute, Kikka Ojanen at Helsinki University and Telle Sarvela and Benita Merisaari in Vaasa. You are the essential people without whom no institute could function.

I thank the expert advisers in the National Authority of Medicolegal Affairs, especially Eira Hellbom; the staff in the National Research and Development Centre for Welfare and Health (STAKES); Jouko Laitinen in The National Crime Register; and Tuomo Niskanen, Jorma Kallio and Reijo Saukkonen in Statistics Finland. I have also had the opportunity to work with excellent supervisors in Helsinki, especially the two Heikkis, Forsman and Katila as well as Martti Heikkinen. I am grateful for the financial support I received from the Finnish Psychiatric Association.

Erkki Komulainen was indispensable in the statistical analyses of this work. Thomas Elfgren, Jussi Pajuoja, Pekka Pulkkinen, and Anna Spikberg are among those from whom I have received help and ideas over the years. I also thank Teemu Männynsalo for the years of support in the early phases.

Sister Renee Brinker and Richard Burton have offered their expertise in the language aspects of this work. I sincerely thank both of you.

To my friends who gave unstintingly of their encouragement as well as practical help, thank you. I also wish to thank all the tireless people at the libraries, archives, hospitals and other places I've had to tread these past years. It must have seemed like several lifetimes for me to finish this work. It is impossible to name everyone I would like to. You know I am grateful.

My mother has helped in countless ways. Markku Eronen encouraged me to aim higher and truly changed my life. He gave me the one thing that makes all the work worth while:

Elias, the light of my life, nothing else matters.

IX REFERENCES

- Adler DA, Drake RE, Teague GB. Clinicians' Practices in Personality Assessment: Does Gender Influence the Use of DSM-III Axis II? *Comprehensive Psychiatry* 1990; 31:125-133.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edition (DSM-III). Washington, DC, American Psychiatric Association, 1980.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edition revised (DSM-III-R). Washington, DC, American Psychiatric Association, 1987.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV). Washington, DC, American Psychiatric Association, 1994.
- Angermeyer MC. Schizophrenia and violence. *Acta Psychiatr Scand* 2000; 102 (Suppl):63-67.
- Angermeyer MC, Cooper B, Link BG. Mental disorder and violence: results of epidemiological studies in the era of de-institutionalization. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):1-6.
- Appelbaum PS, Robbins PC, Monahan J. Violence and Delusions: Data from the MacArthur Violence Risk Assessment Study. *Am J Psychiatry* 2000; 157:566-572.
- Arboleda-Flórez J, Holley H, Crisanti A. Understanding causal paths between mental illness and violence. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):38-46.
- Arseneault L, Moffitt TE, Caspi A, Taylor PJ, Silva PA. Mental disorders and violence in a total birth cohort: results from the Dunedin Study. *Arch Gen Psychiatry* 2000; 57:979-986.
- Batten BJ. The Descriptive Epidemiology of Unnatural Deaths in Oregon's State Institutions: A 25-Year (1963-1987) Study. III. A 25-Year Overview of Unnatural Deaths in the Mental and Correctional Facilities. *Am J Forensic Med Pathol* 1992; 13:159-168.
- Baxter DN. The mortality experience of individuals on the Salford psychiatric case register I. All-cause mortality. *Br J Psychiatry* 1996; 168:772-779.
- Baxter D, Appleby L. Case Register Study of Suicide Risk in Mental Disorders. *Br J Psychiatry* 1999; 175:322-326.
- Black DW, Baumgard CH, Bell SE, Kao C. Death Rates in 71 Men With Antisocial Personality Disorder. A Comparison With General Population Mortality. *Psychosomatics* 1996; 37:131-136.
- Bonta J, Law M, Hanson K. The Prediction of Criminal and Violent Recidivism among Mentally Disordered Offenders; a Meta-analysis. *Psychol Bull* 1998; 123:123-142.
- Bourget D, Bradford JM. Homicidal Parents. *Can J Psychiatry* 1990; 35:233-238.
- Bourget D, Labelle A. Homicide, Infanticide, and Filicide. *Psychiatr Clin North Am* 1992; 15:661-673.
- Brooks GR. Gender-sensitive family therapy in a violent culture. *Top Fam Psychol Coun* 1992; 1:24-36.
- Byard RW, Knight D, James RA, Gilbert J. Murder-suicides Involving Children: a 29-year study. *Am J Forensic Med Pathol* 1999; 20:323-327.
- Cannon TD, Kaprio J, Lönqvist J, Huttunen M, Koskenvuo M. The Genetic Epidemiology of Schizophrenia in a Finnish Twin Cohort. A population-based modeling study. *Arch Gen Psychiatry* 1998; 55:67-74.
- Clayton D, Hills M. *Statistical Models in Epidemiology*. New York, Oxford University Press, 1993: pp.147-152.
- Collander J. Finnish neonaticides 1980 – 2000. Master's Thesis in Psychology, Department of Psychology, Åbo Academi University. Turku, Finland, 2002.

Conner KR, Cox C, Duberstein PR, Tian L, Nisbet PA, Conwell Y. Violence, Alcohol, and Completed Suicide: A Case-Control Study. *Am J Psychiatry* 2001; 158:1701-1705.

Côté G, Hodgins S. The Prevalence of Major Mental Disorders Among Homicide Offenders. *Int J Law Psychiatry* 1992; 15:89-99.

CriminalDefense.com (2003) http://www.criminaldefense.com/violent_first_degree_murder.html last visited 20.2.2003.

Daniel AE, Harris PW. Female Homicide Offenders Referred for Pre-Trial Psychiatric Examination: a Descriptive Study. *Bull Am Acad Psychiatry Law* 1982; 4:261-269.

DeJong J, Virkkunen M, Linnoila M. Factors Associated with Recidivism in a Criminal Population. *J Nerv Ment Dis* 1992; 180:543-550.

Dixon L. Dual diagnosis of substance abuse in schizophrenia: prevalence and impact on outcomes. *Schizophr Res* 1999; 35 suppl:93-100.

Dodge KA, Bates JE, Pettit GS. Mechanisms in the cycle of violence. *Science* 1990; 250:1678-1683.

D'Orban PT. Women Who Kill their Children. *Br J Psychiatry* 1979; 134:560-571.

Driessen M, Veltrup C, Wetterling T, John U, Dilling H. Axis I and axis II comorbidity in alcohol dependence and the two types of alcoholism. *Alcohol Clin Exp Res* 1998; 22:77-86.

Eastman N. Who should take responsibility for antisocial personality disorder? Fallon suggests emphasising custody, but psychiatrists' future role remains unclear. *BMJ* 1999; 318:206-207.

Eronen M. Mental Disorders and Homicidal Behavior in Female Subjects. *Am J Psychiatry* 1995; 152:1216-1218.

Eronen M, Angermeyer MC, Schulze B. The Psychiatric Epidemiology of Violent Behaviour. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 suppl:13-23.

Eronen M, Hakola P, Tiihonen J. Factors Associated With Homicide Recidivism in a 13-Year Sample of Homicide Offenders in Finland. *Psychiatr Serv* 1996a; 47:403-406.

Eronen M, Hakola P, Tiihonen J. Mental Disorders and Homicidal Behavior in Finland. *Arch Gen Psychiatry* 1996b; 53:497-501.

Eronen M, Tiihonen J, Hakola P. Schizophrenia and Homicidal Behavior. *Schizophr Bull* 1996c; 22:83-89.

Eronen M, Repo E, Vartiainen H, Tiihonen J. Forensic Psychiatric Organization in Finland. *Int J Law Psychiatry* 2000; 23:541-546.

Europol 2002. 2000 European Union Organised Crime Situation Report. <http://www.europol.eu.int/index.asp?page=EUOrganisedCrimeSitRep2000#SITUATION> last visited 26.2.2003.

Fagan AA. The gender cycle of violence: comparing the effects of child abuse and neglect on criminal offending for males and females. *Violence Vict* 2001; 16:457-474.

Finnish Law (1998) Suomen Laki 1-2, Ri101, So409-So411. Helsinki, Kauppakaari Oyj, Lakimiesliiton kustannus, 1998; pp.1596-1602. (in Finnish)

First MB, Gibbon M, Spitzer RL, Williams JBW, Benjamin L. Structured Clinical Interview for DSM-IV Axis II Personality Disorders, (User's guide for the SCID-II). Washington, D.C. American Psychiatric Press, Inc., 1997.

Gottlieb P, Gabrielsen G, Kramp P. Psychotic Homicides in Copenhagen from 1959 to 1983. *Acta Psychiatr Scand* 1987; 76:285-292.

- Green CM, Manohar SV. Neonaticide and Hysterical Denial of Pregnancy. *Br J Psychiatry* 1990; 156:121-123.
- Haapasalo J, Petäjä S. Mother Who Killed or Attempted to Kill Their Child: Life Circumstances, Childhood Abuse, and Types of Killing. *Violence Vict* 1999; 14:219-239.
- Harding-Pink D. Mortality Following Release From Prison. *Med Sci Law* 1990; 30:12-16.
- Hare R. *The Hare Psychopathy Checklist-Revised*. Toronto, Multi-Health Systems, 1991.
- Harris GT, Rice ME, Cormier CA. Psychopathy and violent recidivism. *Law Hum Behav* 1991; 15:625-637.
- Hellerstein D, Frosch W, Koenigsberg HW. The clinical significance of command hallucinations. *Am J Psychiatry* 1987; 144:219-221.
- Hemphill JF, Hare RD, Wong S. Psychopathy and recidivism: a review. *Legal and Criminological Psychology* 1998; 3:139-170.
- Herjanic M, Henn FA, Vanderpearl RH. Forensic Psychiatry: Female Offenders. *Am J Psychiatry* 1977; 134:556-568.
- Hiday VA, Swartz MS, Swanson JW, Borum R, Wagner HR. Male-female differences in the setting and construction of violence among people with severe mental illness. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):68-74.
- Hill J, Fudge H, Harrington R, Pickles A, Rutter M. Complementary approaches to the assessment of personality disorder. The Personality Assessment Schedule and Adult Personality Functioning compared. *Br J Psychiatry* 2000; 176:434-439.
- Hodgins S. Mental Disorder, Intellectual Deficiency, and Crime – Evidence From a Birth Cohort. *Arch Gen Psychiatry* 1992; 49:476-483.
- Hodgins S. Epidemiological investigations of the associations between major mental disorders and crime: methodological limitations and validity of the conclusions. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):29-37.
- Hodgins S, Hébert J, Baraldi R. Women Declared Insane: a Follow-up Study. *Int J Law Psychiatry* 1986; 8:203-216.
- Hodgins S, Mednick SA, Brennan PA, Schulsinger F, Engberg M. Mental Disorder and Crime – Evidence from a Danish Birth Cohort. *Arch Gen Psychiatry* 1996; 53:489-496.
- Hosmer DW, Lemeshow S. *Applied Logistic Regression*. New York, Wiley, 1989.
- Hovatta I, Terwilliger JD, Lichtermann D, Mäkiyryö T, Suvisaari J, Peltonen L, Lönnqvist J. Schizophrenia in the Genetic Isolate of Finland. *Am J Med Genet* 1997; 74:353-360.
- Husain A, Anasseril DE, Harris PW. A Study of Young-Age and Mid-Life Homicidal Women Admitted to a Psychiatric Hospital for Pre-Trial Evaluation. *Can J Psychiatry* 1983; 28:109-113.
- Isometsä ET, Henriksson MM, Heikkinen ME, Aro HM, Marttunen MJ, Kuoppasalmi KI, Lönnqvist JK. Suicide among subjects with personality disorders. *Am J Psychiatry* 1996; 153:667-673.
- Jackson HJ, Pica S. An Investigation into the Internal Structure of DSM-III Antisocial Personality Disorder. *Psychol Rep* 1993; 72:355-367.
- Joukamaa M. Prison suicide in Finland, 1969-1992. *Forensic Sci Int* 1997; 89:167-174.
- Joukamaa M. The Mortality of Released Finnish Prisoners: a 7 Year Follow-up Study of the WATTU Project. *Forensic Sci Int* 1998; 96:11-19.

- Joukamaa M, Heliövaara M, Knekt P, Aromaa A, Raitasalo R, Lehtinen V. Mental disorders and cause-specific mortality. *Br J Psychiatry* 2001; 179:498-502.
- Jurik NC, Winn R. Gender and Homicide: A Comparison of Men and Women Who Kill. *Violence Vict* 1990; 5:227-242.
- Kaltiala-Heino R, Laippala P, Joukamaa M. Has the attempt to reduce psychiatric inpatient treatment been successful in Finland? *Eur Psychiatry* 2000; 16:215-212.
- Kellerman AL, Mercy JA. Men, Women, and Murder: Gender-specific Differences in Rates of Fatal Violence and Victimization. *J Trauma* 1992; 33:1-5.
- Kempainen L, Jokelainen J, Isohanni M, Järvelin M-R, Räsänen P. Predictors of Female Criminality: Findings From the Northern Finland 1966 Birth cohort. *J Am Acad Child Adolesc Psychiatry* 2002; 41:854-859.
- Keskimäki I, Aro S. Accuracy of Data on Diagnoses, Procedures and Accidents in the Finnish Hospital Discharge Register. *Int J Health Sci* 1991; 2:15-21.
- Kivivuori J. Patterns of criminal homicide in Finland. Oikeuspoliittinen tutkimuslaitos. Helsinki, Hakapaino Oy, 1999. (in Finnish, English summary)
- Kjelsberg E, Dahl AA. A long-term follow-up study of adolescent psychiatric in-patients. Part II. Predictors of delinquency. *Acta Psychiatr Scand* 1999; 99:237-242.
- Kullgren G, Tengström A, Grann M. Suicide among Personality-disordered Offenders: a Follow-up Study of 1943 Male Criminal Offenders. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):102-106.
- Lecomte D, Fornes P. Homicide followed by suicide: Paris and its suburbs, 1991-1996. *J Forensic Sci* 1998; 43:760-764.
- Lehtinen V, Joukamaa M, Jyrkinen E, Lahtela K, Raitasalo R, Maatela J, Aromaa A. Need for Mental Health Services of the Adult Population in Finland: Results from the Mini Finland Health Survey. *Acta Psychiatr Scand* 1990; 81:426-431.
- Licht RW, Mortensen PB, Gouliaev G, Lund J. Mortality in Danish Psychiatric Long-stay Patients, 1972-1982. *Acta Psychiatr Scand* 1993; 87:336-341.
- Lidz CW, Mulvey EP, Gardner W. The accuracy of predictions of violence to others. *JAMA* 1993; 269:1007-1011.
- Linaker OM. Dangerous female psychiatric patients: prevalences and characteristics. *Acta Psychiatr Scand* 2000; 101:67-72.
- Lindqvist P, Gustafsson L. Homicide followed by the offender's suicide in Northern Sweden. *Nord J Psychiatry* 1995; 49:17-24.
- Maden A. Are women different? *Int Rev Psychiatry* 1997; 9:243-248.
- Maden T, Swinton M, Gunn J. Criminological and Psychiatric Survey of Women Serving a Prison Sentence. *Br J Criminology* 1994a; 34:172-191.
- Maden T, Swinton M, Gunn J. Psychiatric Disorders in Women Serving a Prison Sentence. *Br J Psychiatry* 1994b; 164:44-54.
- Mann CR. Black Female Homicide in the United States. *J Interpersonal Violence* 1990; 5:176-201.
- Martin RL, Cloninger CR, Guze SB, Clayton PJ. Mortality in a Follow-up of 500 Psychiatric Outpatients. II. Cause specific mortality. *Arch Gen Psychiatry* 1985; 42:58-66.
- Marzuk PM, Tardiff K, Hirsch CS. The Epidemiology of Murder-Suicide. *JAMA* 1992; 267:3179-3183.

- Masle LM, Gorea M, Juki V: The Comparison of Forensic-Psychiatric Traits between Female and Male Perpetrators of Murder or Attempted Murder. *Coll Antropol* 2000; 24:91-99.
- Mattila J. On Proneness to Repeat a Violent Offense. Foundation for Psychiatric Research in Finland. Helsinki, Kyriiri Oy, 1988.
- McKee GR, Shea SJ. Maternal Filicide: a Cross-national Comparison. *J Clin Psychol* 1998; 54:679-687.
- McNiel DE, Binder RL. Correlates of accuracy in the assessment of psychiatric inpatients' risk of violence. *Am J Psychiatry* 1995; 152:901-906.
- Mellsop G, Varghese F, Joshua S, Hicks A. The Reliability of Axis II of DSM-III. *Am J Psychiatry* 1982; 139:1360-1361.
- Mendlowicz MV, DaSilva Filho JF, Gekker M, De Moraes TM, Rapaport MH, Jean-Louis F. Mothers Murdering Their Newborns in the Hospital. *Gen Hosp Psychiatry* 2000; 22:53-55.
- Ministry of Justice 2003. <http://www.oikeus.fi/10818.htm> last visited 25.2.2003.
- Monahan J. Risk Assessment of Violence Among the Mentally Disordered: Generating Useful Knowledge. *Int J Law Psychiatry* 1988; 11:249-257.
- Monahan J. Mental Disorder and Violent Behavior. *American Psychologist* 1992; 47:511-521.
- Monahan J, Steadman HJ, Appelbaum PS, Robbins PC, Mulvey EP, Silver E, Roth LH, Grisso T. Developing a clinically useful actuarial tool for assessing violence risk. *Br J Psychiatry* 2000; 176:312-319.
- Moore H. The Problem of Explaining Violence in the Social Sciences. In: Harvey P, Gow P, editors. *Sex and violence – Issues in representation and experience*. London, New York, Routledge, 1994: pp.138-155.
- Motz A. *The Psychology of Female Violence. Crimes Against the Body*. East Sussex, Brunner-Routledge, 2001.
- Mueser KT, Yarnold PR, Rosenberg SD, Swett C, Miles KM, Hill D. Substance Use Disorder in Hospitalized Severely mentally Ill Psychiatric Patients: Prevalence, Correlates, and Subgroups. *Schizophr Bull* 2000; 26:179-192.
- Munro E, Rungay J. Role of risk assessment in reducing homicides by people with mental illness. *Br J Psychiatry* 2000; 176:116-120.
- Muscat JE, Huncharek MS. Firearms and Adult, Domestic Homicides – The Role of Alcohol and the Victim. *Am J Forensic Med Pathol* 1991; 12:105-110.
- Mäkelä P. Alcohol-related mortality by age and sex and its impact on life expectancy. *Eur J Public health* 1998; 8:43-51.
- National Agency for Welfare and Health. Sosiaali- ja terveyshallitus. Mielentilatutkimus ja siitä annettava lausunto. Helsinki, Valtion painatuskeskus, 1992. (In Finnish)
- The National Research and Development Centre for Welfare and Health (STAKES) Drug Monitoring Centre of Finland (2002). <http://www.stakes.fi/reitoxfin/n9.htm> last visited 26.2.2003.
- Niskanen T. Criminal Statistics Database. Statistics Finland, Helsinki, 1977-2000.
- Niskanen T. (Personal communication 17.2.2000.)
- Nolo (2003) http://nolo.com/lawcenter/dictionary/dictionary_listing.cfm/Term/51AB22D3-86AB-4B55-8648BC28B45909C0/alpha/H last visited 20.2.2003.

- Norušis MJ. Spss for Windows. Advanced Statistics. Release 10.0. Chapter 11, Cox Regression. Chicago, Illinois, SPSS, Inc, 1999.
- Olds D, Henderson CR Jr, Chamberlin R, Tatelbaum R. Preventing child abuse and neglect: a randomized trial of nurse home visitation. *Pediatrics* 1986; 78:65-78.
- Overpeck MD, Brenner RA, Trumble AC, Trifiletti LB, Berendes HW. Risk Factors for Infant Homicide in the United States. *N Engl J Med* 1998; 339:1211-1216.
- Paanila J, Hakola P, Tiihonen J. Mortality among Habitually Violent Offenders. *Forensic Sci Int* 1999; 100:187-191.
- Paanila J, Eronen M, Hakola P, Tiihonen J. Aging and homicide rates. *J Forensic Sci* 2000; 45:390-391.
- Pajuoja J. Väkivalta ja mielentila. Oikeussosiologinen tutkimus syyntakeisuussäännöksistä ja mielentilatutkimuksista. Helsinki, Suomalaisen Lakimiesyhdistyksen julkaisuja, A-sarja N:o 201, 1995. (in Finnish, English summary)
- Paris J. Antisocial Personality Disorder: A Biopsychosocial Model. *Can J Psychiatry* 1996; 41:75-80.
- Pérez-Cárceles M, Íñigo C, Luna A, Osuna E. Mortality in maximum security psychiatric hospital patients. *Forensic Sci Int* 2001; 119:279-283.
- Phelan JC, Link BG. The growing belief that people with mental illnesses are violent: the role of the dangerousness criterion for civil commitment. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):7-12.
- Pirkola SP, Isometsä ET, Heikkinen ME, Henriksson MM, Marttunen MJ, Lönnqvist JK. Female Psychoactive Substance-Dependent Suicide Victims Differ From Male-Results From a Nationwide Psychological Autopsy Study. *Comprehensive Psychiatry* 1999; 40:101-107.
- Population Statistics. Causes of Death 1982-1999, Official Statistics of Finland, Statistics Finland. Helsinki, 1982 - 1999.
- Putkonen A, Ryyänänen O-P, Eronen M, Tiihonen J. The quantitative risk of violent crime and criminal offending: a case-control study among the offspring of recidivistic Finnish homicide offenders. *Acta Psychiatr Scand* 2002; 106 (Suppl):54-57.
- Reed J. Psychopathy – A Clinical and Legal Dilemma. *Br J Psychiatry* 1996; 168:4-9.
- Repo E. Finnish Pretrial Fire-Setting Offenders. Psychiatric characteristics and criminal recidivism. Academic Dissertation. University of Helsinki, Department of Psychiatry. Helsinki, Finland, 1997.
- Repo E, Virkkunen M. Criminal recidivism and family histories of schizophrenic and nonschizophrenic fire setters: comorbid alcohol dependence in schizophrenic fire setters. *J Am Acad Psychiatry Law* 1997; 25:207-215.
- Repo E, Virkkunen M, Rawlings R, Linnoila M. Criminal and Psychiatric Histories of Finnish Arsonists. *Acta Psychiatr Scand* 1997; 95:318-323.
- Resnick PJ. Child Murder by Parents: a Psychiatric Review of Filicide. *Am J Psychiatry* 1969; 126:325-334.
- Resnick PJ. Murder of the Newborn: a Psychiatric Review of Neonaticide. *Am J Psychiatry* 1970; 126:1414-1420.
- Robertson G. Mentally Abnormal Offenders: Manner of Death. *Br Med J (Clin Res Ed.)* 1987; 295:632-634.
- Robertson RG, Bankier RG, Schwartz L. The Female Offender: A Canadian Study. *Can J Psychiatry* 1987; 32:749-755.

- Rossow I. Alcohol and homicide: a cross-cultural comparison of the relationship in 14 European countries. *Addiction* 2001; 96 (Suppl):77-92.
- Rudas T. Odds Ratios in the Analysis of Contingency Tables. Sage University Papers Series on Quantitative Applications in the Social Sciences, 07-119. Thousand Oaks, CA, Sage, 1998.
- Rutherford MJ, Cacciola JS, Alterman AI. Antisocial Personality Disorder and Psychopathy in Cocaine-Dependent Women. *Am J Psychiatry* 1999; 156:849-856.
- Räsänen P, Hakko H, Väisänen E. The Mental State of Arsonists as Determined by Forensic Psychiatric Examinations. *Bull Am Acad Psychiatry Law* 1995; 23:547-553.
- Räsänen P, Tiihonen J, Isohanni M, Moring J, Koiranen M. Juvenile Mortality, Mental Disturbances and Criminality: a Prospective Study of the Northern Finland 1966 Birth Cohort. *Acta Psychiatr Scand* 1998; 97:5-9.
- Salekin RT, Rogers R, Ustad KL, Sewell KW. Psychopathy and recidivism among female inmates. *Law Hum Behav* 1998; 22:109-128.
- Shaw J, Appleby L, Amos T, McDonnell R, Harris C, McCann K, Kiernan K, Davies S, Bickley H, Parsons R. Mental Disorder and Clinical Care in People Convicted of Homicide: National Clinical Survey. *BMJ* 1999; 318:1240-1244.
- Siegel JA. Aggressive behavior among women sexually abused as children. *Violence Vict* 2000; 15:235-255.
- Silverman RA, Kennedy LW. Women Who Kill Their Children. *Violence Vict* 1988; 3:113-127.
- Sjögren H, Eriksson A, Ahlm K. Role of Alcohol in Unnatural Deaths: A Study of All Deaths in Sweden. *Alcohol Clin Exp Res* 2000; 24:1050-1056.
- Sohlman B, Lehtinen V. Mortality among Discharged Psychiatric Patients in Finland. *Acta Psychiatr Scand* 1999; 99:102-109.
- Somander LK, Rammer LM. Intra- and Extrafamilial Child Homicide in Sweden 1971-1980. *Child Abuse Negl* 1991; 15:45-55.
- Soyka M. Substance misuse, psychiatric disorder and violent and disturbed behaviour. *Br J Psychiatry* 2000; 176:345-350.
- Spinelli MG. A Systematic Investigation of 16 Cases of Neonaticide. *Am J Psychiatry* 2001; 158:811-813.
- Sprock J, Blashfield RK, Smith B. Gender Weighting of DSM-III-R Personality Disorder Criteria. *Am J Psychiatry* 1990; 147:586-590.
- Spunt B, Brownstein HH, Crimmins SH, Langley S. Drugs and Homicide by Women. *Subst Use Misuse* 1996; 31:825-845.
- Spunt B, Brownstein HH, Crimmins SM, Langley S, Spanjol K. Alcohol-Related Homicides Committed by Women. *J Psychoactive Drugs* 1998; 30:33-43.
- Statistics Finland 1994: Yearbook of justice statistics 1994. *Justice* 1995;14, Helsinki.
- Statistics Finland 1998. http://www.stat.fi/tk/tp/tasku/taskus_vaesto.html last visited: 20.2.2002.
- Statistics Finland. Criminality 1980-2000 http://statfin.stat.fi/Statweb/index_ENG.stm last visited: 2.10.2002.
- Statistics Finland. Offenses recorded by the police. http://www.stat.fi/tk/tp/tasku/taskue_oikeusolot.html last visited 27.3.2003.
- Steadman HJ. Insanity Acquittals in New York State, 1965-1978. *Am J Psychiatry* 1980; 137:321-326.

Steadman HJ, Mulvey HJ, Monahan J, Robbins PC, Appelbaum PS, Grisso T, Roth LH, Silver E. Violence by People Discharged From Acute Psychiatric Inpatient Facilities and by Others in the Same Neighborhoods. *Arch Gen Psychiatry* 1998; 55:393-401.

Swartz MS, Swanson JW, Hiday VA, Borum R, Wagner R, Burns BJ. Taking the wrong drugs: the role of substance abuse and medication noncompliance in violence among severely mentally ill individuals. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):75-80.

Taylor PJ. Motives for Offending among Violent and Psychotic Men. *Br J Psychiatry* 1985; 147:491-498.

Taylor PJ. When symptoms of psychosis drive serious violence. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):47-54.

Taylor PJ, Gunn J. Homicides by People with Mental Illness: Myth and Reality. *Br J Psychiatry* 1999; 174:9-14.

Taylor PJ, Mullen P, Wesseley S. Psychosis, Violence and Crime. In: Gunn J, Taylor PJ, editors. *Forensic Psychiatry: Clinical, Legal and Ethical Issues*. London, Butterworth-Heinemann, 1993:329-372.

Taylor PJ, Leese M, Williams D, Butwell M, Daly R, Larkin E. Mental disorder and violence. A special (high security) hospital study. *Br J Psychiatry*. 1998; 172:218-226.

Tehrani JA, Brennan PA, Hodgins S, Mednick SA. Mental Illness and Criminal Violence. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):81-85.

Teplin LA, Abram KM, McClelland GM. Prevalence of Psychiatric Disorders among Incarcerated Women, I: Pretrial Jail Detainees. *Arch Gen Psychiatry* 1996; 53:505-512.

Tiihonen J, Hakola P. Psychiatric Disorders and Homicide Recidivism. *Am J Psychiatry* 1994; 151:436-438.

Tiihonen J, Eronen M, Hakola P. Criminality Associated With Mental Disorders and Intellectual Deficiency. *Arch Gen Psychiatry* 1993; 50:917-918.

Timonen M, Miettunen J, Hakko H, Järvelin M-R, Veijola J, Kinnunen J, Räsänen P. Psychiatric admissions at different levels of the national health care services and male criminality: the Northern Finland 1966 Birth Cohort study. *Soc Psychiatry Psychiatr Epidemiol* 2000; 35:198-201.

Tuningger E E, Levander S, Bernce R, Johansson G. Criminality and aggression among psychotic in-patients: frequency and clinical correlates. *Acta Psychiatr Scand* 2001; 103:294-300.

Tuovinen M. Crime as an Attempt at Intrapyschic Adaptation. *Acta Universitatis Ouluensis, Series D, Medica No. 2, Psychiatrica No.1*. Oulu, University of Oulu, 1973.

US Department of Justice, Bureau of Justice Statistics. Available from: [URL:http://www.ojp.usdoj.gov/bjs/homicide/overview.htm](http://www.ojp.usdoj.gov/bjs/homicide/overview.htm) last visited 2.10.2002.

Vanamo T, Kauppi A, Kärkölä K, Merikanto J, Räsänen E. Intra-familial Child Homicide in Finland 1970-1994: Incidence, Causes of Death and Demographic Characteristics. *Forensic Sci Int* 2001; 117:199-204.

Virkkunen M, Kallio E, Rawlings R, Tokola R, Pland RE, Guidotti A, Nemeroff C, Bissette G, Kalogeras K, Karonen SL et al. Personality profiles and state aggressiveness in Finnish alcoholic, violent offenders, fire setters, and healthy volunteers. *Arch Gen Psychiatry* 1994; 51:28-33.

Vitale JE, Smith SS, Brinkley CA, Newman JP. The Reliability and Validity of the Psychopathy Checklist-Revised in a Sample of Female Offenders. *Crim Justice Behav* 2002; 29:202-231.

Wallace C, Mullen P, Burgess P, Palmer S, Ruschena D, Browne C. Serious criminal offending and mental disorder. Case linkage study. *Br J Psychiatry* 1998; 172:477-484.

Walsh E, Buchanan A, Fahy T. Violence and schizophrenia: examining the evidence. *Br J Psychiatry* 2001; 180:490-495.

- Wellson EV. Psychology and Psychopathology in Women - A Psychoanalytic Perspective. *Br J Psychiatry* 1991; 158 (Suppl):85-92.
- Wessely S. The Camberwell Study of Crime and Schizophrenia. *Soc Psychiatry Psychiatr Epidemiol* 1998; 33 (Suppl):24-28.
- Widiger TA, Corbitt EM. Antisocial Personality Disorder. In: *The DSM-IV Personality Disorders* (ed. W. John Livesley). Guilford Publications, New York, 1993. pp.103-125.
- Widom SC. The Cycle of Violence. *Science* 1989; 244:160-166.
- Wissow LS. Infanticide. *N Engl J Med* 1998; 339:1239-1241.
- World Health Organization. *The ICD-8 Classification of Mental and Behavioural Disorders*. Geneva, Switzerland, World Health Organization, 1967.
- World Health Organization. *The ICD-10 Classification of Mental and Behavioural Disorders*. Geneva, Switzerland, World Health Organization, 1992.
- World Health Organization. *World Health Statistics Annual 1997-1999* (online edition). <http://www3.who.int/whosis/menu.cfm?path=whosis,whsa&language=english> last visited 2.10.2002.
- Yarvis RM. Axis I and Axis II Diagnostic Parameters of Homicide. *Bull American Acad Psychiatry Law* 1990; 18:249-269.
- Zimmerman M. Diagnosing Personality Disorders. A Review of Issues and Research Methods. *Arch Gen Psychiatry* 1994; 51:225-245.
- Öhberg A, Lönnqvist J, Sarna S, Vuori E, Penttilä A. Trends and Availability of Suicides Methods in Finland. Proposals for Restrictive Measures. *Br J Psychiatry* 1995; 166:35-43.

X APPENDIX: LEGAL DEFINITIONS

1. Finland

An Act on Amendments (578/95) to the Penal Code came into force on September 1st, 1995. The effects on the comparability of data from the resulting changes to the crime nomenclature were minor. Correspondence between new and old nomenclatures is presented below:

<u>Old nomenclature</u>	<u>New nomenclature</u>
- Manslaughter	- Manslaughter, homicide
- Attempted manslaughter or murder	- Attempted manslaughter, murder or homicide
- Infanticide	- Infanticide
- Involuntary manslaughter	- Negligent homicide, grossly negligent homicide

Manslaughter

Penal Code 21:1.

As a result of the legislative amendment of 1995, homicide was separated from this nomenclature, and given its own.

Murder

Penal Code 21:2.

Homicide (surma)

Penal Code 21:3.

The new nomenclature has been in use since 1995. Prior to this, the data were entered under the nomenclature of manslaughter.

Attempted manslaughter, murder or homicide

Penal Code 21:1-3.

Attempted homicide added to crime nomenclature in 1995.

Infanticide (lapsensurma)

Penal Code 21:4.

Until 1994 the nomenclature was infanticide (lapsentappo).

Source: Statistics Finland, Criminality 1980–2000.

<http://statfin.stat.fi/statweb/start.asp?LA=en&DM=SLEN&lp=catalog&clg=justice> (last visited 6.3.2003)

2. USA

First Degree Murder:

Although it varies from state to state, it is generally a killing which is deliberate and premeditated (planned, after lying in wait, by poison or as part of a scheme), in conjunction with felonies such as rape, burglary, arson, or involving multiple deaths, the killing of certain types of people (such as a child, a police officer, a prison guard, a fellow prisoner), or using certain weapons, particularly a gun. The specific criteria for first degree murder, are established by statute in each state and by the US Code in federal prosecutions. It is distinguished from second degree murder, in which premeditation is usually absent, and from manslaughter, which lacks premeditation and suggests that at most there was intent to harm rather than to kill.

Second Degree Murder:

A non-premeditated killing, resulting from an assault in which death of the victim was a distinct possibility. Second degree murder is different from first degree murder, which is a premeditated, intentional killing or results from a vicious crime such as arson, rape or armed robbery. Exact distinctions on degree vary by state.

Source: http://www.criminaldefense.com/violent_first_degree_murder.html (visited 20.2.2003)