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Mennesker med store lærevansker i kriminalomsorgen.

En av ti innsatte har store lærevansker. To av ti har så store språkvansker at de vil ha store vansker med å forstå språklig samhandling. Dette gir nødvendigvis negative utslag gjennom hele straffesakskjeden. Fengselsinnsatte er i alminnelighet ei utsatt gruppe mennesker. Innsatte med store lærevansker er utsatt i dobbel forstand ved at de kan mindre, lærer langsommere og misforstår viktig informasjon.

Hensikten med denne avhandlingen har vært å utdype forhold som er av betydning for mennesker med store lærevansker og strafferettspleien. Gjennom fire separate studier er det rettet fokus mot 1) identifisering av store lærevansker, 2) forekomst av store lærevansker i fengsel, 3) status og endring i status for særreaksjonsdømte personer med utviklingshemming og 4) oversikt over den nyeste forskningen på området.

Avhandlingen dokumenterer noen områder som tidligere ikke har vært studert. Et screening instrument konstruert for å avdekke store lærevansker hos personer i kontakt med strafferettssytemet er funnet velegnet for bruk i en norsk versjon (Studie 1 og studie 2). En av ti personer under fengselssoning har store lærevansker, med et stort innslag av behandlingstrengende psykiske plager, og med et fordoblet antall fengselsopphold bak seg sammenlignet med andre innsatte (studie 2). Endringer i de strafferettslige særreaksjonene i 2002 har ført til noen forandringer i den praktiske tilnærmingen til en ytterligere marginalisert gruppe av domfelte personer i Norge (Studie 3). Den seneste forskningen på dette området viser et mangfold av studier over en rekke sentrale tema som prevalens, kartlegging, risiko, behandling, lovbruddskategorier og kriminalomsorg (Studie 4).

Kandidat: Erik Søndenaa, Institutt for Nevromedisin
Veiledere: Jim Aage Nøttestad og Kirsten Rasmussen

Ovennevnte avhandling er funnet verdig til å forsvares offentlig for graden PhD i nevromedisin.

Disputas finner sted i Festsalen, Østmarka, fredag 30.01.2009, kl.12.15

TABLE OF CONTENTS

Abstract

The present thesis addresses two different issues related to people with intellectual disabilities (ID). First, making a screening tool available to differentiate people with ID from those who do not have ID (paper one and two), and second, studying ID in two different criminal justice settings (paper two and three). The fourth paper reviews the most essential scientific contributions to the field of ID and criminality during the last two years.

In the search for an appropriate screening tool for ID in the criminal justice system (CJS), the Hayes Ability Screening Index (HASI) was translated and validated in a Norwegian non-criminal sample, using the Wechsler Adult Intelligence Scale, version III (WAIS-III) as a gold standard. The HASI was later validated in a prison sample using both the HASI and Wechsler Abbreviated Scale of Intelligence (WASI). The results indicated that the HASI correlated significantly with WAIS-III ($r = 0.81$) and WASI ($r = 0.72$).

Two studies were conducted in the CJS. The first was a study in Norwegian prisons focusing on the prevalence and nature of ID among general prisoners. The prevalence of ID was found to be 10.8% of the prison sample, and two out of three prisoners with an ID were medicated for mental disorders. Secondly, the health and living conditions of offenders in the only Norwegian unit for offenders with ID were followed for a period of four years before and after a law reform. Services for offenders with ID had progressed with elevated health-related competency and a higher level of physical limitation after major changes in the legislation in 2002. A review in recent literature of the last two years in forensic issues and ID summarised this part.

Acknowledgements

This dissertation is the result of a continuing interest in the situation of people with intellectual disabilities who find themselves on the fringes of the available services and who exhibit challenging and offending behaviours.

Many people have been involved in the process that resulted in the thesis. First of all I want to thank my nearest family for the support and endurance with me during late nights and weekends occupied with studies.

My supervisors Associate Professor Jim Aage Nøttestad and Professor Kirsten Rasmussen, deserve many thanks for their stimulating support. Their knowledge, interest, and contributions to my ideas have been essential. My colleges at the research centre at Brøset, the national unit for Mandatory Care, the Correction Service Region North, and the prisons of Region North have all made this research meaningful and absorbing.

I am grateful to my colleagues Professor Susan Hayes and Forensic Commissioner Phil Shackell who inspired and supported me initiating and for their good advice during the research.

A number of other people have also contributed to the present study in different ways. I wish to express my deep appreciation to Professor Olav Linaker, Dr. Tom Palmstierna, Tale Gjertine Bjørgen, Emmanuel Revis and Øyvind Nygaard. They have all contributed as co-authors and supporters of this research.

List of papers

1. Søndenaa, E., Bjørgen, T. G., & Nøttestad, J. A. (2007). Validation of the Norwegian version of Hayes Ability Screening Index for mental retardation. *Psychological Reports, 101*, 1023-1030.
2. Søndenaa, E., Rasmussen, K., Palmstierna, T., & Nøttestad, J. A. (2008). The prevalence and nature of intellectual disability in Norwegian prisons. *Journal of intellectual disability research*.
3. Søndenaa, E., Linaker, O. M., & Nøttestad, J. A. (Submitted). Changes after the introduction of new legislation for offenders with intellectual disabilities in Norway: a descriptive study. *Journal of Policy and Practice in Intellectual Disabilities*.
4. Søndenaa, E., Rasmussen, K., & Nøttestad, J. A. (2008). Forensic issues in intellectual disability. *Current Opinion in Psychiatry, 21,* 449-453.

Abbreviations

CJS: Criminal Justice System

ID: Intellectual Disabilities

HASI: Hayes Ability Screening Index

ICD-10: International Classification of Mental and Behavioural Disorders, version 10

WHO: World Health Organization

AAMR: American Association for Mental Retardation

APA: American Psychiatric Association

ROC: Receiving Operating Characteristics

AUC: Area Under Curve

1 Introduction

Defendants with ID who go unrecognised in the CJS are often incarcerated without an adequate assessment of their needs. However, the prevalence of people with ID among defendants has been reported as much higher than in the general population (Baroff, 1996; Hayes, 1996; Holland, Clare, & Mukhopadhyay, 2002; Jones, 2007; Søndenaa, Rasmussen, Palmstierna, & Nøttestad, 2008). The services for the general population and for people with ID are not usually designed to prevent criminal acts and are not adequate. Defendants with an ID may have unrecognised ID, a strong need for independence that makes them unapproachable to different criminal preventive services, a perception of themselves as not belonging in the care system caused by the inflexibility of services, a high level of functioning in certain domains or an absence of supporting agencies (such as appropriate employment services) (Barron, Hassiotis, & Banes, 2002; Hayes, 2004; Hayes, 2007; Hayes, 2002; Holland, 2004; Holland et al., 2002; Jones, 2007; Lyall, Holland, Collins, & Styles, 1995)

1.1 Norwegian Perspectives

The general civil penal law (Ministry of Justice, 1994), sections 39 and 39 a and further prescriptions regulate the sentences involving mandatory care, which are based on section 44 of the penal law: “A person who was psychotic or unconscious at the time of committing the act can not be punished. The same applies to a person who at the time of committing the act was mentally retarded to a high degree”. The need for alternative options in the CJS for offenders with ID in Norway and the need to separate offenders with ID who are not criminally liable from other offenders with mental disorders who are not criminally liable in

the criminal justice system (CJS) was specified after renewed definitions of criminal liability in 1994 (Ministry of Justice, 1994). The separation resulted in the national unit of mandatory care and forensic placements in mental hospitals. People with the most serious offences and with a high risk of reoffending were separated into liable and not liable offenders, and the offenders who were not liable were classified in two groups, those who were mentally ill and those who were intellectual disabled (IQ below 55). If an offender is found to be liable for his/her actions at the time of the act, he/she may in certain cases be sentenced to detention. The reform took place in 2002. Those offenders found liable were incarcerated at the detention unit at Ila prison. Those found not liable due to a serious mental disorder were sentenced and housed in regional psychiatric hospitals. A national unit for mandatory care was established and replaced the institute of preventive supervision for offenders with ID (fig. 1).

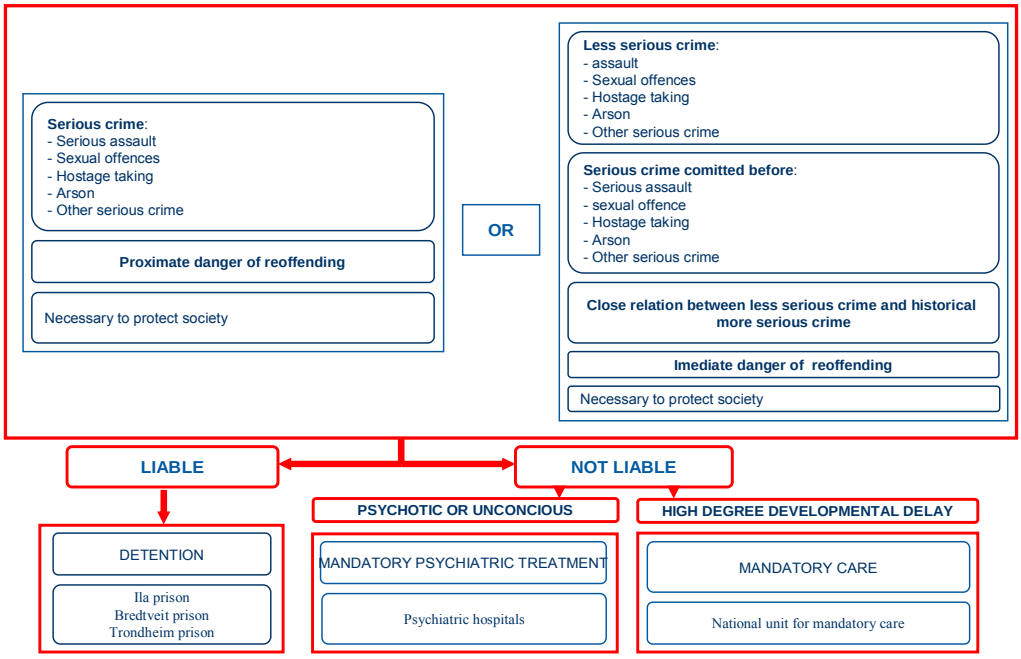

Fig. 1. The forensic legislation in Norway since 2002 (Revis, 2007)

The Norwegian criminal law sets a narrow limit for sentencing people with intellectual disabilities to mandatory care. There has to be a serious and life-threatening crime, such as a sexual offence, arson or serious violence, committed by a person defined as not liable due to ID, and with intellectual functioning corresponding to an ID with an IQ below 55. The risk of reoffending must also be high if the person is to be sentenced to mandatory care. Offenders with ID who do not fulfil these criteria are given regular prison sentences. There is an option for giving reduced sentences if/when the person has a mild ID, defined as IQ 55-70, according to Section 56 c in the penal code. This section states: "When the offender at the time of committing the act had a serious mental illness with a considerably reduced capacity for making a realistic assessment of his relationship to his surroundings, but was not psychotic, cf. Section 44, or was slightly mentally retarded or acted under a severe disturbance of consciousness that was not a consequence of self-induced intoxication, the court may reduce the penalty below the minimum prescribed for the act and to a milder form of penalty". This paragraph has only been used in the conclusion of a judgement eleven times during the last five years and is seldom used (Den Rettsmedisinske Kommisjon, 2008; Mæland, Sagfossen, & Revis, 2008). The infrequent application of this paragraph may reflect the need for a screening instrument designed to be used in cases of doubt regarding ID.

Compared to other western countries, the low IQ limit for sentencing people to mandatory care is fairly rare. Denmark has no exact limits for applying the criminal legislation to people with intellectual disabilities, and a wide range of violations are associated with sentences involving institutional care (Mikkelsen, Klausen, & Sandberg, 2007). Sweden has no segregated institutions for offenders with ID, and the alternative may be forensic hospitals (rättspsykiatrisk vård) when society's need for protection is stated.

Before 2002, convicted offenders with an ID were sentenced to preventive supervision in the municipality where they lived. The offenders were placed under the supervision of the probation services. Conditions for such a sentence also included a serious violent crime, sexual offence or life-threatening fire-setting, with a high risk of reoffending (Ministry of Justice, 1994). This supervision and care are now provided by the national unit for mandatory care, although the local services cooperate by adapting services for each offender. The national unit for mandatory care is responsible for the public safety and for the rehabilitation of the offenders.

International studies of offenders with intellectual disabilities in the criminal justice system (CJS) have during the last two or three decades demonstrated the need for services for a minority group that tends to be neglected in the criminal justice system and to reoffend more frequently. Historically, only the defendants with ID whose cognitive impairments were most obvious were identified by courts. Typically, these offenders were committed to the more appropriate services for people with ID (Brown & Courtless, 1968). The misfit between the offender with ID in the mental health system (inappropriate facilities) and the correctional system (inappropriate programmes) was described by Brown and Courtless (1968) and still seems relevant after 40 years. A common dilemma is that people with ID who have offended, or who are at risk of offending, may be rejected by mainstream services as being too difficult and awkward to treat, and may also be rejected by local ID services as not being in need of services or because they are said to be presenting a great risk to other people in the service system (Hayes, 2004; Holland et al., 2002; Jones, 2007).

Internationally there seems to be a variety of approaches in cases of offenders with ID. Hayes (2004) present several options both within and diverted from the CJS, where considerations of lesser sanctions could be given.

1.2 Alternative options

The effects of deinstitutionalisation in Norway did not seem to have much impact on the frequency and nature of behavioural disturbances and psychiatric disorders among people with ID (Nøttestad, 2004), and an access to treatment applying some restraints in preventing self-harm or harm to others was implemented. A special act was introduced in the Norwegian social service legislation in 1999 to regulate the possibility to use coercive treatment in the care of people with ID (Ministry of Health, 1991; Røed & Syse, 2002). These regulations and consequently these options in the Norwegian services for people with ID may be used to prevent some people from offending. The number of defendants with ID is probably dependent on the knowledge and attitudes of the caregiver in the intersection between challenging behaviour and criminal acts.

1.3 Intellectual disability

The policy and practice in the care and treatment of people with ID have improved and this improvement may have been caused by academic progress, self-advocacy groups, crisis including abuse towards users of the services and economic growth. The problems of today should then be recognised in a historical perspective (Linaker, 1994), because the treatment of people with ID address and reflect historical eras and social systems. Linaker gives a detailed historical review from ancient Greek and Roman times until recent policies. ID seems to have

been regarded as a disease like any other diseases by Greek and Roman doctors. Theories of imbalanced body fluids had a certain impact in explaining reduced cognitive capacity. According to Plato's laws, people with ID were exempt from criminal responsibility. During the middle ages, houses for the poor and / or sick were established in many places, and religious dogmas often ascribed mental disorders to possession by demons and similar processes. An example of this demonisation was when Martin Luther claimed that people with ID were godless and without a soul, possessed by the devil and without the right to live. During the last two centuries people with ID have increasingly been separated from other people with mental disorders, and at the same time they have been offered adjusted treatments (Linaker, 1994).

ID has been labelled in different ways, with terms like "idiocy", "imbecility", and "feeble-mindedness" to the later, more recent "mental retardation", "intellectual disability", "learning disability", and "developmental disability". The many and rapidly changing terms addressing intellectual disability may have been confusing, but nevertheless attempt to avoid devaluating and stigmatising connotations (Rapley, 2004). The term "intellectual disability" (ID) is used in the present thesis.

The various terms and definitions, however, have three criteria in common: significant limitations in intellectual functioning, significant limitations in adaptive behaviour, and manifestation of these symptoms before adulthood. According to the Intellectual Disabilities Atlas (WHO, 2007) the term "mental retardation" was used most frequently worldwide, followed by "intellectual disability", "mental handicap", "mental disability", "learning disability" and "developmental disability". The International Classification of Diseases ICD-10 was the diagnostic instrument or classification system most often used with reference to

ID, followed by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), professional opinion and clinical judgement, and the American Association on Mental Retardation (now the American Association on Intellectual and Developmental Disabilities) (AAMR/ AAIDD). Some of the terms and classification systems overlapped within the countries. The ICD-10 definition is the most widely used in Norway and Europe, and the AAMR definition is most used in the US.

In the ICD-10 diagnostic guidelines, intellectual disability is characterised by impairments of skills manifested during the developmental period, which contribute to the overall level of intelligence, i.e. cognitive, language, motor, and social abilities. Significant limitations in adaptive functioning are essential for the diagnosis. In the AAMR definition (2002), ID refers to a particular state of functioning that begins in childhood, is multidimensional and is affected positively by individualized supports. ID is then not something you have, like blue eyes or a bad heart. Nor is it something you are, like being short or thin. It is not a medical disorder, although it may be coded in a medical classification of diseases; nor is it a mental disorder, although it may be coded in the classification of psychiatric disorders (Rapley, 2004; AAMR, 2002).

Within the definitions of ID there is great diversity in disorders, syndromes and aetiologies. Prognoses, phenotypes and emphasis in the lifespan studies are therefore quite different between people with autistic disorders (Nordin & Gillberg, 1998), epilepsy (Camfield & Camfield, 2007) and Down syndrome (Bittles, Bower, Hussain, & Glasson, 2007; Carr, 2005) for example.

1.3.1 Prevalence of ID

The term ID refers to a highly heterogeneous group of people who have in common evidence of some delay in reaching developmental milestones, a delay or failure to acquire living, educational and social skills as expected for their age, and evidence, on standard psychological assessment, of a significant intellectual impairment. Some people with ID will have an identifiable genetic or environmental explanation for their abnormality of brain development, and for their impaired cognitive and functional development. For others, a combination of biological and psychosocial disadvantage may have given rise to ID (Fryers, 2000; Stromme, 2000; Stromme & Magnus, 2000). Aetiology has been divided between biopathological and unspecified groups (Stromme, 2000), and the former have been associated with more severe ID. People with severe ID have more needs for services through the administration in the municipalities they live in than people with mild ID. In prevalence studies, people receiving services have often been termed as "administrative" ID (Leonard & Wen, 2002; Roeleveld, Zielhuis, & Gabriels, 1997) in contrast to other people fulfilling the ICD-10 or DSM-IV criteria for ID, but without the need for services from the local ID services. International epidemiological studies often discriminate between the "administrative" and the "true" prevalence of ID (Roeleveld et al., 1997). The prevalence was found to be higher in developed countries, but only for mild ID (Emerson, Hatton, Felce, & Murphy, 2001). Gender studies have reported a higher prevalence in males with an average ratio of 1.2 males: 1 female for severe ID and 1.6 males: 1 female for mild ID (Emerson et al., 2001; McLaren & Bryson, 1987). The age-specific prevalence has been reported with a prevalence peak between 10-20 years of age (Emerson et al., 2001; Fryers, 1993). Throughout adulthood, prevalence rates gradually decline due to increased mortality among people with ID when compared to the general population (Emerson et al., 2001). The Norwegian

administrative prevalence is 0.42-0.48 % (Holden & Gitlesen, 2006; Ministry of Local Government and Regional Development, 2006; Myrbakk & Von Tetzchner, 2008). In contrast Roelveld et al. (1997) found an average ”true” prevalence of ID in school children of 3 %. The true prevalence in the Nordic countries is slightly lower (Gjærum & Grøsvik, 2002), probably as a consequence of the social and welfare system; it is estimated at 1-2 % of the population. Differing between “administrative” and “true” ID may separate people with or without admission to specialized services in home and workplaces and special accommodation (Ho, 2004; Zuriff, 1996). The prevalence studies of offenders with ID have shown that the proportion of offenders with “true” ID is the dominating part (Holland et al., 2002; Søndenaa et al., 2008)

1.3.2 Services for people with ID.

During the last 30 years, most western countries have seen a process of deinstitutionalization of the care for people with ID. Norway and Sweden have seen faster and more complete progress in deinstitutionalisation than other countries (Beadle-Brown, Mansell, & Kozma, 2007). All institutions for people with ID have been closed and people with ID are now living in community settings. The ideological movements of normalisation (Wolfensberger, 1972) and empowerment (Bersani, 1998) have had a significant impact on services (Emerson et al., 2001). The specified need for care and treatment intended for people with ID in Norway is regulated in the social service legislation. Services are provided by the local community, which has the responsibility for secured welfare for people with ID. The county-based habilitation services offer specialised health and habilitation care. The habilitation services also have the responsibility for support and counselling regarding the use of restraint and

coercion in the services to people with ID. Coercion is regulated in the social service law, chapter 4a (Røed & Syse, 2002).

Reports have found major shortcomings related to aspects of psychiatric health services for people with ID and challenging behaviour (Gustafson, 1997; Moss, Bouras, & Holt, 2000; Statens helsetilsyn, 2000), and people with mild ID among psychiatric patients may not be identified and thus not treated in accordance with their cognitive limitations (Linaker, 2007)

1.4 ID and criminality

In the historical context, (Fernald, 1909) suggested that every "imbecile" was a potential criminal, and that the criminality could only be regulated by environmental regulations. Terman (1911), an author of one of the earliest IQ tests, wrote that "there is no investigator who denies the fearful role of mental deficiency in the production of vice, crime and delinquency. Not all criminals are feeble-minded, but all feeble-minded are at least potential criminals" (Terman, 1911). The idea that people with intellectual disabilities were predisposed to criminal activities made such impact on the legislators and policy-makers of the time that special eugenics programs and legislation were developed, and special institutions were built to house, protect and train people with intellectual disabilities (Hahn Rafter, 1997). The view that there was an association between intelligence and crime was dominant until the second half of the twentieth century (Scheerenberger, 1983). The relationship between IQ and offending is still recognised as a robust one (Lindsay, Sturmey, & Taylor, 2004). However, the causal relationship has been questioned in studies emphasising

socio-economic status, social deprivation, parental disorders, IQ and delinquency (Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; Moffitt, Gabrielli, Mednick, & Schulsinger, 1991; West & Farrington, 1973).

1.4.1 Psychological and biological factors associated with criminality in people with ID.

Even though the assumptions of a direct relationship between ID and delinquent and criminal actions is no longer viewed as tenable, the early descriptions of social, emotional, motivational, behavioural and personality characteristics of offenders with ID nonetheless strongly resemble those of more recent authors (Denkowski & Denkowski, 1984, 1986). Such characteristics may be viewed as involving a risk of vulnerability factors for delinquency and criminal acts. Cognitive limitations, reduced verbal skills, impaired ability to analyse, and problems in understanding the consequences of certain behaviours may induce criminal activities when people are confronted with various activating conditions (Santamour & West, 1977). Rejection and lack of adequate social support are also tentative ways to explain criminal activities as acts of frustration against society (Santamour, 1989). The increased vulnerability of people with ID to express symptoms of mental disorders represents another significant personal risk that may contribute to criminal behaviours (Reiss, 1994). The combination of ID and substance abuse, mental illness, and related neuropsychiatric conditions involving organic brain dysfunction magnify the effects of reduced cognitive skills on impulse control, moral judgement, reality testing and social reasoning (McGee & Menolascino, 1992; Noreik & Grunfeld, 1998), all critical ingredients underlying socially appropriate conduct. The explanations of delinquency in people with ID have however emphasized biological and psychological factors less frequently during the last 20 years, as recent research has demonstrated the association as groundless and erroneous (Hanson & Morton Bourgon, 2005; Holland et al., 2002). The current view seems to be that the

vulnerable factor is not the ID itself, but the magnitude of comorbidities of biological (genetic) conditions, somatic disorders, psychiatric disorders and the effects of substance use that may contribute to criminal acts.

The recent studies have emphasised the social factors common in offenders with and without ID. Characteristics include offenders being young and male (Thompson & Brown, 1997) with severe psychological disadvantage with a history of offending by other family members (Day, 1988; Simpson & Hogg, 2001; Winter, Holland, & Collins, 1997). Behavioural and mental health problems are reported and dated back to childhood (Farrington, 2000; Noble & Conley, 1992) and the rates of unemployment are high (Murphy, Harnett, & Holland, 1995). Norwegian studies make these findings reasonable. Friestad and Hansen, (2004) pointed out serious accumulations of disadvantages, and problematic living conditions for a majority of Norwegian prisoners (Friestad, 2004). Eikeland (2006) found significantly lower level of education among Norwegian prisoners than in the general population (Eikeland, 2006). Rasmussen et al. (2001) found a high prevalence of several mental deficiencies in a Norwegian prison population (Rasmussen, Almvik, & Levander, 2001).

1.4.2 Offenders with ID in the Nordic countries

More recent studies in the Nordic countries on offenders with ID were introduced in 1990 by a study of the offenders in Denmark (Lund, 1990). This study summarized the current understanding of this issue, which breaks with the former ID-crime association views. Lund concluded that the causes of delinquency in people with ID seemed to be the same as in non-ID, with a strong incidence of behavioural disorders. He argued that the higher prevalence of offending among mild and borderline ID could be explained by the higher risk of detection for this population, and there is a clearly decreased incidence of crime among people with more

severe ID (Lund, 1990). The declining number of offenders with ID in Denmark during the period 1973-1984 was explained by deinstitutionalisation and the probability that most borderline ID offenders were sentenced in ordinary penal sanctions instead of institutions for offenders with ID. Lund concludes that the causes of delinquency in people with ID seem to be the same as in the non-ID population.

A follow-up study of a birth cohort born in 1953 (n=15117) in Sweden (Hodgins, 1992) showed that people with ID, identified from the registers of school children educated in special classes because of academic difficulties, were over three times more likely to have a criminal conviction by 30 years of age compared to the general population. This longitudinal study was followed by a similar study in Denmark (N= 324.401), which confirmed the results from the Swedish study (1992) and concluded that the offences committed by persons with ID seemed to be similar to those of persons without ID (Hodgins, Mednick, Brennan, Schulsinger, & Engberg, 1996). This result is congruent with the study of Norwegian prisoners (Søndenaa et al., 2008) with the exception that people with ID are seldom involved in drug crimes.

The recent Norwegian studies of ID and criminality consist of only two publications. Grunfeld and Noreik studied Norwegian forensic reports in the period between 1980-1996 where the charged persons were diagnosed with ID (Noreik & Grunfeld, 1998). A total of 294 examinations concluded with a diagnosis of ID. Compared to forensic reports of people without ID, the sample with ID was charged with sexual offences more frequently. Nøttestad and Linaker described the living conditions and health status among 27 offenders with ID who were sentenced to preventive supervision in the local communities (Nøttestad & Linaker,

2005). Both the Norwegian studies have considered selected samples of offenders or alleged offenders whose offences were sexual abuse, violence, homicide or arson.

1.4.3 The prevalence of people with ID in the CJS

A broad range of studies have addressed different issues of people with ID in contact with the criminal justice system. Studies report a large range of estimates, from 2 % to 40 %, depending on methodology and diagnostic approach (Jones, 2007; Lindsay, Law, & Macleod, 2002; Noble & Conley, 1992). Studies during the last 10 years seem to confirm that ID may be present in a significant proportion of people in randomly selected prison samples (table 1). Estimates of prevalence have also been higher than in several previous studies presented in Holland et al. (2002), varying from 7.1 % (Hayes, Shackell, Mottram, & Lancaster, 2007) to 28.8 % (Murphy, Harrold, Carey, & Mulrooney, 2000).

Table 1: Prevalence of prison inmates with intellectual disability in studies over the last 10 years.

Reference	Design	Measure	Subjects	Prevalence
(Hayes et al., 2007)	Randomly selected cross-sectional	WAIS-III	140 prisoners	7.1 % IQ<70
(Chitsabesan et al., 2006)	Cross-sectional	WASI WORD	301 young offenders	20 % IQ<70
(Murphy et al., 2000)	Randomly selected cross sectional	WRAT-R K-BIT	264 prisoners	28.8 % IQ<70
(Hayes, 2000)	Self-selected sample	K_BIT WAIS-R WISC-R	339 prisoners	20 % IQ<70
(Petersilia, 2000)	Review in the US prisons			10 % IQ<70
(Dwyer & Frierson, 2006)	Consecutively selected sample	WAIS-III	270 murder defendants	15.5 % IQ<70
(Søndenaa et al., 2008)	Randomly selected cross sectional	HASI WASI	143 prisoners	10.8 % IQ<70

1.4.4 The Criminal Justice System

People with ID who have offended or are alleged to have offended may struggle in the CJS. Without awareness that a person has ID, the CJS will not take into account the needs and difficulties that are specific to people with intellectual problems. Several studies (Clare & Gudjonnson, 1995; Everington & Dunn, 1995; Fulero & Everington, 1995; Gardner, Graeber, & Machkovitz, 1998; Petersilia, 1997; Smith & Hudson, 1995) emphasise that the majority of persons with ID experience considerable injustice in various stages in the CJS, beyond that of other groups of offenders. The possible consequences of having an ID may cause victimisation of the offender through all phases of the CJS.

1.4.4.1 Arrest and prosecution:

During the initial contact with the CJS, alleged offenders with ID are exposed to several situations with a potential source of bias or conflict: 1. Pre-arrest and arrest, 2. Caution and legal rights, 3. Detection, 4. Interview and 5. Disposal (Jacobson, 2008). An offender with ID may have a highly overt "offending behaviour" marked by impulsivity which lacks sufficient forethought and planning to avoid detection (Byrnes, 1995; Prins, 1980). Many people with ID do not understand the benefit from the protections afforded by the US Miranda warning against self-incrimination (e.g. you have the right to remain silent), which is typically read or stated to a suspect by a police officer at the time of arrest (Baroff, 1996; Baroff, Gunn, & Hayes, 2004). The same is probably true for comparable warnings in other countries. During interrogation, suspects with cognitive impairments tend to be more suggestible and therefore more vulnerable to the pressures of interrogation (Den Rettsmedisinske Kommisjon, 2008; Gudjonsson, 1990; Kassin, 1997; Petersilia, 2000). An increased desire to please the authorities often leads to false confessions by innocent suspects with ID (Gudjonsson, 2002; Perske, 1994, 2005). Most offenders proceed through the police and court phases of the

justice system without anyone raising the issue of ID (Hayes, 2002; Holland et al., 2002; Petersilia, 2000), and the policies for diversion of people with ID vary between countries (Herrington, 2005; Mason & Murphy, 2002; McBrien, 2003). There is a fine balance between holding the offender accountable and diverting him or her from the CJS, and the diverted services have not been developed in the case of offenders with ID compared to those for offenders with a psychiatric diagnosis (Hayes, 2004). Diversion from the criminal justice system may also not be in the best interest of the individual with an ID, because the length of stay in a forensic unit is likely to be longer than if the individual received a prison sentence (Hayes, 2007; Myers, 2004). In Norway there is an option of sentencing offenders to a community sentence or penalty as an alternative to prison, and community sentences have been four times more frequently used than they were ten years ago for less serious offences, but the statistics do not include any details on offenders with ID (Statistic Norway, 2008).

1.4.4.2 Conviction

In the US, offenders with ID are unlikely to meet the criteria for personal recognizance or bail, because the individual is probably unemployed and living in less stable surroundings, two of the major criteria used in bail decision making (Petersilia, 1997). Persons with ID confess more readily, provide more incriminating evidence to authorities, and are less successful in plea bargaining. As a result, they are more likely to be convicted and to receive longer sentences (Petersilia, 1997). The ID defendant often gives a quick confession during an interrogation because of the stressful situation and the desire to please (Gudjonnson, Clare, Rutter, & Pearse, 1993; Perske, 2005). The lack of knowledge on the part of staff, officers or the authorities about the presence of ID often prevents the making of a request for a pre-trial forensic examination (Gardner et al., 1998) and the strain throughout the trial prevents offenders with ID from appealing the conviction (Milne & Bull, 2001).

1.4.4.3 Imprisonment

According to a recent British report, only 20% of prisoners with an ID had any accompanying information about the disability at the time of imprisonment (Talbot, 2007). Prison staff have doubts about the adequacy of the resources allocated to this group of inmates, and point out several problems including missing identification of people with ID, a lack of appropriate support, exclusion from the prison rehabilitation services, diminished access to prison information, insight into their own offending circumstances, victimisation in prison and a lack of supporting strategies in prison staff (Talbot, 2007).

Prisoners with ID may be exposed to bullying and intimidation from other prisoners. They may also be tricked out of their money by other prisoners in a yearning to be accepted within the prison culture, and perform acts of modelling exploitative behaviour in order to fit in (Cockram, Jackson, & Underwood, 1998; Ellem, 2006; Hayes & Craddock, 1992).

Prisoner rehabilitation programmes are generally not adjusted to support the needs of people with ID, and when they do not take part, this in turn results in fewer proofs of improvement (Gardner et al., 1998; Hayes, 2007; Petersilia, 2000; Søndenaa, 2008). The lack of pro-social or problem-solving skills that often contributed to the contact with the CJS in the first place, is usually unchanged upon release.

1.4.4.4 Post-release

When released, there is usually no distinction made between ID and no-ID parolees, and local agencies appointed to serve people with ID are absent. Now possessing a criminal record, the ID offender will have almost no possibility of getting a job (Petersilia, 1997). Social isolation,

lack of community support, homelessness and an unstructured life may contribute to the reported high recidivism rate of offenders with ID (Hodgins, 1992; Lindsay & Taylor, 2005). We do not know the situation of offenders with ID in Norway, but the problems that people with ID encounter in the CJS are probably of the same kind as cited in the international studies. The high recidivism rates are confirmed in the recent study (Søndenaa et al., 2008).

2 Objective and outline of the thesis

Intellectual disabilities and offending behaviours are the main topic of this thesis. However, in preparation of the prison prevalence study, paper one exclusively serves as a validation of a screening tool. The limited knowledge about ID in the CJS has been the main reason for initiating the studies. The scope of papers one and two has involved presenting possible identification tools for the CJS, and evaluating the need for such identification. The services for offenders with ID were explored in paper three and the current progress in the field was reviewed in paper four.

2.1 Paper 1: Validation of the Norwegian version of Hayes Ability Screening Index for mental retardation.

This study aimed to validate the HASI with the WAIS-III, because no other validated screening instrument for ID is available in Norwegian. No previous research using these two instruments was located, and the agreement between them could be important in future assessments. Provided that there is accordance between the two instruments, the HASI would be useful as a screening instrument.

2.2 Paper 2: The prevalence and nature of intellectual disability in Norwegian prisons.

The main aim of this study was to examine a randomly selected sample of inmates in Norwegian prisons and estimate the prevalence of people with ID. Comparisons were conducted between inmates with ID and the rest of the prison population. The proportion of inmates with borderline ID (IQ<85) was also compared with the rest of the prison population. The second aim of the study was to compare the Norwegian version of the Hayes Ability Screening Index as a screening tool for ID with the Wechsler Abbreviated Scale of Intelligence in an offender sample.

2.3 Paper 3: Changes after the introduction of new legislation for offenders with intellectual disabilities in Norway: a descriptive study.

The aim of this study was to compare two groups of offenders with intellectual disability: (1) those sentenced to preventive supervision, who were studied in 2002, and (2) those sentenced to mandatory care, studied in 2006. We hypothesized that mandatory care would entail (i) less adaptive functioning, (ii) more behaviour problems and (iii) more psychiatric disorders, (iv) staff with a higher level of qualification and (v) higher use of specialized health services.

2.4 Paper 4: Forensic issues in intellectual disability

The aim was to review some of the most significant findings in the field of forensic issues related to intellectual disability over the last two years. The issues were selected from studies of prevalence, assessment, offender characteristics, treatment and the criminal justice system.

3 METHODS

3.1 Design:

Papers one to three of this thesis were based on cross-sectional studies. Papers one and two were based on interviews and psychological testing, while paper three was based on self-report questionnaires. Due to different sample procedures, they vary in methodological strength. This may have important implications for the conclusions that can be drawn from them. In cross-sectional designs, participants are selected and assessed in relation to current characteristics. This is distinguished from studies that are designed to evaluate events or experiences that occurred in the past (retrospective studies) or that will happen in the future (prospective studies). The goal of a cross-sectional case-control study is to examine factors that are associated with a particular characteristic of interest (Kazdin, 2003). Participants are identified and assessed on multiple characteristics beyond those used to delineate their status as cases or controls.

Cross-sectional designs are useful for identifying correlates and associated features, and these findings may be quite informative and significant. They are well suited when studying conditions or characteristics that are relatively infrequent in the population. However, causal relations cannot be directly demonstrated, and sampling biases may occur, depending on how the cases were identified (Kazdin, 2003). Moreover, one should avoid derailing into a "the more the better" axiom as a compensation for a weak design, as this axiom may increase the

risk of type 1 statistical errors (rejecting the null hypothesis when the hypothesis is true) and ad hoc theoretical constructions from statistically significant results.

3.2 Participants and procedures

Included subjects were from three different populations:

1. Patients referred for neuropsychological examination, 73; 45 men and 28 women.
2. Prisoners in Norwegian prisons, 143; 136 men and 7 women.
3. People with ID sentenced to mandatory care, 13; 11 men and 2 women.

Patients referred for neuropsychological examination

A total of 73 subjects were included in the study. All of these individuals were referred for neuropsychological examinations to specialized disability services in Sør-Trøndelag and Nord-Trøndelag, counties in Norway. There were 45 male and 28 female subjects; 66 (92%) were ethnic Norwegians. The subjects' ages ranged from 17 to 60 years (M=33.3; SD=12.5).

Prisoners in Norwegian prisons

The subjects were 143 prisoners serving sentences in prisons in the Norwegian Correctional Service Region North. Non-Norwegian speaking prisoners or prisoners in custody were excluded. All other inmates were included. The region has six prisons with nine separate units of varying security levels, each holding from 11 to 144 prisoners. A randomised 50% of the 370 prisoners meeting the inclusion criteria were asked to participate. The sample was randomly selected. Seven were released after selection, one was admitted to hospital, three had moved to another prison and 31 refused to participate, leaving a sample of 143 subjects (77%), 136 men and seven women. The mean age was 34.6 (range 19-68). The age

distribution and male/female ratio correspond well to the general prison population of Norway (The Correctional Services Annual Statistics, 2006).

People with ID sentenced to mandatory care

In all 13 offenders with intellectual disability sentenced to mandatory care through the Norwegian penal code were studied. This sample was compared with a sample of 27 offenders sentenced to preventive supervision (Nottestad & Linaker, 2005).

Information about each individual was provided by the offenders' key carers, the care managers, the probation officers (who were organised at a national level after 2002) and the criminal register. Some individuals were excluded from some analyses because of missing data. The procedure used for data collection in 2006 was equivalent to the procedure used in the 2002 study (Nottestad & Linaker, 2005). From the population in preventive supervision, three persons decided not to participate. From the mandatory care population, all were willing to participate. Information about the three persons who were not willing to participate consists only of data from the criminal register: age, sex, criminality, degree of disability, housing conditions, admission to psychiatric hospitals and the annual costs of the preventive supervision. The study was approved by the regional committee for medical research and head of the unit for mandatory care.

3.3 **Instruments**:

The Hayes Ability Screening Index (HASI)

The Hayes Ability Screening Index (HASI) was developed by Susan Hayes (Hayes, 2000). The purpose was to develop a valid and user-friendly instrument to screen for ID within the

CJS, since people with reduced intellectual abilities are overrepresented among habitual criminals (Cockram, 2005). The HASI is not designed to diagnose ID, but rather identifies those individuals who need to be referred for full psychological assessment.

The HASI involves collecting background information about learning difficulties that are already known, some facts about spelling and the alphabet, immediate verbal attention, divided attention, visuospatial and constructional knowledge, and knowledge about important issues of everyday living. All the tests in HASI can be administered quickly; the whole battery, including administration and scoring, is meant to be completed within 10-15 minutes. The HASI includes subtests that are similar to some in the neuropsychological test tradition. The HASI correlates significantly with the K-BIT (Kaufmann & Kaufmann, 1990) (r=.627) and the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984) (r=.497) (Hayes, 2002).

The Norwegian translation of the HASI included the complete version (Hayes, 2000). The translation was done by the authors of this article. A preliminary trial was conducted to detect problems in the structure of the instrument, translation errors, difficulties in understanding, and terms and expressions which could cause cultural, linguistic or ethical conflicts (Merenda, 2006; Sternberg, 2004). The final Norwegian version was back-translated into English by a professional translator, according to internationally accepted rules for cross-cultural translation procedures (Flaherty et al., 1988) and reviewed by the original author, Susan Hayes. The HASI was used in papers one and two.

The Wechsler Adult Intelligence Scales – III (WAIS-III)

The WAIS-III used in this study was the Norwegian edition (Wechsler, Nyman, & Nordvik, 2003). The WAIS-III is recognised as the gold standard of intelligence scales, consisting of 14

subtests, seven verbal tests and seven performance tests. The Norwegian version has proven validity and a reliability of 0.92. The WAIS-III was used in paper one.

The Wechsler Abbreviated Scale of Intelligence (WASI)

The WASI consists of two tests assessing verbal IQ (Vocabulary and Similarities) and two tests assessing performance IQ (Block Design and Matrix Reasoning). A Norwegian translation (Sundet, Ørbeck, Brager-Larsen, & Bang Nes, 2000-2001) was applied, although US norms were used. A study of the psychometric properties of the Norwegian WASI translation found that mean T-scores and IQ results, as well as intercorrelations of subtests and IQ values, closely resemble results published with regard to the US population (Brager-Larsen, Sundet, Engvik, Ørbeck, & Bang Nes, 2001). The WASI full scale correlates significantly with the WAIS-III full scale (r=0.92) (Wechsler, 1999). The WASI was used in paper two.

Psychopathology Instrument for Mentally Retarded Adults (PIMRA)

Psychiatric disorders were identified with the Psychopathology Instrument for Mentally Retarded Adults (PIMRA (informant version)); (Matson, Barrett, & Helsel, 1988). This instrument includes a checklist of 56 dichotomized items divided into eight subscales (schizophrenia, affective disorder, psychosexual disorder, adjustment disorder, anxiety disorder, somatoform disorder, personality disorder and inappropriate adjustment). The rater was asked to indicate whether each statement was true ("YES") or false ("NO"). Diagnosis requires the presence of at least four of the seven symptoms on a subscale (Matson et al., 1988). The PIMRA was used in paper three.

The translation of the PIMRA was not performed according to internationally accepted rules for cross-cultural procedures (Flaherty et al., 1988), and after translation it has not been back-translated into US English. Research on the Norwegian version of the PIMRA has however has yielded very similar results to international studies on the psychometric properties (Linaker, 1994).

3.4 Statistics:

Univariate and bivariate statistics with test of significance have been used in paper one, two, and three. Multivariate analysis extracted more information about the multiple measures and the interrelations in the prison study (paper two). In the validation of the HASI, methods were applied to define precision compared to the more established scales of intelligence:WAIS-III (in paper one) and WASI (in paper two). The terms of sensitivity and specificity of the HASI are concerned with the correct screening of the proportion of people who have an ID (sensitivity) and the correct screening of the proportion of people who do not have an ID. The sensitivity is calculated by dividing the True Positives (TP) by the screened positives (TP+FP) and the specificity is calculated by dividing the True Negatives by the screened negatives (TN+FN) (table 2)

Table 2: Screening outcome

		WAIS-III and WASI	
		IQ<70	IQ≥70
HASI	Under cut-off	True Positive TP	False Positive FP
	Over cut-off	False Negative FN	True Negative TN

Receiving Operating Characteristics curve analyses (ROC) curve analysis were conducted to test the significance of the HASI as a screening tool in comparison to the WASI and WAIS-III. The ROC curve is a plot of the sensitivity versus (1-specificity) of a screening test, where the different points on the curve correspond to different cut-off points used to designate test positive (Rosner, 2006). The key value for interpreting a ROC curve analysis is the area under the curve (AUC). The better the screening test, the further the curve is from the straight diagonal line – the "by chance" alternative. The AUC varies in the range between 0 and 1, where 1 represents a perfect screening and 0.5 represents a random screening of no value.

Although ROC curve analysis is seen more and more in scientific papers, the use of this method still entails some problems. One problem is the tendency to interpret the AUC too optimistically. Given the possible human and monetary costs associated with errors, Sjöstedt and Grann (2002) have suggested that AUCs should be interpreted conservatively; AUC 0.70-0.80 = modest precision; AUC 0.80 – 0.90 = good precision and AUC > 0.90 = high precision (Sjöstedt & Grann, 2002). The current HASI studies found AUCs of good - high precision (AUC = 0.89 in paper 1 and 0.93 in paper 2) in screening for ID.

4 Discussion

Within the criminal justice system, ID has not been the topic of much research. The problems arising in cases of ID have been neglected. Some of the reasons for neglecting this problem have been described in this thesis. The research upon which the thesis is built gives an overview of the present services for offenders with ID in Norway (paper 3), it presents a screening instrument adapted to identify ID in offenders (paper 1), and it gives prevalence data for ID in Norwegian prisons (paper 2).

4.1 The Hayes Ability Screening Index

The studies presented in this thesis suggest that the HASI is a valid, reliable and user-friendly screening instrument. There has been international demand for such instruments (Hayes, 2002; Jahoda, 2002; McBrien, 2003), and as a quick and highly available screening tool, the HASI can become a good resource for identifying difficulties. The studies on the Norwegian version of HASI showed high sensitivity (94.7 and 86.7) and specificity (72.2 and 84.6) in paper 1 and paper 2, and the screening tool therefore seems useful.

As a screening instrument for ID in the CJS, the HASI is intended to be useful for prison officers, solicitors, law courts, prison administrators, probation and parole officers and health services. It is brief and easy to use, and training in administration and scoring should take no more than one hour. Steadman and colleagues (Stedman et al., 2000) have proposed criteria or dimensions for assessing the suitability of an instrument:

The measure must be applicable. The HASI addresses dimensions that are important to prisoners and the CJS, and provides information that facilitates management in the CJS.
The measure must be acceptable. The HASI is a brief instrument with a clear purpose and interpretation.
The measure must be practical. The HASI is designed to be used by examiners who may not have psychological or psychometric training. It is time-saving and it requires a minimum of training compared to other measures of ID.
The measure must be valid. The HASI shows sound psychometric properties and measures what it is supposed to measure.
The measure must be reliable. Reliability data indicates acceptable coefficient α reliability (paper 1).

The HASI is constructed to be over-inclusive, and individuals referred for full assessment may have psychiatric disorders, challenging behaviour or language difficulties; however in a sample with too many false positives, the test may be screening those with an average intellectual capacity instead of those with an ID. Paper 1 and 2 recommends a lower cut-off score for the Norwegian version than the suggested cut-off score in the original version (Hayes, 2000). This will reduce the number of false positives by 40% (paper 1) and 58% (paper 2).

In the case of screening for ID among offenders using the HASI, the consequences of possible false positives should be less intrusive. The high number of prisoners in the borderline ID range (prominent in the number of false positives), reported significantly more ADHD, dyslexia and mental health problems than non-ID prisoners (paper 2), and further examination from neuropsychological experts would be preferable.

Implementing the HASI as a screening checklist in the CJS is one way of solving the problem of the many unidentified people with an ID in the CJS. However, the HASI should be administered following a reasonable suspicion that the person has an ID. The identification seems to be a major problem to the CJS, and a check-list suggested in paper 2 may be of initial assistance to direct into screening and eventually further assessment. One problem with identification, however, is the serious lack of knowledge about ID within some professions in the CJS, and a screening for the screening (HASI) should therefore only suggest reasonable suspicion.

4.2 The prevalence and nature of ID in Norwegian prisons

Studies of the prevalence of ID in the CJS have been conducted with differing terms and designs, and have led to more confusion than clarification of the issue. Former prevalence studies have been criticised for using non-validated assessment (Holland et al., 2002; McBrien, 2003). The comparison of the ID offender with other offenders and between ID offenders with ID non-offenders is infrequently studied (McBrien, 2003).

The offenders with ID in the present study had been involved in a wide range of crimes, and with exception of conducting less drug-crimes, they did not differ significantly from other offenders. Previous theories, based on samples of offenders who already diverted to hospitals or prisons for serious crimes, have maintained sexual and arson offences as more common among offenders with ID (Day, 1993). Prevalence studies in randomised prison populations do not support these theories, and instead suggest that people with ID appear to be involved in

a range of offences except offences as “white-collar” crime (Hayes, 1996; Holland et al., 2002; Jones, 2007)

Nancy Loucks (2007) has in a recent study commented that the literature of prevalence “muddies the water” in the terms of identifying how many offenders have ID (Loucks, 2007). She also reports a large number of studies with a range of estimated ID amongst offenders between 0-80%. Inclusion of different severity levels of ID (i.e. borderline, mild, moderate) seems crucial for the prevalence measured. With a prevalence of 10.8 in the present study (paper 2), all the criteria for a diagnosis of ID are not fulfilled. A formal assessment of ID should include adaptive measures rather than just IQ, and confirmation that intellectual problems were present since childhood (AAMR, 1992). The definition of borderline ID is set at IQ 70-85 in paper 2, but the most common definition internationally is set at IQ 70-79.

The Norwegian prevalence data have been analysed and compared to characteristics of offenders with ID (IQ<70), within the offenders with an IQ below 85, and then compared with the offenders without ID. The comparison between the groups pointed out several factors that separate offenders with ID from other offenders. The hypothesis of a large proportion of people with an earlier non-diagnosed ID among prison inmates was supported in paper 2. Internationally, this “hidden population” has been suggested by Holland et al. (2002), but doubted by others (May & Hogg, 1999).

4.3 New legislation for offenders with ID in Norway

The offenders with ID sentenced to mandatory care in Norway tended to be subject to more restrictive measures compared to offenders with ID formerly sentenced to preventive

supervision. Measures of adaptive behaviour, behaviour problems and psychopathology did not show any significant differences between the two groups. The staff in mandatory care are more educated than in the former preventive supervision, while the use of a magnitude number of specialised health services has decreased in mandatory care.

The number of offenders has been reduced from 27 to 13 at the national level from 2002 to 2006, as a result of a more restrictive policy during conviction and the planned regulation of restraint in care and treatment to protect some people with ID from self-harm or harm to others. This small group of people, usually already known to ID services as service users, but for whom the process whereby what might have been conceptualized as "challenging behaviour" becomes "offending" is far from clear (Holland et al., 2002). According to Holland (2002) the definition of ID and offending in the political and societal context will influence this dynamic. Most violent offences brought to court pose a possible danger to others, but may at the same time be considered within the limits of challenging behaviour. The offenders with ID may differ from other people with ID who exhibit challenging behaviour in not receiving sufficient social support and care before the act that led to prosecution. The fall and rise of the number of convicted offenders with ID have been found to depend upon both policies and practices (Lund, 1990; Mikkelsen et al., 2007). Some studies have pointed at the ID offender typically within the borderline and mild ID range, with very few offenders with a moderate ID (Holland et al., 2002; Lyall et al., 1995).

4.4 Policy, clinical implications and future research

The present research suggests that offenders with an ID within the criminal justice system are high in number, and could easily be identified. However, some debate upon the results and the

future directions is expected. The identification should result in adaptation to improve services in the criminal justice system. The criminal justice system only adapts services to the minority of offenders sentenced to mandatory care, and then has to allocate resources and direct prison rehabilitation to the considerable group of offenders with ID. The expertise and experiences from the national unit for mandatory care would certainly make contributions to serve prisoners with ID more efficient.

An historical perspective indicates that investigating the relationship between people with ID and offending is beset with difficulties. Valid interpretation of the findings requires considerable thought and caution (Holland et al., 2002). The political climate of the developed countries is one in which the emphasis is on the public fear of crime and the need for public protection. There is a real potential for particular groups such as those with mental disorders, ID, and those seeking asylum to become scapegoats for such a fear (Hayes, 2007; Holland, 2004; Lindsay et al., 2004). If fear of crime becomes heightened and marginalized groups become associated with such behaviour, the pressure to protect society by the diversion of these groups to prisons, hospitals or camps become considerable. A historical circularity, reversing the normalisation principle for certain people with ID, may then be a consequence. In this situation it must be emphasized that people with ID are not committing high levels of crime. One self-advocacy organisation for people with ID in Norway (NFU) has been involved in a steering committee during the accomplishment of the studies in this thesis, and they have been engaged in this current problem.

The legal act regulating the use of coercive and aversive elements in the care and treatment of people with ID may influence the tendency to attach people with ID to the CJS. In order to prevent criminal acts, this paragraph of the legislation might be applied as a substitute for the

CJS, and this is probably also the case, as the number of people with ID sentenced to mandatory care is very low. Some authors have argued that whilst the level of formal institutionalization for people with ID has decreased over the past three decades (Braddock, Emerson, Felce, & Stancliffe, 2001), some individuals are still experiencing hidden forms of incarceration and involuntary placements such as secure mental health facilities and "innovative" housing arrangements isolated from everyday community life (Cockram, 2005; Petersilia, 1997). However, there is a problem involved in providing for all those with a diminished intellectual functioning, not identified as people with ID, who are both claiming and struggling with their independence.

The **Scandinavian welfare model** is the term used to describe the way in which Denmark, Sweden, Norway, Finland and Iceland have chosen to organize and finance their social security systems, health services and education. The hallmark of the model is its universal character in the sense that basic welfare arrangements are a citizen's rights. The basic welfare arrangements are also defined for the individual and the financing is collective via taxation. An implication of this basic principle is that there should be no direct relationship between entitlements and financing for the individual. Although this principle is not applied without exceptions, there are strong universal elements in basic arrangements such as education, hospital care, social benefits, care of elderly people, and basic pensions for all people, including those with ID (Andersen, 2004). This welfare model and the access to utilize coercion to prevent serious harm from certain people with ID exhibiting challenging behaviour (Sosial og helsedirektoratet, 1999), may prevent the criminalization of these persons. One problem arises when people on the borderline, with significant intellectual problems without being administratively diagnosed as a person with ID offend. They are not

included in the local ID services, and they are not within the scope of coercive treatment. The habilitation services do not traditionally serve prisoners or the CJS. One in ten prisoners in the Norwegian prisons have been identified in this group (Søndenaa et al., 2008).

The pathways for offenders with ID in western countries seem to be divided between the criminal justice system and the social/ health care system (Hayes, 2004). Gunn (2000) speculates upon the style of political administration that allows prisons rather than mental hospitals to be the preferred placement for people with ID, and suggests that the fear of unpredictable behaviour, the lack of more cost-effective administrations than the prisons, an inadequate funding for ID and a failing treatment optimism of caring professionals may be determining factors (Gunn, 2000): As Gunn emphasises, the clients who are "untreatable" do not disappear, and have to be looked after by other agencies, including correctional services.

Gunn does not mention the problem of identification of this group, and also the "duty of care", that is, if a government knows this group exists in the prison and can identify them, it has the duty to provide adequately for their care and possible rehabilitation, which implies extra use of resources.

The problems raised by Gunn also appeal to cautiousness in introducing research in offenders with ID. An unsubstantiated link between crime and ID in the media may harm both marginalised groups: people with ID and offenders. However, information about prevalence, needs, attitudes and problems is essential in making any progress. The Nordic welfare model combined with a reasonable application of coercion may prevent serious harm from certain people with ID who exhibit challenging behaviour (Sosial og helsedirektoratet, 1999)

When focusing on the prevalence of ID in the CJS, one has to be cautious in linking ID and offending behaviour. Most people with ID are not offenders (Holland, 2004). The widespread presence of ID in the CJS calls for better services in the CJS, rather than general changes in services for people with ID. Progress in our understanding of the characteristics of offenders with ID and better identification will contribute to improved and more adapted services in the CJS.

With reference to the British project "No One Knows" (Talbot & Riley, 2007), there are several ways to approach those people with ID who offend or are alleged to have committed offences. "No One Knows" is run by the Prison Reform Trust and has aimed to initiate changes for people with learning difficulties and learning disabilities who are referred to the criminal justice system. Covering the different perspectives of police officers (Jacobson, 2008) and prison staff (Talbot, 2007), this project addresses the needs and extent of problems confronting offenders with ID. The continuation of this thesis would certainly be affected by "No One Knows".

The findings in this thesis have implications for a wide range of problems in connection to people with ID who offend or are alleged to have committed offences. First, there is a limited identification of ID in the criminal justice system. Implementing the Hayes Ability Screening Index (HASI; (Hayes, 2000)) as a screening checklist is one way of approaching this problem, but there is a need for more radical thinking in addressing the costs and benefits of identifying offenders with ID. Further studies on a checklist suggested in paper 2 may help separate offenders suspected of having an ID. The advantage of a checklist is that it may address the need for further examinations and assistance before the individuals enter police

questioning. Second, the court and the prisons should direct resources to meet the needs of people who have intellectual problems, both with supporting agencies in courts and with adapted prison rehabilitation programmes. Third, the criminal justice system should take into consideration the profound learning difficulties in ID and remove some of the barriers that make changes impossible. Local (civil) social services should take part in the rehabilitation ahead of discharge and bring continuation through personal service plans.

5 Conclusion

The findings in this thesis reflect several aspects of ID and the CJS.

HASI is a valid and reliable instrument for screening of ID. A lower level is preferred for the cut-off score of the Norwegian version compared to the original version.

The prevalence of ID in a prison sample (n=143) was found to be 10.8 %. 50 % of the prisoners in the correctional region north were randomly selected as subjects.

Prisoners with an ID were different from other prisoners with respect to several qualities. Most outstanding was medical treatment for mental disorders, previous needs depending on school curriculum, infrequent consumption of drugs, and no history of head injuries.

Identification of ID among prisoners was not routinely conducted in prison, although the prison officers suspected the presence of an ID.

Prisoners with an ID participated in prison programmes and education offered in prisons less frequently. .

Forensic services for people with an ID have gained a better qualified staff since the CJS reform of the Norwegian penal code in 2002.

The offenders sentenced to mandatory care after 2002 had less contact with other health services outside the residence than those sentenced to preventive supervision before 2002.

Security measures differed, with more frequent use of door alarms for offenders sentenced to mandatory care after 2002. These offenders were also more continually followed and monitored by the care staff.

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Paper 1

Søndenaa, E., Bjørgen, T. G., & Nøttestad, J. A. (2007). Validation of the Norwegian version of Hayes Ability Screening Index for mental retardation. *Psychological Reports, 101*, 1023-1030.

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Paper 2

Søndenaa, E., Rasmussen, K., Palmstierna, T., & Nøttestad, J. A. (2008). The prevalence and nature of intellectual disability in Norwegian prisons. *Journal of Intellectual Disability Research, 52*, 1129-1137.

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Paper 3

Søndenaa, E., Linaker, O. M., & Nøttestad, J. A. (Submitted). Changes after the introduction of new legislation for offenders with intellectual disabilities in Norway: a descriptive study. *Journal of Policy and Practice in Intellectual Disabilities*.

Changes after the introduction of new legislation for offenders with intellectual disabilities in Norway: a descriptive study.

Abstract

Due to a change in legislation, the number of offenders with intellectual disability (ID) in forensic services in Norway decreased from 27 in 2002 to 13 in 2006. In terms of Norway's new penal code, criteria for defining an individual as an offender with ID included lower intellectual functioning, a more serious offence and a higher risk of reoffending than previously. Offenders with ID appeared to be managed by better qualified staff, but at the same time they had less contact with other health services outside the residence.

Introduction:

The importance of improving services for offenders with intellectual disabilities (ID) has been brought into focus by the implementation of policies for the deinstitutionalization of people with ID, which has resulted in changes in all aspects of organization and service delivery (Lindsay & Taylor, 2005). In the criminal justice system, there are now fewer options for offenders with ID (Sturmey, Taylor, & Lindsay, 2004). This logically follows from the intention of integrating services for people with ID with those for the general population.

Offenders with ID are not only some of the most difficult of all health service users to treat, but, historically, they have also been offered little attention in research and in society (Lindsay, Sturmey, & Taylor, 2004). Most research has concentrated on offenders with mild ID within secure placements. Offenders with a moderate or more extreme level of ID seldom enter the criminal justice system, and they are diverted to mental health care, ID services or forensic mental health services. No studies exploring the needs and living conditions of offenders with moderate ID compared to offenders with mild ID were found during the preparation of this paper.

Offenders with ID have many characteristics similar to offenders in the general population (Barron, Hassiotis, & Banes, 2004; Holland, Clare, & Mukhopadhyay, 2002). They tend to be young and male, and to have experienced social disadvantage, unstable environments and financial instability (Anderson, 2005). There is little research on how the characteristics of people with ID who are labelled "offenders" may differ from those with ID who do not offend (Winter et al. 1997). Holland *et al.* (2002) propose that two groups of offenders with ID can be identified: those with intellectual impairments who are not already known to the ID services, and a smaller

group already known to the ID services. In the latter group, the term "offence" may often be confused with "challenging behaviour" (Emerson, 1995).

The concepts of criminal responsibility and fitness to stand trial are emphasized in western countries (Baroff, Gunn, & Hayes, 2004), and there is a conflict of views between the "hold them accountable" and "divert them from the criminal justice system" factions in the population (Hayes, 2004). The Norwegian system has somewhat restrictive policies about diverting offenders with ID from the common criminal justice system. There has been no focus on intellectual impairment among offenders, and the system is occupied with other, more visible tasks, like building more prison accommodation, splitting up criminal gangs and preventing recidivists. Norway closed all institutions for people with intellectual disability in 1991, and municipal authorities were called upon to establish locally based services and accommodation. No institutions were left in the country to serve offenders or other people with a need for specialized services due to concomitant ID.

The lack of alternative options for offenders with ID in Norway, and the need to separate non-responsible offenders with ID from other non-responsible offenders in the criminal justice system, was identified after a redefinition of criminal responsibility in 1994. A national unit for mandatory care (MC) was established in 2002, replacing the unit for preventive supervision (PS).

Internationally, there seem to be a variety of approaches in the management of offenders with ID. Hayes (2004) identifies several options both within and diverted from the criminal justice system, where lesser sanctions should be considered.

Norway's new penal code (Ministry-of-Justice, 2006) sets stringent criteria for bringing people with intellectual disabilities into the scope of mandatory care in the forensic services. These include the commission of a serious and life-threatening crime by a person defined as non-responsible due to ID, with an intellectual functioning corresponding to moderate or severe intellectual disability (IQ<55). The risk of reoffending must also be regarded as high before a sentence mandatory care (MC) can be imposed. Offenders who do not fulfil these criteria are given regular prison sentences. There is scope for imposing reduced sentences if/when ID is discovered during court proceedings.

In comparison with other western countries, such precise limits to the eligibility of ID offenders for specialist care are relatively unusual. Denmark has no precise limitations for the application of criminal legislation to people with intellectual disabilities, and offenders responsible for a wide range of violations are sentenced to institutional care (Mikkelsen, Klausen, & Sandberg, 2007).

Before 2002, convicted offenders with an ID in Norway were sentenced to preventive supervision (PS) in the municipality where they lived. The offenders were placed under the supervision of the probation services. Criteria for such a sentence also included commission of a serious violent crime, sexual offence or life-threatening arson, with a high risk of reoffending (Ministry-of-Justice, 1994). The supervision and care are now provided by the national unit for MC, although the local services cooperate by adapting services for each offender. The National Unit for Mandatory Care is responsible for the public safety and for the rehabilitation of the offenders.

Offenders with an IQ above 55, or a conviction for minor offences are held in an ordinary prison.

Aims:

The purpose of this study was to compare two groups of offenders with intellectual disability: (1) those sentenced to PS, who were studied in 2002, and (2) those sentenced to MC, studied in 2006. We hypothesized that MC would entail (i) less adaptive functioning, (ii) more behaviour problems and (iii) more psychiatric disorders, (iv) more qualified staff and (v) higher use of specialized health services.

This work reports retrospectively on the differences between offenders with an ID sentenced to PS (Nottestad & Linaker, 2005) and offenders with an ID sentenced to MC. This study focused on living conditions, services, restrictions, challenging behaviour and mental health. The comparisons between the two groups also include the costs of care, participation in activities outside the residence, and the use of specialized health services. We also compared the two groups of offenders with findings from other studies of people with ID in general.

Methods:

Subjects and procedure:

All 13 offenders with intellectual disability sentenced to MC in terms of the Norwegian penal code were studied. This sample was compared with a sample of 27 offenders sentenced to PS (Nottestad & Linaker, 2005).

Information about each individual was provided by the offenders' key carers, the care managers, the probation officers (who were organized at national level after 2002) and the criminal register. Some individuals were excluded from some analyses due to missing data. Data collection in 2006 followed similar procedures to those used in the 2002 study (Nottestad & Linaker, 2005). Three individuals in the PS population declined to participate in the study, but everyone in the MC population agreed to participate. The information about the three individuals who chose not to participate in the study consists only of data from the criminal register, including: age, sex, criminality, degree of disability, housing conditions, admittance to psychiatric hospitals and the annual costs of the PS.

The study was approved by the regional committee for medical research and by the head of the unit for MC.

Instruments:

The presence and frequencies of challenging behaviours were identified by the carers. They were asked if any of the following behaviours had occurred during the previous year: attacks on people or objects, threats about killing or vandalism, refusal to cooperate, temper tantrums, self-injurious behaviour, self-stimulation, excessive and persistent demands, echolalia, compulsive behaviour or social isolation. They also scored the frequencies of these behaviours, on a scale from zero (never) to four (always).

Nine functional skills such as dressing, eating, personal hygiene and mobility were scored on scales from one to five. A score of one indicated full independence, while five indicated total dependence on the carers.

Psychiatric disorders were identified by means of the Psychopathology Instrument for Mentally Retarded Adults (PIMRA (informant version)); (Matson, Barrett, & Helsel, 1988). This instrument includes a checklist of 56 dichotomized items divided into eight subscales (schizophrenia, affective disorder, psychosexual disorder, adjustment disorder, anxiety disorder, somatoform disorder, personality disorder and inappropriate adjustment). The rater was asked to indicate whether each statement was true ("YES") or false ("NO"). Diagnosis requires the presence of at least four of the seven symptoms on a subscale (Matson et al., 1988).

The use of health services was investigated by asking if there had been any contact between the individual and various categories of health professional in the previous year. The categories included: general practitioner, psychiatrist, psychologist, dentist, eye specialist and physiotherapist.

SPSS version 14.0 was used for data analysis. We used descriptives, non-parametric tests (chi-square and Mann-Whitney) and parametric tests (student t-tests and one-way ANOVA). Two-tailed p-values less than p=0.05 were regarded as significant.

Results

Individual characteristics

The intensity of ID differed between the PS group and the MC group. In the PS group, 48% were classified as having mild ID and 52% as having moderate ID (WHO, 1993). In the MC group, all were classified as having moderate ID (the average IQ at the time of forensic psychiatric examination was 45).

We found no significant differences between the groups in relation to gender distribution or mean age (PS, mean = 38 years; MC, mean = 40 years).

Housing and care

There were no significant differences in the standard of housing between the two groups. Security measures differed, with more frequent use of door alarms in MC (χ^2 (1, n=39) =8.955, p=0.003), and more people in MC were continually followed and monitored by the care staff (χ^2 (1, n=39) =5.299, p=0.021). The average staff: offender ratio was the same for both groups, with six staff posts per offender, and the number of different individual staff members responsible for each client was almost the same (mean = 9.6 in PS and 9.8 in MC).

The annual cost of care had increased from an average in 2002 of $ 348,772 (range: $ 101,185 to $ 613,010) per individual in PS to an average of $ 577,100 (range: $ 413,600 to $ 959,500) per person in MC. The rate of inflation over the four years (2002-2006) was 6.9% (Statistics Norway).Converted to 2006 values, the average cost of care had increased from $ 372,837 to $ 577,100.

Our expectation of a more homogeneous sample was confirmed, although a similar pattern of offences was seen in both groups. Sexual offences were a target offence in 41% of PS and 38% of MC individuals. Arson was a target offence in 22% of PS and 15% of MC individuals. Violence was a target offence in 26% of PS and 46% of MC individuals. Due to the legal criteria, theft and robbery without serious violence were applicable only in the PS context, and represented target offences in 11% of PS individuals.

Competency

Independent sample t-tests were conducted to explore the differences in competency among staff in PS and MC. The staff was divided into three levels of competence; registered nurses, licensed practical nurses and unskilled staff. The mean and standard deviations are presented in Table 1. There was a significant difference in the mean number of registered nurses in PS (M=2.04, SD=1.40) and MC (M=4.45, SD=3.83; t(33)=-2.75, p=0.01). The magnitude of the difference in the means was large (eta squared =0.19).

Table 1 about here

Participation

We analysed participation in community activities. Independent sample t-tests did not indicate significant differences between the number of activities in PS (M=3.68, SD=4.84) and in MC (M=3.54, SD=4.24). Neither was the total time (hours) spent on community activities statistically significantly different for people in PS (M=14.0, SD=14.1) and people in MC [M=8.8, SD=7.8; t(32)=1.178, p=.248].

Behavioural problems

There were no significant differences in any specific behaviour problems between the two groups nor in all behavioural problems seen together. PS: (M=12.17, SD=6.23) and MC: [M=12.08, SD=7.59; t(35)=0.39, p=0.97].

Psychiatric disorders:

Table 2 shows the overall occurrence of psychiatric disorders, in terms of the PIMRA criteria, in the two groups. There was a significant decrease in the number of subjects meeting the criteria for anxiety disorder in MC, using a Fisher's exact test.

Table 2 about here

The prevalence of subjects sentenced to PS meeting the criterion for at least one diagnosis was 74%. The percentage in the MC sample is 46%. The difference was however not significant.

Behavioural deficits

The behavioural deficits and impairments studied included the range of mobility, hygiene, dressing, eating, communication, sight and hearing. People sentenced to both groups had few behavioural deficits, and the differences between the groups were insignificant.

Impact of intellectual functioning

A key difference between the two groups was the level of intellectual functioning. PS included people with both mild (IQ 55-70) and moderate ID (IQ 40-55) while the core criterion for MC was mainly below mild ID (IQ <55). Studying the people in PS with a moderate ID (n=12), shows small and insignificant differences from the group as a whole; see table 3

Table 3 about here

Health services outside the place of care.

The use of health services is shown in figure 1. The graph presents the percentage of the ID offenders who had had contact with any of the services in the last year. All of the health services seemed to be accessed less in MC; however, the differences were insignificant.

Figure 1 about here

The overall use of health services (all services combined) has declined from an average of 2.92 services accessed in the previous year in PS to 2.23 services in MC. A Mann-Whitney nonparametric test indicates that this decrease is significant (Z= -2.003; p=0.045).

Discussion

The people in MC were subject to more restrictive measures than the people in PS. They were more likely to have their movements closely observed by care staff and to have alarms used in controlling their entrances and exits from spaces. The care staff was better educated in MC, with significantly more registered nurses. The time spent in activities outside the residence was found to be less in MC, though not significantly so. Behavioural problems were equivalent in the two groups, but assessments of mental health and symptoms of psychiatric disorders indicate fewer symptoms of anxiety disorder in MC compared to PS. Adaptive behaviour and impairments are at the same level in the two groups, and there were few adaptive or physical deficits. The use of other health services was higher in PS, and the overall analysis confirmed a significant decrease in the use of these services.

Measuring behaviour problems, mental health and adaptive behaviour by means of carer interviews has methodological limitations which may influence the results. Within a new legal system, with new perspectives and objectives, the care and treatment of offenders with intellectual disabilities has been altered. Intellectual functioning is lower among subjects in MC (mean IQ 45.2 from the state of the forensic reports).The local adaptation of services in PS has been replaced by central directions in MC, and the emphasis on more serious offences is more explicit in MC. The present authors believe that these factors might influence the differences found between PS and MC.

Differences in mental health, staff competency, participation, and security measures are significant across the two groups, and at the same time these findings differ from studies of other samples of people with intellectual disability. One study found a total PIMRA score of mean 15.03 in a mixed sample of institutionalized and community located subjects (Jenkins, Rose, & Jones, 1998). This is comparable with our findings in MC which scored 16.77. A recent study found that 54% of a randomly selected sample of people with ID in two Swedish counties met the criteria for one or more psychiatric diagnoses (PIMRA) (Gustafsson & Sonnander, 2004). The figures from our study show 74% in PS and 46% in MC.

Studies on the relationship between challenging behaviour and psychiatric disorders are inconclusive. One study (S. Moss et al., 2000) compared clients with challenging behaviour to a control group and found that clients with more severe challenging behaviours had significantly more symptoms on the Psychiatric Assessment Schedule

for Adults with Developmental Disability (PAS-ADD) Checklist (S. C. Moss, Prosser, Costello, & al., 1998). In contrast, (Rojahn, Borthwick-Duffy, & Jacobson, 1993) failed to find compelling correlations between psychiatric diagnosis and problem behaviours in a sample of 135,102 clients with mental retardation. The term "psychiatric disorders" include disorders with varying degrees of biological basis, and disorders of a biological origin are suggested to correlate more closely with behaviour problems (Murphy, 1999). Age, gender and intensity of ID are also factors which are known to be associated with the presence of challenging behaviour (Borthwick-Duffy, 1994; S. Moss et al., 2000). The present study did not show significant differences between groups, although people in MC had a lower level of intellectual functioning.

It is widely accepted that there is a higher prevalence of psychiatric disorders in people with ID, and that psychiatric disorders become more prevalent as the severity of ID increases (Cooper & Bailey, 2001; Hemmings, 2007) .

There is more restrictive management of individuals in MC, with extended monitoring and less time spent in those activities which involve more monitoring by the carer. More participation in meaningful activities was found to be associated with adaptive behaviour and independence in a sample of people with intellectual disability after deinstitutionalizing (Mansell, Elliott, Beadle-Brown, Ashman, & Macdonald, 2002). Better qualified staff might possibly observe, register and treat challenging behaviour differently than would less qualified staff. So the systemic differences in the daily regime may explain some of the ratings of challenging behaviour between PS and MC.

There was a change in the use of various specialist health services between the two groups. As the qualified staff is better represented in MC, some of the need for specialized health services may be met at a local level. According to (Jenkins et al., 1998) there may be several explanations why individuals exhibiting challenging behaviours in local authority residences were not known to "experts": 1) Perhaps staff at these houses did not know how to use the referral system. 2) Staff may have seen it as "failing" if they called in outside help. 3) The staff may have used specialist services without reporting it. 4) It is possible that there may be an attitude of "containment" among staff, in terms of not wanting outsiders intervening in staff practices or directly with residents. 5) The staff may have a general mistrust of psychiatry. It is also probable that the MC system already includes access to some of the specialist health services needed for this client group and that these services are not recognized as being particular to them.

The decrease in the number of offenders in MC compared to the number who were detained in PS is primarily due to the introduction of more restrictive legal criteria for the definition of offenders with ID. A similar change was reported in Denmark between 1973 and 1984 (Lund, 1990) as a consequence of the imposition of shorter sentences and a decrease in the number of sentenced borderline ID offenders. Variations in the criminal justice and welfare system may explain the wide variation in the numbers of offenders identified with ID in western countries.
Coercive options in the Norwegian services for people with ID may help to prevent some people from behaving offensively, and they also shift the responsibility for illegal acts from the offender to the services. Some authors have argued that whilst the level of formal institutionalization for people with ID has decreased over the past

three decades (Braddock, Emerson, Felce, & Stancliffe, 2001), some individuals are still experiencing hidden forms of incarceration and involuntary placements such as secure mental health facilities and "innovative" housing arrangements isolated from everyday community life (Cockram, 2005; Petersilia, 1997)

This exploratory study describes some of the changes among and for offenders with intellectual disability after a change in the legislation in Norway. There are several important aspects outside the focus of this study, such as quality of life and the individual's general level of contentment. Quantitative studies have some limitations in disclosing the nuances of the individual subjects' point of view. A qualitative study of the Norwegian offenders with intellectual disability (Bjørum, 2006) concluded that most offenders sentenced to MC were satisfied with their living conditions, but staff seemed too concerned about safety measures and too little focussed on rehabilitation. To analyse the long-term outcomes of MC, further research on this particular service is needed.

There are limitations to this study due to the small sample size, derived from very specialized and small populations. The resulting statistical power is weak and the risk of disregarding relations in the material is considerable.

With Norway's population of 4.6 million, 13 offenders with marked intellectual disability constitute an almost insignificant part of the total offender population of 3,000 people held in the country's prisons at any one time, or of the 18,000 individuals imprisoned annually. However, those 13 persons constitute the number of offenders who have been found to be not accountable for their actions due to the extent of their ID. So they constitute an important group in the criminal justice system. There would appear to be a grey area between offending and challenging

behaviour (Emerson, 1995; Holland et al., 2002). Most violent offences brought to court are harmful, but at the same time within the limits of challenging behaviour. The offenders with ID may differ from other people with ID who exhibit challenging behaviour in not receiving adequate social support and care before the act that led to prosecution. Holland et al. (2002) describe the distinction between criminal offending and challenging behaviour as far from clear.

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Table 1: competency in staff. Total number in each competency group and mean in each residence.

Competency category	PS (n=27)			MC (n=13)			
	n	mean	st.dev	n	mean	st.dev	p-value
Registered nurse	49	2.04	1.40	49	4.45	3.83	0.01
Licensed practical nurse	70	2.88	2.40	25	2.27	2.52	ns
Unskilled	126	4.81	3.26	34	3.09	1.51	ns

Table 2: Frequencies of psychiatric disorders in 2002 for subjects sentenced to preventive supervision (PS) and in 2006 for subjects sentenced to mandatory care (MC)

	PS (n=23)		MC (n=13)		
Psychiatric disorder	Number	Percentage	Number	Percentage	P-value*
Schizophrenic disorder	2	9	1	8	NS
Affective disorder	7	30	2	15	NS
Anxiety disorder	14	61	4	31	0.046
Somatoform disorder	6	26	2	15	NS
Psychosexual disorder	0		0		
Personality disorder	4	17	2	15	NS
Adjustment disorder	5	22	2	15	NS

*NS: not significant

Table 3: Occurrence of behaviour problems, psychiatric disorders, and adaptive behaviour in PS and MC, mean scores and confidence interval. Data for people with a moderate level of ID (n=12) were extracted from the PS system, and these results are presented.

	PS (n=27)		MC (n=13)		Independent-samples t-test	PS (IQ<55) (n=12)	
	Mean	SD	Mean	SD		Mean	SD
Behaviour problems	12.17	6.23	12.08	7.59	T(35)=0.39, p=0.969	12.08	6.69
PIMRA total-score	20.96	7.09	16.77	6.42	T(33)=1.76, p=0.087	20.75	5.66
Adaptive behaviour	14.91	3.25	15.58	3.65	T(34)=-0.56, p=0.582	15.33	3.31

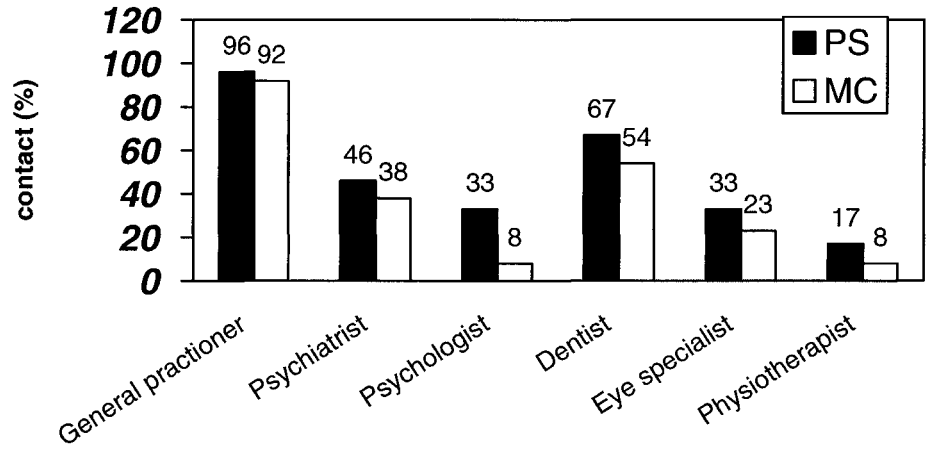

Figure 1: Contact between the offender with an ID and specialist health services in the previous year.

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69. Kjetil B. Åsbakk: STUDIES OF A PROTEIN FROM PSORIATIC SCALE, PSO P27, WITH RESPECT TO ITS POTENTIAL ROLE IN IMMUNE REACTIONS IN PSORIASIS.
70. Arnulf Hestnes: STUDIES ON DOWN´S SYNDROME.
71. Randi Nygaard: LONG-TERM SURVIVAL IN CHILDHOOD LEUKEMIA.
72. Bjørn Hagen: THIO-TEPA.
73. Svein Anda: EVALUATION OF THE HIP JOINT BY COMPUTED TOMOGRAMPHY AND ULTRASONOGRAPHY.

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74. Martin Svartberg: AN INVESTIGATION OF PROCESS AND OUTCOME OF SHORT-TERM PSYCHODYNAMIC PSYCHOTHERAPY.
75. Stig Arild Slørdahl: AORTIC REGURGITATION.
76. Harold C Sexton: STUDIES RELATING TO THE TREATMENT OF SYMPTOMATIC NON-PSYCHOTIC PATIENTS.
77. Maurice B. Vincent: VASOACTIVE PEPTIDES IN THE OCULAR/FOREHEAD AREA.
78. Terje Johannessen: CONTROLLED TRIALS IN SINGLE SUBJECTS.
79. Turid Nilsen: PYROPHOSPHATE IN HEPATOCYTE IRON METABOLISM.
80. Olav Haraldseth: NMR SPECTROSCOPY OF CEREBRAL ISCHEMIA AND REPERFUSION IN RAT.
81. Eiliv Brenna: REGULATION OF FUNCTION AND GROWTH OF THE OXYNTIC MUCOSA.

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82. Gunnar Bovim: CERVICOGENIC HEADACHE.
83. Jarl Arne Kahn: ASSISTED PROCREATION.
84. Bjørn Naume: IMMUNOREGULATORY EFFECTS OF CYTOKINES ON NK CELLS.
85. Rune Wiseth: AORTIC VALVE REPLACEMENT.
86. Jie Ming Shen: BLOOD FLOW VELOCITY AND RESPIRATORY STUDIES.
87. Piotr Kruszewski: SUNCT SYNDROME WITH SPECIAL REFERENCE TO THE AUTONOMIC NERVOUS SYSTEM.
88. Mette Haase Moen: ENDOMETRIOSIS.
89. Anne Vik: VASCULAR GAS EMBOLISM DURING AIR INFUSION AND AFTER DECOMPRESSION IN PIGS.
90. Lars Jacob Stovner: THE CHIARI TYPE I MALFORMATION.
91. Kjell Å. Salvesen: ROUTINE ULTRASONOGRAPHY IN UTERO AND DEVELOPMENT IN CHILDHOOD.

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92. Nina-Beate Liabakk: DEVELOPMENT OF IMMUNOASSAYS FOR TNF AND ITS SOLUBLE RECEPTORS.
93. Sverre Helge Torp: *erb*B ONCOGENES IN HUMAN GLIOMAS AND MENINGIOMAS.
94. Olav M. Linaker: MENTAL RETARDATION AND PSYCHIATRY. Past and present.
95. Per Oscar Feet: INCREASED ANTIDEPRESSANT AND ANTIPANIC EFFECT IN COMBINED TREATMENT WITH DIXYRAZINE AND TRICYCLIC ANTIDEPRESSANTS.
96. Stein Olav Samstad: CROSS SECTIONAL FLOW VELOCITY PROFILES FROM TWO-DIMENSIONAL DOPPLER ULTRASOUND: Studies on early mitral blood flow.
97. Bjørn Backe: STUDIES IN ANTENATAL CARE.
98. Gerd Inger Ringdal: QUALITY OF LIFE IN CANCER PATIENTS.
99. Torvid Kiserud: THE DUCTUS VENOSUS IN THE HUMAN FETUS.
100. Hans E. Fjøsne: HORMONAL REGULATION OF PROSTATIC METABOLISM.
101. Eylert Brodtkorb: CLINICAL ASPECTS OF EPILEPSY IN THE MENTALLY RETARDED.
102. Roar Juul: PEPTIDERGIC MECHANISMS IN HUMAN SUBARACHNOID HEMORRHAGE.
103. Unni Syversen: CHROMOGRANIN A. Phsysiological and Clinical Role.

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104. Odd Gunnar Brakstad: THERMOSTABLE NUCLEASE AND THE *nuc* GENE IN THE DIAGNOSIS OF *Staphylococcus aureus* INFECTIONS.
105. Terje Engan: NUCLEAR MAGNETIC RESONANCE (NMR) SPECTROSCOPY OF PLASMA IN MALIGNANT DISEASE.
106. Kirsten Rasmussen: VIOLENCE IN THE MENTALLY DISORDERED.
107. Finn Egil Skjeldestad: INDUCED ABORTION: Timetrends and Determinants.
108. Roar Stenseth: THORACIC EPIDURAL ANALGESIA IN AORTOCORONARY BYPASS SURGERY.
109. Arild Faxvaag: STUDIES OF IMMUNE CELL FUNCTION *in mice infected with* MURINE RETROVIRUS.

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110. Svend Aakhus: NONINVASIVE COMPUTERIZED ASSESSMENT OF LEFT VENTRICULAR FUNCTION AND SYSTEMIC ARTERIAL PROPERTIES. Methodology and some clinical applications.
111. Klaus-Dieter Bolz: INTRAVASCULAR ULTRASONOGRAPHY.
112. Petter Aadahl: CARDIOVASCULAR EFFECTS OF THORACIC AORTIC CROSS-CLAMPING.
113. Sigurd Steinshamn: CYTOKINE MEDIATORS DURING GRANULOCYTOPENIC INFECTIONS.
114. Hans Stifoss-Hanssen: SEEKING MEANING OR HAPPINESS?
115. Anne Kvikstad: LIFE CHANGE EVENTS AND MARITAL STATUS IN RELATION TO RISK AND PROGNOSIS OF CANCER.
116. Torbjørn Grøntvedt: TREATMENT OF ACUTE AND CHRONIC ANTERIOR CRUCIATE LIGAMENT INJURIES. A clinical and biomechanical study.
117. Sigrid Hørven Wigers: CLINICAL STUDIES OF FIBROMYALGIA WITH FOCUS ON ETIOLOGY, TREATMENT AND OUTCOME.
118. Jan Schjøtt: MYOCARDIAL PROTECTION: Functional and Metabolic Characteristics of Two Endogenous Protective Principles.
119. Marit Martinussen: STUDIES OF INTESTINAL BLOOD FLOW AND ITS RELATION TO TRANSITIONAL CIRCULATORY ADAPATION IN NEWBORN INFANTS.
120. Tomm B. Müller: MAGNETIC RESONANCE IMAGING IN FOCAL CEREBRAL ISCHEMIA.
121. Rune Haaverstad: OEDEMA FORMATION OF THE LOWER EXTREMITIES.
122. Magne Børset: THE ROLE OF CYTOKINES IN MULTIPLE MYELOMA, WITH SPECIAL REFERENCE TO HEPATOCYTE GROWTH FACTOR.
123. Geir Smedslund: A THEORETICAL AND EMPIRICAL INVESTIGATION OF SMOKING, STRESS AND DISEASE: RESULTS FROM A POPULATION SURVEY.

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124. Torstein Vik: GROWTH, MORBIDITY, AND PSYCHOMOTOR DEVELOPMENT IN INFANTS WHO WERE GROWTH RETARDED *IN UTERO*.
125. Siri Forsmo: ASPECTS AND CONSEQUENCES OF OPPORTUNISTIC SCREENING FOR CERVICAL CANCER. Results based on data from three Norwegian counties.
126. Jon S. Skranes: CEREBRAL MRI AND NEURODEVELOPMENTAL OUTCOME IN VERY LOW BIRTH WEIGHT (VLBW) CHILDREN. A follow-up study of a geographically based year cohort of VLBW children at ages one and six years.
127. Knut Bjørnstad: COMPUTERIZED ECHOCARDIOGRAPHY FOR EVALUTION OF CORONARY ARTERY DISEASE.
128. Grethe Elisabeth Borchgrevink: DIAGNOSIS AND TREATMENT OF WHIPLASH/NECK SPRAIN INJURIES CAUSED BY CAR ACCIDENTS.
129. Tor Elsås: NEUROPEPTIDES AND NITRIC OXIDE SYNTHASE IN OCULAR AUTONOMIC AND SENSORY NERVES.
130. Rolf W. Gråwe: EPIDEMIOLOGICAL AND NEUROPSYCHOLOGICAL PERSPECTIVES ON SCHIZOPHRENIA.
131. Tonje Strømholm: CEREBRAL HAEMODYNAMICS DURING THORACIC AORTIC CROSSCLAMPING. An experimental study in pigs.

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132. Martinus Bråten: STUDIES ON SOME PROBLEMS REALTED TO INTRAMEDULLARY NAILING OF FEMORAL FRACTURES.
133. Ståle Nordgård: PROLIFERATIVE ACTIVITY AND DNA CONTENT AS PROGNOSTIC INDICATORS IN ADENOID CYSTIC CARCINOMA OF THE HEAD AND NECK.

134. Egil Lien: SOLUBLE RECEPTORS FOR **TNF** AND **LPS**: RELEASE PATTERN AND POSSIBLE SIGNIFICANCE IN DISEASE.
135. Marit Bjørgaas: HYPOGLYCAEMIA IN CHILDREN WITH DIABETES MELLITUS
136. Frank Skorpen: GENETIC AND FUNCTIONAL ANALYSES OF DNA REPAIR IN HUMAN CELLS.
137. Juan A. Pareja: SUNCT SYNDROME. ON THE CLINICAL PICTURE. ITS DISTINCTION FROM OTHER, SIMILAR HEADACHES.
138. Anders Angelsen: NEUROENDOCRINE CELLS IN HUMAN PROSTATIC CARCINOMAS AND THE PROSTATIC COMPLEX OF RAT, GUINEA PIG, CAT AND DOG.
139. Fabio Antonaci: CHRONIC PAROXYSMAL HEMICRANIA AND HEMICRANIA CONTINUA: TWO DIFFERENT ENTITIES?
140. Sven M. Carlsen: ENDOCRINE AND METABOLIC EFFECTS OF METFORMIN WITH SPECIAL EMPHASIS ON CARDIOVASCULAR RISK FACTORES.

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141. Terje A. Murberg: DEPRESSIVE SYMPTOMS AND COPING AMONG PATIENTS WITH CONGESTIVE HEART FAILURE.
142. Harm-Gerd Karl Blaas: THE EMBRYONIC EXAMINATION. Ultrasound studies on the development of the human embryo.
143. Noèmi Becser Andersen:THE CEPHALIC SENSORY NERVES IN UNILATERAL HEADACHES. Anatomical background and neurophysiological evaluation.
144. Eli-Janne Fiskerstrand: LASER TREATMENT OF PORT WINE STAINS. A study of the efficacy and limitations of the pulsed dye laser. Clinical and morfological analyses aimed at improving the therapeutic outcome.
145. Bård Kulseng: A STUDY OF ALGINATE CAPSULE PROPERTIES AND CYTOKINES IN RELATION TO INSULIN DEPENDENT DIABETES MELLITUS.
146. Terje Haug: STRUCTURE AND REGULATION OF THE HUMAN UNG GENE ENCODING URACIL-DNA GLYCOSYLASE.
147. Heidi Brurok: MANGANESE AND THE HEART. A Magic Metal with Diagnostic and Therapeutic Possibilites.
148. Agnes Kathrine Lie: DIAGNOSIS AND PREVALENCE OF HUMAN PAPILLOMAVIRUS INFECTION IN CERVICAL INTRAEPITELIAL NEOPLASIA. Relationship to Cell Cycle Regulatory Proteins and HLA DQBI Genes.
149. Ronald Mårvik: PHARMACOLOGICAL, PHYSIOLOGICAL AND PATHOPHYSIOLOGICAL STUDIES ON ISOLATED STOMACS.
150. Ketil Jarl Holen: THE ROLE OF ULTRASONOGRAPHY IN THE DIAGNOSIS AND TREATMENT OF HIP DYSPLASIA IN NEWBORNS.
151. Irene Hetlevik: THE ROLE OF CLINICAL GUIDELINES IN CARDIOVASCULAR RISK INTERVENTION IN GENERAL PRACTICE.
152. Katarina Tunòn: ULTRASOUND AND PREDICTION OF GESTATIONAL AGE.
153. Johannes Soma: INTERACTION BETWEEN THE LEFT VENTRICLE AND THE SYSTEMIC ARTERIES.
154. Arild Aamodt: DEVELOPMENT AND PRE-CLINICAL EVALUATION OF A CUSTOM-MADE FEMORAL STEM.
155. Agnar Tegnander: DIAGNOSIS AND FOLLOW-UP OF CHILDREN WITH SUSPECTED OR KNOWN HIP DYSPLASIA.
156. Bent Indredavik: STROKE UNIT TREATMENT: SHORT AND LONG-TERM EFFECTS
157. Jolanta Vanagaite Vingen: PHOTOPHOBIA AND PHONOPHOBIA IN PRIMARY HEADACHES

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158. Ola Dalsegg Sæther: PATHOPHYSIOLOGY DURING PROXIMAL AORTIC CROSS-CLAMPING CLINICAL AND EXPERIMENTAL STUDIES
159. xxxxxxxxx (blind number)
160. Christina Vogt Isaksen: PRENATAL ULTRASOUND AND POSTMORTEM FINDINGS – A TEN YEAR CORRELATIVE STUDY OF FETUSES AND INFANTS WITH DEVELOPMENTAL ANOMALIES.
161. Holger Seidel: HIGH-DOSE METHOTREXATE THERAPY IN CHILDREN WITH ACUTE LYMPHOCYTIC LEUKEMIA: DOSE, CONCENTRATION, AND EFFECT CONSIDERATIONS.
162. Stein Hallan: IMPLEMENTATION OF MODERN MEDICAL DECISION ANALYSIS INTO CLINICAL DIAGNOSIS AND TREATMENT.

163. Malcolm Sue-Chu: INVASIVE AND NON-INVASIVE STUDIES IN CROSS-COUNTRY SKIERS WITH ASTHMA-LIKE SYMPTOMS.
164. Ole-Lars Brekke: EFFECTS OF ANTIOXIDANTS AND FATTY ACIDS ON TUMOR NECROSIS FACTOR-INDUCED CYTOTOXICITY.
165. Jan Lundbom: AORTOCORONARY BYPASS SURGERY: CLINICAL ASPECTS, COST CONSIDERATIONS AND WORKING ABILITY.
166. John-Anker Zwart: LUMBAR NERVE ROOT COMPRESSION, BIOCHEMICAL AND NEUROPHYSIOLOGICAL ASPECTS.
167. Geir Falck: HYPEROSMOLALITY AND THE HEART.
168. Eirik Skogvoll: CARDIAC ARREST Incidence, Intervention and Outcome.
169. Dalius Bansevicius: SHOULDER-NECK REGION IN CERTAIN HEADACHES AND CHRONIC PAIN SYNDROMES.
170. Bettina Kinge: REFRACTIVE ERRORS AND BIOMETRIC CHANGES AMONG UNIVERSITY STUDENTS IN NORWAY.
171. Gunnar Qvigstad: CONSEQUENCES OF HYPERGASTRINEMIA IN MAN
172. Hanne Ellekjær: EPIDEMIOLOGICAL STUDIES OF STROKE IN A NORWEGIAN POPULATION. INCIDENCE, RISK FACTORS AND PROGNOSIS
173. Hilde Grimstad: VIOLENCE AGAINST WOMEN AND PREGNANCY OUTCOME.
174. Astrid Hjelde: SURFACE TENSION AND COMPLEMENT ACTIVATION: Factors influencing bubble formation and bubble effects after decompression.
175. Kjell A. Kvistad: MR IN BREAST CANCER – A CLINICAL STUDY.
176. Ivar Rossvoll: ELECTIVE ORTHOPAEDIC SURGERY IN A DEFINED POPULATION. Studies on demand, waiting time for treatment and incapacity for work.
177. Carina Seidel: PROGNOSTIC VALUE AND BIOLOGICAL EFFECTS OF HEPATOCYTE GROWTH FACTOR AND SYNDECAN-1 IN MULTIPLE MYELOMA.

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178. Alexander Wahba: THE INFLUENCE OF CARDIOPULMONARY BYPASS ON PLATELET FUNCTION AND BLOOD COAGULATION – DETERMINANTS AND CLINICAL CONSEQUENSES
179. Marcus Schmitt-Egenolf: THE RELEVANCE OF THE MAJOR hISTOCOMPATIBILITY COMPLEX FOR THE GENETICS OF PSORIASIS
180. Odrun Arna Gederaas: BIOLOGICAL MECHANISMS INVOLVED IN 5-AMINOLEVULINIC ACID BASED PHOTODYNAMIC THERAPY
181. Pål Richard Romundstad: CANCER INCIDENCE AMONG NORWEGIAN ALUMINIUM WORKERS
182. Henrik Hjorth-Hansen: NOVEL CYTOKINES IN GROWTH CONTROL AND BONE DISEASE OF MULTIPLE MYELOMA
183. Gunnar Morken: SEASONAL VARIATION OF HUMAN MOOD AND BEHAVIOUR
184. Bjørn Olav Haugen: MEASUREMENT OF CARDIAC OUTPUT AND STUDIES OF VELOCITY PROFILES IN AORTIC AND MITRAL FLOW USING TWO- AND THREE-DIMENSIONAL COLOUR FLOW IMAGING
185. Geir Bråthen: THE CLASSIFICATION AND CLINICAL DIAGNOSIS OF ALCOHOL-RELATED SEIZURES
186. Knut Ivar Aasarød: RENAL INVOLVEMENT IN INFLAMMATORY RHEUMATIC DISEASE. A Study of Renal Disease in Wegener's Granulomatosis and in Primary Sjögren's Syndrome
187. Trude Helen Flo: RESEPTORS INVOLVED IN CELL ACTIVATION BY DEFINED URONIC ACID POLYMERS AND BACTERIAL COMPONENTS
188. Bodil Kavli: HUMAN URACIL-DNA GLYCOSYLASES FROM THE UNG GENE: STRUCTRUAL BASIS FOR SUBSTRATE SPECIFICITY AND REPAIR
189. Liv Thommesen: MOLECULAR MECHANISMS INVOLVED IN TNF- AND GASTRIN-MEDIATED GENE REGULATION
190. Turid Lingaas Holmen: SMOKING AND HEALTH IN ADOLESCENCE; THE NORD-TRØNDELAG HEALTH STUDY, 1995-97
191. Øyvind Hjertner: MULTIPLE MYELOMA: INTERACTIONS BETWEEN MALIGNANT PLASMA CELLS AND THE BONE MICROENVIRONMENT
192. Asbjørn Støylen: STRAIN RATE IMAGING OF THE LEFT VENTRICLE BY ULTRASOUND. FEASIBILITY, CLINICAL VALIDATION AND PHYSIOLOGICAL ASPECTS

193. Kristian Midthjell: DIABETES IN ADULTS IN NORD-TRØNDELAG. PUBLIC HEALTH ASPECTS OF DIABETES MELLITUS IN A LARGE, NON-SELECTED NORWEGIAN POPULATION.
194. Guanglin Cui: FUNCTIONAL ASPECTS OF THE ECL CELL IN RODENTS
195. Ulrik Wisløff: CARDIAC EFFECTS OF AEROBIC ENDURANCE TRAINING: HYPERTROPHY, CONTRACTILITY AND CALCUIM HANDLING IN NORMAL AND FAILING HEART
196. Øyvind Halaas: MECHANISMS OF IMMUNOMODULATION AND CELL-MEDIATED CYTOTOXICITY INDUCED BY BACTERIAL PRODUCTS
197. Tore Amundsen: PERFUSION MR IMAGING IN THE DIAGNOSIS OF PULMONARY EMBOLISM
198. Nanna Kurtze: THE SIGNIFICANCE OF ANXIETY AND DEPRESSION IN FATIQUE AND PATTERNS OF PAIN AMONG INDIVIDUALS DIAGNOSED WITH FIBROMYALGIA: RELATIONS WITH QUALITY OF LIFE, FUNCTIONAL DISABILITY, LIFESTYLE, EMPLOYMENT STATUS, CO-MORBIDITY AND GENDER
199. Tom Ivar Lund Nilsen: PROSPECTIVE STUDIES OF CANCER RISK IN NORD-TRØNDELAG: THE HUNT STUDY. Associations with anthropometric, socioeconomic, and lifestyle risk factors
200. Asta Kristine Håberg: A NEW APPROACH TO THE STUDY OF MIDDLE CEREBRAL ARTERY OCCLUSION IN THE RAT USING MAGNETIC RESONANCE TECHNIQUES

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201. Knut Jørgen Arntzen: PREGNANCY AND CYTOKINES
202. Henrik Døllner: INFLAMMATORY MEDIATORS IN PERINATAL INFECTIONS
203. Asta Bye: LOW FAT, LOW LACTOSE DIET USED AS PROPHYLACTIC TREATMENT OF ACUTE INTESTINAL REACTIONS DURING PELVIC RADIOTHERAPY. A PROSPECTIVE RANDOMISED STUDY.
204. Sylvester Moyo: STUDIES ON STREPTOCOCCUS AGALACTIAE (GROUP B STREPTOCOCCUS) SURFACE-ANCHORED MARKERS WITH EMPHASIS ON STRAINS AND HUMAN SERA FROM ZIMBABWE.
205. Knut Hagen: HEAD-HUNT: THE EPIDEMIOLOGY OF HEADACHE IN NORD-TRØNDELAG
206. Li Lixin: ON THE REGULATION AND ROLE OF UNCOUPLING PROTEIN-2 IN INSULIN PRODUCING ß-CELLS
207. Anne Hildur Henriksen: SYMPTOMS OF ALLERGY AND ASTHMA VERSUS MARKERS OF LOWER AIRWAY INFLAMMATION AMONG ADOLESCENTS
208. Egil Andreas Fors: NON-MALIGNANT PAIN IN RELATION TO PSYCHOLOGICAL AND ENVIRONTENTAL FACTORS. EXPERIENTAL AND CLINICAL STUDES OF PAIN WITH FOCUS ON FIBROMYALGIA
209. Pål Klepstad: MORPHINE FOR CANCER PAIN
210. Ingunn Bakke: MECHANISMS AND CONSEQUENCES OF PEROXISOME PROLIFERATOR-INDUCED HYPERFUNCTION OF THE RAT GASTRIN PRODUCING CELL
211. Ingrid Susann Gribbestad: MAGNETIC RESONANCE IMAGING AND SPECTROSCOPY OF BREAST CANCER
212. Rønnaug Astri Ødegård: PREECLAMPSIA – MATERNAL RISK FACTORS AND FETAL GROWTH
213. Johan Haux: STUDIES ON CYTOTOXICITY INDUCED BY HUMAN NATURAL KILLER CELLS AND DIGITOXIN
214. Turid Suzanne Berg-Nielsen: PARENTING PRACTICES AND MENTALLY DISORDERED ADOLESCENTS
215. Astrid Rydning: BLOOD FLOW AS A PROTECTIVE FACTOR FOR THE STOMACH MUCOSA. AN EXPERIMENTAL STUDY ON THE ROLE OF MAST CELLS AND SENSORY AFFERENT NEURONS

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216. Jan Pål Loennechen: HEART FAILURE AFTER MYOCARDIAL INFARCTION. Regional Differences, Myocyte Function, Gene Expression, and Response to Cariporide, Losartan, and Exercise Training.
217. Elisabeth Qvigstad: EFFECTS OF FATTY ACIDS AND OVER-STIMULATION ON INSULIN SECRETION IN MAN

218. Arne Åsberg: EPIDEMIOLOGICAL STUDIES IN HEREDITARY HEMOCHROMATOSIS: PREVALENCE, MORBIDITY AND BENEFIT OF SCREENING.
219. Johan Fredrik Skomsvoll: REPRODUCTIVE OUTCOME IN WOMEN WITH RHEUMATIC DISEASE. A population registry based study of the effects of inflammatory rheumatic disease and connective tissue disease on reproductive outcome in Norwegian women in 1967-1995.
220. Siv Mørkved: URINARY INCONTINENCE DURING PREGNANCY AND AFTER DELIVERY: EFFECT OF PELVIC FLOOR MUSCLE TRAINING IN PREVENTION AND TREATMENT
221. Marit S. Jordhøy: THE IMPACT OF COMPREHENSIVE PALLIATIVE CARE
222. Tom Christian Martinsen: HYPERGASTRINEMIA AND HYPOACIDITY IN RODENTS – CAUSES AND CONSEQUENCES
223. Solveig Tingulstad: CENTRALIZATION OF PRIMARY SURGERY FOR OVARAIN CANCER. FEASIBILITY AND IMPACT ON SURVIVAL
224. Haytham Eloqayli: METABOLIC CHANGES IN THE BRAIN CAUSED BY EPILEPTIC SEIZURES
225. Torunn Bruland: STUDIES OF EARLY RETROVIRUS-HOST INTERACTIONS – VIRAL DETERMINANTS FOR PATHOGENESIS AND THE INFLUENCE OF SEX ON THE SUSCEPTIBILITY TO FRIEND MURINE LEUKAEMIA VIRUS INFECTION
226. Torstein Hole: DOPPLER ECHOCARDIOGRAPHIC EVALUATION OF LEFT VENTRICULAR FUNCTION IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION
227. Vibeke Nossum: THE EFFECT OF VASCULAR BUBBLES ON ENDOTHELIAL FUNCTION
228. Sigurd Fasting: ROUTINE BASED RECORDING OF ADVERSE EVENTS DURING ANAESTHESIA – APPLICATION IN QUALITY IMPROVEMENT AND SAFETY
229. Solfrid Romundstad: EPIDEMIOLOGICAL STUDIES OF MICROALBUMINURIA. THE NORD-TRØNDELAG HEALTH STUDY 1995-97 (HUNT 2)
230. Geir Torheim: PROCESSING OF DYNAMIC DATA SETS IN MAGNETIC RESONANCE IMAGING
231. Catrine Ahlén: SKIN INFECTIONS IN OCCUPATIONAL SATURATION DIVERS IN THE NORTH SEA AND THE IMPACT OF THE ENVIRONMENT
232. Arnulf Langhammer: RESPIRATORY SYMPTOMS, LUNG FUNCTION AND BONE MINERAL DENSITY IN A COMPREHENSIVE POPULATION SURVEY. THE NORD-TRØNDELAG HEALTH STUDY 1995-97. THE BRONCHIAL OBSTRUCTION IN NORD-TRØNDELAG STUDY
233. Einar Kjelsås: EATING DISORDERS AND PHYSICAL ACTIVITY IN NON-CLINICAL SAMPLES
234. Arne Wibe: RECTAL CANCER TREATMENT IN NORWAY – STANDARDISATION OF SURGERY AND QUALITY ASSURANCE

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235. Eivind Witsø: BONE GRAFT AS AN ANTIBIOTIC CARRIER
236. Anne Mari Sund: DEVELOPMENT OF DEPRESSIVE SYMPTOMS IN EARLY ADOLESCENCE
237. Hallvard Lærum: EVALUATION OF ELECTRONIC MEDICAL RECORDS – A CLINICAL TASK PERSPECTIVE
238. Gustav Mikkelsen: ACCESSIBILITY OF INFORMATION IN ELECTRONIC PATIENT RECORDS; AN EVALUATION OF THE ROLE OF DATA QUALITY
239. Steinar Krokstad: SOCIOECONOMIC INEQUALITIES IN HEALTH AND DISABILITY. SOCIAL EPIDEMIOLOGY IN THE NORD-TRØNDELAG HEALTH STUDY (HUNT), NORWAY
240. Arne Kristian Myhre: NORMAL VARIATION IN ANOGENITAL ANATOMY AND MICROBIOLOGY IN NON-ABUSED PRESCHOOL CHILDREN
241. Ingunn Dybedal: NEGATIVE REGULATORS OF HEMATOPOIETEC STEM AND PROGENITOR CELLS
242. Beate Sitter: TISSUE CHARACTERIZATION BY HIGH RESOLUTION MAGIC ANGLE SPINNING MR SPECTROSCOPY
243. Per Arne Aas: MACROMOLECULAR MAINTENANCE IN HUMAN CELLS – REPAIR OF URACIL IN DNA AND METHYLATIONS IN DNA AND RNA
244. Anna Bofin: FINE NEEDLE ASPIRATION CYTOLOGY IN THE PRIMARY INVESTIGATION OF BREAST TUMOURS AND IN THE DETERMINATION OF TREATMENT STRATEGIES

245. Jim Aage Nøttestad: DEINSTITUTIONALIZATION AND MENTAL HEALTH CHANGES AMONG PEOPLE WITH MENTAL RETARDATION
246. Reidar Fossmark: GASTRIC CANCER IN JAPANESE COTTON RATS
247. Wibeke Nordhøy: MANGANESE AND THE HEART, INTRACELLULAR MR RELAXATION AND WATER EXCHANGE ACROSS THE CARDIAC CELL MEMBRANE

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248. Sturla Molden: QUANTITATIVE ANALYSES OF SINGLE UNITS RECORDED FROM THE HIPPOCAMPUS AND ENTORHINAL CORTEX OF BEHAVING RATS
249. Wenche Brenne Drøyvold: EPIDEMIOLOGICAL STUDIES ON WEIGHT CHANGE AND HEALTH IN A LARGE POPULATION. THE NORD-TRØNDELAG HEALTH STUDY (HUNT)
250. Ragnhild Støen: ENDOTHELIUM-DEPENDENT VASODILATION IN THE FEMORAL ARTERY OF DEVELOPING PIGLETS
251. Aslak Steinsbekk: HOMEOPATHY IN THE PREVENTION OF UPPER RESPIRATORY TRACT INFECTIONS IN CHILDREN
252. Hill-Aina Steffenach: MEMORY IN HIPPOCAMPAL AND CORTICO-HIPPOCAMPAL CIRCUITS
253. Eystein Stordal: ASPECTS OF THE EPIDEMIOLOGY OF DEPRESSIONS BASED ON SELF-RATING IN A LARGE GENERAL HEALTH STUDY (THE HUNT-2 STUDY)
254. Viggo Pettersen: FROM MUSCLES TO SINGING: THE ACTIVITY OF ACCESSORY BREATHING MUSCLES AND THORAX MOVEMENT IN CLASSICAL SINGING
255. Marianne Fyhn: SPATIAL MAPS IN THE HIPPOCAMPUS AND ENTORHINAL CORTEX
256. Robert Valderhaug: OBSESSIVE-COMPULSIVE DISORDER AMONG CHILDREN AND ADOLESCENTS: CHARACTERISTICS AND PSYCHOLOGICAL MANAGEMENT OF PATIENTS IN OUTPATIENT PSYCHIATRIC CLINICS
257. Erik Skaaheim Haug: INFRARENAL ABDOMINAL AORTIC ANEURYSMS – COMORBIDITY AND RESULTS FOLLOWING OPEN SURGERY
258. Daniel Kondziella: GLIAL-NEURONAL INTERACTIONS IN EXPERIMENTAL BRAIN DISORDERS
259. Vegard Heimly Brun: ROUTES TO SPATIAL MEMORY IN HIPPOCAMPAL PLACE CELLS
260. Kenneth McMillan: PHYSIOLOGICAL ASSESSMENT AND TRAINING OF ENDURANCE AND STRENGTH IN PROFESSIONAL YOUTH SOCCER PLAYERS
261. Marit Sæbø Indredavik: MENTAL HEALTH AND CEREBRAL MAGNETIC RESONANCE IMAGING IN ADOLESCENTS WITH LOW BIRTH WEIGHT
262. Ole Johan Kemi: ON THE CELLULAR BASIS OF AEROBIC FITNESS, INTENSITY-DEPENDENCE AND TIME-COURSE OF CARDIOMYOCYTE AND ENDOTHELIAL ADAPTATIONS TO EXERCISE TRAINING
263. Eszter Vanky: POLYCYSTIC OVARY SYNDROME – METFORMIN TREATMENT IN PREGNANCY
264. Hild Fjærtoft: EXTENDED STROKE UNIT SERVICE AND EARLY SUPPORTED DISCHARGE. SHORT AND LONG-TERM EFFECTS
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