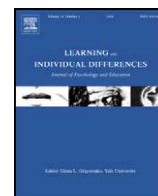




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Reading and writing disabilities among inmates in correctional settings. A Swedish perspective

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ABSTRACT

An abundance of research has shown that there is an extensive overrepresentation of reading and writing disabilities among inmates in juvenile institutions and prisons. The aim of this paper is to review publications from the Nordic countries, especially Sweden in the last decade regarding the prevalence of reading and writing disabilities and dyslexia. The prevalence of the difficulties varies between 6 and 70% among the studies. The main reason for these immense differences may be the definition of reading and writing disabilities and dyslexia and the distinction between those concepts. An additional aim has been to review some publications regarding effective reading and writing interventions for this population. Few studies have been carried out in this area worldwide. This may mainly be due to methodological obstacles created by the conditions that exist at the institutions such as the inmates' security restrictions, the transposition of the youngsters and escaping inmates.

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1. Introduction

The demand on literacy has increased rapidly in recent decades, not least because of the penetration of the Internet. A failure in this domain will seriously jeopardize the chances to get a job and to continue education after the compulsory school. Investigations among the incarcerated have shown this fact. There has been an extensive amount of research regarding problems with reading and writing among juvenile delinquents and incarcerated adults in the last few decades (see outlines by Gellert & Elbro, 1999; Grigorenko, 2006). The main topics that have been discussed in many of those investigations have concerned the prevalence and causes of these problems, i.e. the chicken-and-egg syndrome. The prevalence issue depends, among other things, on how definitions have been defined by researchers. In publications on this topic the dyslexia concept has been used as well as the broader term reading and writing disabilities to describe individuals with literacy difficulties. It is also common to include measures of intelligence as an additional criterion for defining dyslexia, i.e. the participant has to perform above a certain value on an IQ test to be regarded as a dyslexic. The reason for excluding those with a low IQ is that poor intellectual ability might be a confounding factor. However, this approach has been called into question. Researchers who argued that poor phonological ability is at the heart of dyslexics' problems have found no differences in decoding tasks between the reading disabled with and without IQ discrepancy

(Fletcher et al., 1994; Gustafson & Samuelsson, 1999; Stanovich & Siegel, 1994).

In DSM IV (reference) the concept of reading disabilities comprises reading disorders with the following descriptions:

"A. Reading achievement, as measured by individually administered standardized tests of reading accuracy or comprehension, is substantially below that expected given the person's chronological age, measured intelligence, and age-appropriate education. B. The disturbance in Criterion A significantly interferes with academic achievement or activities of daily living that require reading skills. C. If a sensory deficit is present, the reading difficulties are in excess of those usually associated with it." (code 315.00, DSM-IV 1994 p.)

However, there is no specific description in the "reading disorder" diagnoses regarding the dyslexia concept. The International Dyslexia Association (IDA) has adopted the following definition:

"Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge." (Lyon et al., 2003 p. 2)

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Obviously, there are different definitions, and the fact that different researchers use different definitions to describe reading and writing deficiencies and dyslexia causes confusion regarding the prevalence of this problem.¹ However, most of the researchers in this domain agree that there is an extensive overrepresentation of reading and writing difficulties among prisoners and youngsters in juvenile institutions (Alm & Andersson, 1997; Moody et al., 2000; Snowling, Adams, Bowyer-Crane, & Tobin, 2000; Svensson, Lundberg, & Jacobson, 2001).

This paper will mainly discuss four issues: The prevalence of reading disabilities among youth in juvenile justice settings, “the chicken and egg issue” regarding reading disabilities and conduct disorder, the argument that reading and writing disabilities might not be synonymous with dyslexia, which is a more severe deficiency, and, finally, the importance of remediate reading and writing disabilities for prisoners and youngsters in juvenile settings.

The first question is whether there is an overrepresentation of dyslexia or if “general reading backwardness” is more common. This question is associated with the next topic: are reading problems caused by conduct behaviour or vice versa? Or is there an underlying common factor that causes both reading disabilities and conduct problems? Rutter and Yule (1970) were among the pioneers who discuss the “chicken-and-egg” problem and they stated that it is important from a practical viewpoint to determine which disorder is primary and which is secondary. If reading difficulties constitute the primary disorder, the focus should be on pedagogical treatment. If antisocial behaviour is primary, a psychiatric treatment might be preferable.

Three possibilities are usually highlighted:

- a) Reading disabilities precede and cause later conduct disorder
- b) Conduct disorder leads to reading and writing difficulties
- c) Reading difficulties and conduct disorder have a mutual underlying cause (Baker & Ireland, 2007; Bennett, Brown, Boyle, Racine, & Offord, 2003; Brier, 1989; Fergusson & Horwood, 1995; Gellert & Elbro, 1999; Grigorenko, 2006; McMichael, 1979; Svensson, Lundberg, & Jacobson, 2003; Williams & McGee, 1994).

In the late seventies McMichael (1979) wrote an article discussing the chicken-and-egg question. He concluded that there was no obvious relationship between reading backwardness and antisocial emotional disorders. The result that Cornwall and Bawden (1992) presented was in line with the reasoning by McMichael (1979), i.e. that aggressive behaviour was a risk factor for developing reading difficulties rather than vice versa. However, in a project conducted by Bennett et al. (2003), the result showed a decreasing risk of conduct problems when the reading scores increased. The authors concluded that reading problems may contribute to an early start of behaviour disorders. There are a great number of publications that support both these standpoints (Bennett et al., 2003; Cornwall & Bawden, 1992; Fergusson & Lynskey, 1997; Hinshaw, 1992; Malmgren, Abbott, & Hawkins, 1999; Moody et al., 2000; Samuelsson, Herkner, & Lundberg, 2003; Svensson et al., 2003). The third view implicates that there might be an underlying factor that causes both reading problems and conduct behaviour. Family diversity, genetic factors, ADHD and early language difficulties are examples of a common underlying explanation that investigators have enunciated (see Gellert & Elbro, 1999; Grigorenko, 2006, for a review). Nevertheless, from an educational point of view it is essential to shed light on the cause and effect issue to achieve an optimal condition for the treatment procedure.

¹ In this paper I will use literacy difficulties and written language problems as a broader concept which includes more than difficulties to read and write. Dyslexia should be regarded as comprising specific difficulties with a constitutional background as regards reading and writing. The core factor in dyslexia is weak phonological ability (Lundberg, Olofsson, & Wall, 1980; Stanovich, 2000; Stanovich & Siegel, 1994). Remaining concepts regarding problems with reading and writing should be treated as synonyms.

In the last decade there have been at least two papers that have skillfully reviewed publications with the focus on literacy difficulties and behaviour problems among juvenile offenders (Gellert & Elbro, 1999; Grigorenko, 2006). The first intention of the present article focusing on Nordic conditions was to give an overview of research so far regarding reading and writing disabilities and dyslexia among inmates in juvenile institutions. However, published investigations about literacy difficulties among offenders in juvenile institutions in the Nordic countries in the last decade are almost non-existent. Therefore this article will also include publicized investigations concerning literacy difficulties among inmates in prisons and forensic psychiatric clinics. Troublesome schooling and previous confinement in juvenile institutions is frequently reported in this population. The main focus of the overview will thus be on literature that has been published in the last decade in Sweden. There will also be some references to investigations carried out in Norway and Finland. This overview does not attempt to represent the literature comprehensively or take into account all of the aspects these studies have pinpointed.

The first part of the article will briefly describe the conditions at juvenile institutions in Sweden. The results from different studies across the world regarding literacy difficulties among young incarcerated pupils might be affected by the fact that the conditions obtaining in such institutions probably differ depending on the kind of institution, e.g. prison or juvenile institution and on which country has been the object of research. In the second part there will be a review of the reading and writing research made in juvenile institutions, prisons and forensic psychiatric clinics in three of the Nordic countries, especially in Sweden. The last part has the intention to elucidate some of the intervention studies of reading and writing disabilities among inmates in correctional institutions. In sum, the review will focus on the differences concerning the prevalence of individuals with reading and writing difficulties and dyslexia and the nature of these difficulties. These issues are important because they affect the treatment procedure. Furthermore, the review will elucidate some investigations with an intervention focus to illuminate the importance of enhancing the inmates' literacy ability.

1.1. *Juvenile institutions in Sweden*

An important aspect to consider when carrying out studies is the condition that prevails in the institutions. This fact might influence the possibility to accomplish an investigation with as much methodological rigour as possible, which in turn may affect the outcome. The differences may concern age, type of crime, care and treatment versus compulsory institutional care. The following part will describe the conditions predominant at juvenile institutions in Sweden.

In Sweden there are 31 special approved homes (care for young people with problems) which The National Board of Institutional Care (SiS) is responsible for. Approximately one thousand youngsters are placed in these homes every year. The age of the inmates varies between twelve and twenty-one. Some of the institutions admit single sex inmates and some have mixed groups of males and females. There are those that specialize, for example, on adopted children. There is also a distinction between pure diagnostic institutions and school and treatment institutions. Most of the institutions have a secure unit. Depending on the type of institution, the inmates remain in residence from a few weeks up to two years. The care order has to be reviewed every six months. Roughly half of the commissions are concluded within two months. Almost all the inmates have serious psychological problems, often with elements of criminal behaviour and substance abuse. The young people often come from disrupted homes and from socially exposed families. Their relations to parents and significant others are mainly characterized by instability and insecurity. They have limited school attendance and there are often reports about reading and writing disabilities among them. An

important principle in Sweden is that delinquents that are 18 years old or younger should receive care and treatment and not punishment if they have committed a crime. Consequently, all institutions have access to psychologists, psychiatrists, doctors, and nurses. Their treatment methods include environmental therapy, functional family therapy, cognitive behavioural therapy and, for substance abuse, the twelve-step method.

2. Reading and writing disabilities among inmates in Swedish and other Nordic juvenile institutions, prisons, and forensic psychiatric clinics

In the last decade there have been 10 publications (as far as I know) in Sweden, of which at least one research issue in these studies has concerned the prevalence of reading and writing disabilities and dyslexia among inmates in juvenile institutions and in prisons and patients in forensic psychiatric clinics (Alm & Andersson, 1997; Asbjørnsen, Jones, & Manger, 2008; Dåderman, Lindgren, & Lidberg, 2004; Jensen, Lindgren, Meurling, Ingvar, & Levander, 1999; Lindgren, Jensen, Dalteg, Wirsén-Meurling, & Ingvar, 2002; Samuelsson, Gustavsson, Herkner, & Lundberg, 2000; Samuelsson et al., 2003; Silenius, Dåderman, Meurling, & Levander, 2006; Svensson et al., 2001, 2003). The first part of the review will deal with juvenile settings.

2.1. Juvenile institutions

More than thirty years ago a Finnish study by Virkkunen and Nuutila (1976) established the relation between reading retardation and the development of criminal behaviour among adolescents. The study participants consisted of 224 male patients treated for reading and writing disabilities. The authors used “specific reading retardation” to describe their deficiencies. They made the point that even if there was an overrepresentation of criminality among youngsters with a reading retardation, the reading disability factor did not seem to be the only contributor to later criminality. Nor did the severity of the reading and writing problems seem to contribute to criminality. The writers proclaimed that hyperactivity seems to add more to criminal behaviour. After this investigation there have been very few, if any, publications in this area in the Nordic countries until a project in Sweden concerning the pedagogical condition at juvenile institutions was performed by Gerrevall and Jenner (2001). One of the purposes of this study was to obtain a picture of young incarcerated people's ability to read and write. In the 1990s there had been some publications in Sweden that pointed out the high frequency of prison inmates with literacy difficulties (Alm & Andersson, 1997; Dalteg et al., 1997; Jensen et al., 1999). The common opinion was that these problems were of a dyslexic nature and a factor contributing to their career into behaviour problems and criminality. To explore this condition Svensson et al. (2001, 2003) investigated reading and writing disabilities and dyslexia among inmates of juvenile institutions. The first study included 163 pupils (114 boys and 49 girls) with a mean age of 15.5 years. Three tests were used to measure literacy skills. The main aims were to investigate the prevalence of reading and spelling difficulties among these pupils and to analyze differences in reading comprehension between native Swedes and immigrants. There was no intention to measure dyslexia. However, amongst those with severe difficulties (11%) we could assume that quite a few might have dyslexia. In total, approximately 70% showed some problems, being below grade six in reading, spelling or reading comprehension. Severe difficulties were shown by 11%, i.e. they did not surpass grade four in reading and spelling. More than half the pupils with severe problems in this area had an immigrant background compared to 7% of those with Swedish as their native language. Furthermore, there was a significant difference in reading comprehension, in which

respect native Swedes outperformed immigrants despite the same decoding ability. The authors concluded that most of the youngsters with literacy difficulties should not be characterized as dyslexics. These difficulties are more likely related to other factors such as shortcomings in school and chaotic home conditions. Immigrants' low performance in reading comprehension is probably more related to deep language processes and the lack of cultural competence than to problems with word decoding.

The next study (Svensson et al., 2003) explored the nature of reading difficulties among juvenile delinquents. This issue might offer a clearer picture of how many of the delinquents could be regarded as a dyslexic. A total of 70 (49 boys and 29 girls) inmates in juvenile institutions with the mean age of 15.9 years were investigated. In addition to literacy skills the assessment included phonological skills, school attendance, and school background. The dyslexia definition was based upon a composite score of phonological tests and a working memory test (digit span in WISC, Wechsler Intelligence Scale for Children, 1992). On two of the tests (pseudo word, and pseudo text reading) the participants had to perform at least half a standard deviation below mean as compared to a norm group. Furthermore, the youngsters had to score below the mean for grade seven on another phonological decoding test (phonological choice) and/or on the digit span task. With these rather strict criteria for being dyslexic there remained eleven participants. Three of them were excluded since they had lived in Sweden rather a short time (3–6 years). Thus, eight out of a total of seventy participants were regarded as dyslexic, i.e. 11%. Two of those eight inmates had immigrant backgrounds. To further emphasize the importance of phonological functions in dyslexia the authors compared this population with a reading-level-matched group (based on decoding skills) and an age-matched comparison group. There was no significant difference between the inmates and the two comparison groups on the two tests of phonological ability. The authors argued that in the sense of a restriction in phonological ability, dyslexia does not seem to be more common among inmates in juvenile institutions than among pupils in general. Most of the participants' reading difficulties are more likely caused by limited opportunities to learn and by more general cognitive and emotional problems. The majority of the juvenile delinquents in the study have experienced deprived home and school conditions, such as parental neglect, difficulties with early attachments, several changes of teachers and periods of absenteeism and truancy from school. These conditions existed irrespectively of the pupils' reading and writing ability.

2.2. Prisons

Alm and Andersson (1997) investigated 61 male prisoners in the ages between 18 and 67, all with a Swedish background, regarding the prevalence of reading and writing disabilities. Results on a spelling test, a speed of reading and a reading comprehension test constitute the criteria for being regarded as having literacy difficulties. The cut-off for being considered with difficulties was grade 6. The participants were also interviewed, about their school background and reading habit, for instance. The authors judged that 64% had some kind of literacy difficulty. They also tried to discern those with dyslexia on the basis of the three reading and spelling tests and the interview. They argued that at least 31% of the total sample had dyslexia. Alm and Andersson concluded that it is essential to introduce a program for teaching reading and writing in prisons as a treatment to reduce crime.

In another study by Jensen et al. (1999) one of the aims was to assess the frequency of dyslexia among Swedish prisoners. The study investigated 63 prison inmates (59 men and 4 women with a mean age of 35.1 years) with Swedish as their native language. The participants were examined through interviews, neuropsychological assessment and tests of academic achievement. The academic

achievement tests include 4 tests, speed of reading, spelling, oral word reading, and a decoding test. To distinguish those with dyslexia the academic achievement had to be markedly below the expected level (at least two standard units), given the participant's intellectual level and considering age and education, i.e. a discrepancy definition. Errors on a spelling test and reading aloud were also taken into account. Forty-one percent of the participants fulfilled the criteria for dyslexia. The dyslexic group was less educated and showed a lower average IQ. Furthermore, the onset of their criminality was earlier in comparison with the non-dyslexics group. The authors concluded that dyslexics run a higher risk of embarking on and maintaining a criminal career, especially if they also have a low IQ. The authors did not make any obvious distinction between reading and writing disabilities and dyslexia.

In Samuelsson et al. (2000) the main issue was to ascertain if there were more dyslexic problems in a male prison population ($n = 48$, the mean age being 33 years) as compared to a normal population. The authors used tests that measured word decoding skills, reading and spelling abilities. The cut-off limit was grade 6. Only those who failed to attain an appropriate level, lower than one standard deviation below average in grade 6, on phonological decoding skills were regarded as dyslexic. The result showed that 11% with Swedish as their native language met the criteria for dyslexia. If those with an immigrant background were included, approximately 19% were regarded as dyslexic. Samuelsson et al. (2000) concluded that the frequency of dyslexic problems was very similar to that of the population at large. The authors argued that for the majority of the inmates the relatively low performance on reading and spelling tests is most likely caused by experiential factors such as school history, attention problems, and reading habits.

Lindgren et al. (2002) examined in a replication study 45 male inmates (mean age = 32 years) with Swedish as a native language. This investigation used the same criteria for diagnosing dyslexia as were chosen in the study by Jensen et al. (1999). The result showed that 62% were regarded as dyslexic. They also found a rather high frequency (55%) of inmates with ADHD. The authors stated that a substantial number of prison inmates have reading and writing difficulties as well as ADHD and that the inmates' school failure could be caused by these problems. The researchers emphasized early diagnosis and treatment and that the educational needs of prisoners were substantial. Furthermore, the writers suggest that early language difficulties might be a valid diagnostic criterion for the identification of boys in the risk zone for a criminal career. They draw this conclusion since more than half of the participants in the study had had childhood ADHD. The authors did not make any clear differences between reading and writing disabilities and dyslexia in this study.

Samuelsson et al. (2003) argued that the high frequency of reading and writing disabilities among inmates in prisons is a matter of experiential factors rather than dyslexic problems. In their carefully designed study 82 male prison inmates (mean age = 34.5 years) with Swedish as their first language were investigated. Instead of applying norms from an adult population and a same-age comparison, they used a comparison group of adults with the same educational level, reading habits, and socioeconomic status. The aim behind this design was to create a comparison group that was as similar as possible to the prison participants. They also included a reading-level matched group. Their composite score of phonological skills included three tests, non-word reading, phonological choice and Spoonerisms (see Samuelsson et al., 2003 for description of the tests). The cut-off for being regarded as having phonological deficiencies, i.e. dyslexia, was set at a difference of 1.5 *Standard Deviations* compared to appropriate controls. The results showed that dyslexia problems among the prisoners, compared to the adult comparison group, varied between 6.1% and 14.6% depending on the definition employed. The number of dyslexic individuals in the adult comparison group was similar to that of the group of prisoners. If the inmates' results were compared to the

reading-level matched group, the number of dyslexics was even lower (1.2%–9.8%). Fewer than ten percent had phonological difficulties in the experimental group, which led to about 90% of the inmates having a reading and writing level that agrees rather well with their cognitive abilities, exposure to formal education, sociocultural opportunities and phonological ability. The authors concluded: "previous estimates of dyslexic problems among prison inmates in Sweden have been seriously exaggerated" (p. 69). To obtain a valid result concerning the prevalence of dyslexia among prison inmates the authors concluded that it is important to compare the incarcerated with a sample of non-incarcerated adults on experiential factors (Samuelsson et al., 2003).

In a recently published study by Asbjørnsen et al. (2008) a comprehensive test battery about reading and writing abilities was conducted among 28 male inmates (mean age = 30.25 years) in Norwegian prisons. Besides reading and writing tests, including phonological ability, the test battery covered other cognitive functions such as working memory, information adaptation and attentiveness. Furthermore, the participants had to answer questions regarding their reading, writing and mathematical ability. The result showed that between 50 and 70% of the participants fulfilled the criterion of having substantial difficulties in reading and writing. However, the authors stated that these disabilities in most inmates could not be explained by dyslexia. More probable reasons are insufficient reading acquisition and reading experience. Furthermore, a fourth of the participants had severe difficulties with inattentiveness and impulse control. The writers argued that these difficulties substantiate the argument that the inmates' reading and writing disabilities are more likely caused by inadequate reading acquisition and the lack of reading experience than by dyslexia. This argumentation is in line with the conclusions drawn by Rasmussen, Almvik, and Levander (2001).

2.3. Forensic psychiatric clinics

In the last decade there have been two studies in Sweden focusing on dyslexia among forensic psychiatric rapists. Däderman et al. (2004) investigated ten male participants in the age range between 30 and 51 years. They defined dyslexics in accordance with DSM-IV. Three out of four academic achievement tests (speed and reading comprehension, spelling, reading words aloud and word decoding) had to be markedly below the expected level, more than two standard units, given the participant's nonverbal intellectual capacity. They also considered the length of the patients' education. Seven of the ten participants met the DSM-IV criteria for reading disorders, and were hence regarded as dyslexic, and six of the patients those for ADHD. Furthermore, Däderman et al. (2004) emphasize the importance of early assessments of dyslexia and ADHD, which might affect the psychological development and the socialization process positively. An incorrect diagnosis may have a negative impact on the patients' treatment procedure, according to the writers.

A recent study by Silenius et al. (2006) studied 23 male offenders (the mean age being 27 years) with an immigrant background undergoing a forensic psychiatric investigation. The participants carried out reading and writing tests (oral reading, spelling, speed of reading, and word decoding), IQ and neuropsychological tests. The DSM-IV was used as a criterion for being dyslexic. It is unclear in the text exactly which cut-off limit they used when defining dyslexia. However, the results showed that 39% met their criteria. Silenius et al. (2006) argued that it is essential to assess forensic psychiatric patients' reading and writing ability and that those affected by the deficiency obtain help with the legal procedure, e.g. by having documents read aloud to them. The writers concluded that dyslexia is common among male offenders with an immigrant background, but that a definition of dyslexia should be supplemented with phonological tests in order to determine the reasons for poor reading and writing skills.

The investigations that have been reviewed above reported a wide span regarding the prevalence of dyslexia (between 6 and 70%). One of the main explanations of this rather huge difference among the studies might be due to the definition of the concept.

Four of the publications have used the DSM-IV criterion when diagnosing participants as dyslexics (Dåderman et al., 2004; Jensen et al., 1999; Lindgren et al., 2002; Silenius et al., 2006). In the DSM-IV criterion there is no specific description of dyslexia or what kind of reading and writing tests ought to be used (see the definition of RD in DSM IV above). The main criterion for being regarded as having reading disabilities in DSM-IV is that the person should perform substantially below the expected level on reading tests, on the condition of having an age-adequate intellectual level. In the studies that have used this criterion for dyslexia the prevalence varied between 41 and 70%. In none of these four investigations have they used results on phonological tests as a marker for dyslexia. In some of the studies (Jensen et al., 1999; Lindgren et al., 2002) there are obviously no apparent distinctions between reading and writing disabilities and dyslexia since they use both terms or alternate between them in the text. The three studies that have used phonological tests as the main criterion for discerning dyslexic individuals show the lowest prevalence (Samuelsson et al., 2000, 2003; Svensson et al., 2003) lying in the range of 6 to 15%. The study by Asbjørnsen et al. (2008) makes no specific statement regarding dyslexia despite the use of phonological tests. However, the results showed a high frequency of inmates with reading and writing disabilities, but the authors argued that the main part of the difficulties was not caused by dyslexic problems. Three of the studies have included immigrants (Samuelsson et al., 2000; Svensson et al., 2001, 2003) but present the result separately, i.e. with or without immigrants included. One study examines immigrants alone (Silenius et al., 2006). Overall, there are differences among these studies in the battery of tests measuring reading and writing ability, for example the number and focus of the tests (e.g. using phonological tests or not). However, almost all of the authors agree that there is an overrepresentation of reading and writing disabilities among the inmates. Additionally, the authors also agree concerning the importance of supporting academic achievement in order to reduce, for instance, behaviour problems and recidivism.

In the last decade there have also been a couple of publications from Sweden and Norway regarding offenders which have made statements about the prevalence of reading and writing disabilities and dyslexia, even if the main purpose has concerned other aspects. Dalteg et al. (1997) reported that 40–60% had dyslexia among a prison population, with references to Jensen et al. (1999). Dalteg and colleagues suggested that there could be an underlying factor, the lack of strategy flexibility, which causes the link between dyslexia and criminality.

Rasmussen et al. (2001) claimed that there was an overrepresentation of reading disabilities among prison inmates. They had not been able to assess dyslexia in their study, but since the authors found a distinct bimodal distribution on the word recognition test, used as criterion for reading disabilities, they estimated that one-third of the subjects might have dyslexia. The main aim of this study concerned ADHD among the prisoners and the authors concluded that persistent ADHD, comorbid with both personality disorders and reading deficiencies, is a significant problem among offenders in prison. The obvious association the researchers found between poor reading (possible dyslexia) and ADHD was interpreted as either a neurological link between ADHD and dyslexia or an interruption of the learning process in school caused by ADHD. They also found that decreasing the time spent on reading also causes negative consequences for the students' reading interest.

In a Norwegian study (Manger, Eikeland, Asbjørnsen, & Langelid, 2006) among prisoners the respondents had to answer a questionnaire regarding reading and writing disabilities. It was reported that

approximately 23% had some kind of reading and writing disabilities, and that about eight percent reported serious problems. The results also showed gender differences, with girls reporting fewer problems than boys. The authors argued that education after release is an important element in a successful process of prisoners' transformation into society.

In the light of the results from earlier studies that have been accomplished at juvenile institutions by Svensson et al. (2001, 2003), Svensson (2009) also performed an intervention investigation at juvenile institutions. The main aim of this study was to evaluate different methods with the purpose to strengthen young people's literacy ability. The participants ($n=84$) were measured, before and after the intervention, by several reading and writing tests including tests on phonological ability. The intervention period went on for twenty weeks. The results showed that approximately 70% had difficulties with decoding, spelling or reading comprehension (below grade six on one or more of these three aspects). In this study inmates with immigrant backgrounds were included. For these pupils the picture was even darker regarding literacy ability, especially reading comprehension. Roughly 50% of the immigrants performed below grade four on a reading comprehension test. This finding was in line with earlier results reported in studies from 2001 and 2003 by Svensson and his colleagues, i.e. a disproportionately high frequency of inmates with reading and writing disabilities.

However, phonological difficulties (dyslexia) appeared among 9% up to 29% of the inmates. The definition of dyslexia was set by phonological deficiencies. A z-score was composed of three phonological tests: non-word reading (speed and error) phonological choice, (word decoding test), and the repetition of non-words. If the participants achieved below the mean for grade 6 or grade 4 on at least two of the three tests, at both test occasions, they were regarded as dyslexic. Thus, the differences in the prevalence of dyslexia depended on where the limits for phonological difficulties were set and on the inclusion or exclusion of immigrants and how an immigrant is described, i.e. as having one or two parents with an immigrant background. Approximately 9% were regarded as dyslexics if the limits of phonological difficulties were set below the mean for grade four and immigrants were excluded. Twenty-nine percent were considered as dyslexics if the boundaries were set at less than mean for grade 6 and immigrants were included. If the grade six cut-off was used, the majority belonging to this group consisted of immigrants. This shows the problem with an arbitrary cut-off. However, the participants had been measured twice, before and after the interventions, which might provide a more reliable result (Fletcher, Lyon, Fuchs, & Barnes, 2007) and to some extent control for the factor regression to the mean. Nevertheless, where to set the cut-off limit still remains an open question.

These four investigations (Dalteg et al., 1997; Manger et al., 2006; Rasmussen et al., 2001; Svensson, 2009) also reported an abnormally high frequency of reading and writing deficiencies among the inmates. However, some of the investigations have used less stringent method to measure reading and writing disabilities. ADHD is quite often mentioned as an underlying cause behind behaviour problems and as a function of their reading deficiencies by the researchers (most of them coming from the same research team) from the Nordic countries.

It is obvious that the studies presented above differ concerning methods and the way they define varying subtypes of literacy difficulties, which has consequences for cause and effect, i.e. the chicken-and-egg problem. Furthermore, the concepts that are used in this area, describing different kinds of reading and writing disabilities, are not very easy to compare. In Sweden it is common to use dyslexia and/or reading and writing disabilities to describe literacy problems. However, in investigations from other countries the researchers might use other concepts to label problems with the written language. In the US, for instance, investigators seem to use learning disabilities

(LD) and reading disabilities (RD) more frequently as a definition of literacy problems (Grigorenko, 2006; President's commission on Excellence in Special Education, 2002), which is not quite similar to the way these concepts are used in Sweden. The LD concept includes more than problems with the written language and RD describes more exactly what the person has problems with, i.e. a synonym to dyslexia (Fletcher et al., 2007). In Sweden it is usual that dyslexia characterizes those persons who have specific reading and writing disabilities with a constitutional background. Reading and writing disabilities constitute a broader concept and contain both dyslexia and generally backward readers. However, in Sweden both reading and writing disabilities and dyslexia concerns subtypes of literacy difficulties and do not include for example mathematics. Thus, the lack of consensus regarding the definition of different literacy difficulties makes the comparability and interpretation of the results among studies even more complicated, since there are differences in the use of various concepts concerning literacy difficulties among investigations both between and within countries.

An additional obstacle to comparing different studies regarding the prevalence of literacy problems is how to draw the boundary between what is a problem and what is not. Thus, it is common for researchers to use a specific cut-off point on different tests to determine this. This is often arbitrary and differs among investigations since it is a delicate issue. (Samuelsson et al., 2003; Snowling, Adams, et al., 2000, Snowling, Bishop, et al., 2000; Svensson et al., 2003). It depends, among other things, on the demands on literacy in specific settings and in a specific country and is particularly problematic if the measuring procedure is made at a single point in time. Fletcher et al. (2007) made this statement: "The problem occurs in part because of the measurement error of any tests. Because of measurement error, any cut-point will lead to instability in the identification of specific individuals for the category." (p. 29). Gellert and Elbro (1999) argued for the advantages of longitudinal investigations, since they enable following individuals over time, for example their reading ability, and therefore are able to make more credible statements about the outcomes. Thus, in investigations that focus on interventions the main aim is often the development of a specific ability, for example the reading and writing skill, measured on several occasions during a distinct period.

3. Studies related to intervention of reading and writing deficiencies among young inmates

It is obvious that most of the investigators agree that the remedial process of the inmates' literacy problems is very important for optimizing their chances to find a job or complete their interrupted schooling (Alm & Andersson, 1997; Archwamety & Katsiyannis, 2000; Bullis, Yovanoff, & Havel, 2004; Lindgren et al., 2002; Shelley-Tremblay, O'Brien, & Langhinrichsen-Rohling, 2007). However, there have been very few studies that have focused on the remedial procedure, i.e. investigations with the purpose of studying the effect of intervention methods for reading and writing disabilities. One reason for the poor number of published investigations on this issue, particularly in juvenile institutions, might be due to methodological difficulties (Mulcahy, Krezmien, Leone, Houchins, & Baltodano, 2008). Furthermore, the conditions that exist among juvenile institutions are bound by the laws valid in a specific country regarding young offenders. Paradoxically, it is often easier to accomplish investigations at a given institution if the time of the youngster's residence is known, i.e. in a strict methodological research view it is preferable with a quite long and fixed incarceration time. In an investigation by Mulcahy et al. (2008) the authors discuss the challenges they encountered when they accomplished a reading intervention study among inmates in juvenile corrections. The writers pinpoint a variety of problems, for example getting access to this highly vulnerable population and difficulties in performing research in these settings

due to the students' security restrictions and to an unanticipated release from custody.

Krezmien and Mulcahy (2008) conducted a literature review of reading research studies among inmates in juvenile institutions. The authors found six investigations that fulfilled their inclusion criteria. However, the writers argued that four of the studies had methodological shortcomings that limited the interpretation and the generalizations of the results.

Thus, there are researchers that proclaim the impact of a remedial program on literacy (see the review by Krezmien & Mulcahy, 2008) in the process of socialization for the young inmates. But it is a challenge to carry out sufficiently stringent methodological investigations at these institutions. In a pilot study by Rozalski and Engel (2005) two incarcerated students worked with a computer-based program for training the ability to read and write in different situations. The result showed positive effects and the authors suggest technology-assisted instruction to enhance the pupils' achievement in these fields. In the study by Allen-DeBoer, Malmgren, and Glass (2006) four students with emotional and behavioural disorders were examined. The youngsters were about four years behind in reading. The result showed that the pupils enhanced their reading ability and the authors asserted that systematic reading intervention would benefit the inmates' academic outcomes. Both these studies used specially designed programs and individualized tutoring. The number of participants in these two studies was low and it is therefore dangerous to draw any conclusions.

In the investigation by Svensson (2009) the chief aim was to include assistive technology and an enhanced literacy environment in an action plan for supporting the young incarcerates' reading and writing ability. 130 pupils participated (99 boys and 31 girls with a mean age of 15.6 years). However, the attrition rate was 35%. According to the reasoning by Mulcahy et al. (2008), the researchers had to expect a reduction of 30 percent or more of the sample, depending on the length of the intervention period. In the end there were 84 inmates, distributed among eight institutions, who carried through the reading and writing test before and after the intervention process.

The intervention with assistive technology included synthetic speech, spelling programs, electronic dictionaries, a mind-mapping program, a Daisy CD recorder (digital talking books), and a keyboard practising program. There have been some studies that showed positive results in reading ability when participants have used computer software programs as assistive technology (Beacham & Alty, 2006; Macaruso & Hook, 2007; Olson, Wise, Ring, & Johnson, 1997; Shelley-Tremblay et al., 2007). The literacy environment intervention part mainly consisted of reading aloud for the pupils at least three times a week and a renewal of the institution library. The intervention period lasted twenty weeks. A design was employed, i.e. one group obtained both assistive technology and literacy environment interventions, one group only assistive technology, one group only literacy environment interventions, and finally, one was the comparison group. Overall the participants enhanced their reading and writing ability during the period of interventions. However, no group effects were obtained. There might be a number of explanations for this, but the main factor behind this result is probably the sporadic use of assistive technology. Despite a rather rigorous introduction of the instruments and the program for the teachers and the treatment pedagogue, they didn't use the equipment in the pedagogic and treatment settings as frequently as intended. The staff gave, among other explanations, the time factor, i.e. the lack of time to work with this project as part of their regular job, the transposition of the youngsters, escaping inmates, as explanations for the scarce use of the project's intervention proposals. Thus, a lot of those barriers that Mulcahy et al. (2008) described from their study regarding reading interventions in juvenile institutions also appeared in the investigation by Svensson (2009). In the literacy environment intervention

part no obvious increasing effects on reading and writing tests were expected. Nevertheless, judging by the interviews there were both pupils and teachers that gave positive statements for the reading aloud moment as well as for the use of assistive technology. More details regarding the methodological part are available in the report by Svensson (2009).

Some of the reviewed studies above have methodological shortcomings, such as few participants or a sporadic use of the treatment instrument. It is obvious that intervention studies at juvenile institutions have to be prepared in a rigorous way and that they demand quite a few resources, especially time to prepare the intervention method for the staff at the institutions and to motivate the pupils to be engaged in the intervention program.

4. Discussion

The main purpose of this review paper was to discuss differences concerning the prevalence of reading and writing disabilities and dyslexia and the nature of these problems among inmates in prison and juvenile corrections. The review has focused on publications that have been published in the recent decade in the Nordic countries, especially in Sweden. Further, to illuminate some investigations with a focus on intervention regarding reading and writing disabilities among inmates. This latter area has been rather neglected in comparison with the prevalence and the cause issues. The investigations present extensive differences regarding the prevalence of dyslexia, in the range from 6 to 70%. Some of the studies examined in this review have used dyslexia and reading and writing disabilities as similar concepts, but the majority of the studies report a higher number of inmates with reading and writing deficiencies (up to 70%) than those with dyslexia. The differences among the studies concerning prevalence are mainly due to which concept they have been using and were the cut-off border has been set for both reading and writing disabilities and dyslexia. They are also due to the exclusion or inclusion of immigrants and how rigorous the methodological parts have been, for example the type of comparison group and the selection of tests.

Some of the investigations do not make any obvious distinctions between reading and writing disabilities and dyslexia (Jensen et al., 1999; Lindgren et al., 2002) and it is therefore complicated to make any statement concerning this issue in these studies. The studies that have been examined general reading and writing difficulties often make suggestions concerning the prevalence of dyslexia based on the individuals with severe difficulties (Manger et al., 2006; Rasmussen et al., 2001; Svensson et al., 2001). The other investigations (e.g. Jensen et al., 1999; Samuelsson et al., 2003) use the DSM-III/IV or phonological difficulties criterion to discern those with dyslexia. It is hazardous to make any statement regarding dyslexia based on low achievement on reading and writing tests alone since it just identify low achievers and do not recognize a unique subgroup with a specific problem (Fletcher et al., 2007; Francis et al., 2005). As several studies have pointed out, there could be other factors that cause low literacy ability (Asbjørnsen et al., 2008; Gellert & Elbro, 1999; Samuelsson et al., 2003; Svensson et al., 2003). Therefore the DSM-III/IV criterion as a definition of dyslexia might be questionable since the description does not include specific criteria for dyslexia. Furthermore, except for low achievement in the DSM-III/IV criterion it also includes a discrepancy definition based on IQ, i.e. there should be an obvious difference between the individuals' intellectual skills and their reading and writing performance, where their intellectual skills have to be in or above the normal range. In Sweden as well as in countries all over the world there have been discussions regarding the use of the discrepancy definition for dyslexia, especially the use of IQ as a cut-off for defining those with and without the deficiency (Gustafson & Samuelsson, 1999; Ingesson, 2006; Stanovich & Siegel, 1994). Some researchers claim that the use of an IQ cut-off might

provide a more clearly delimited group of dyslexic persons, i.e. it will prevent confounding factors such as including "a garden variety of poor readers". However, many studies have shown that poor readers present the same problem with decoding and spelling irrespective of IQ level (Fletcher et al., 1994; Gustafson & Samuelsson, 1999; Siegel & Himel, 1998; Stanovich & Siegel, 1994; Vellutino, Scanlon, & Lyon, 2000). Thus, in contrast to the view that the IQ discrepancy definition discerns a more "plain" group of dyslexics, the truth might actually be the opposite. It is common to use the WISC or Wechsler Adult Intelligence Scales as an assessment battery when diagnosing the level of IQ. Studies have shown that these tests are highly charged with language aspects and that this might even be true for non-verbal issues (Gunderson & Siegel, 2001; Oller, 1997). It would therefore be reasonable to expect that children with early dyslexia symptoms will have a descending development in IQ when this ability is assessed with WISC or WAIS (Ingesson, 2006). Consequently, when using a strict discrepancy IQ definition it might be possible that some dyslexics are excluded, especially when the test is used on teenagers and adults (Snowling, Bishop, et al., 2000). In the study by Svensson (2009) IQ records, measured with WISC or WAIS, were found in 37 juvenile delinquents. More than half of them performed one standard deviation below the mean. Among the inmates with an IQ value in the normal zone or above there was nobody who showed symptoms of dyslexia (below grade 6 on phonological tasks). So if the IQ discrepancy definition had been used in this study none of the students would have fulfilled the criterion for being dyslexics.

Among the studies that have used a measure of phonological ability to demarcate inmates with dyslexia the frequency of dyslexic individuals is lower. The studies have used one test (Samuelsson et al., 2000) or three tests on phonological ability (Samuelsson et al., 2003; Svensson, 2009; Svensson et al., 2003) to establish those with phonological problems. As Samuelsson et al. (2000) pointed out, it is essential to make a careful selection of tests that measure phonological skills and to use more than one test. The cut-off for being regarded as having phonological deficiencies is arbitrary and differs between the studies. An arbitrary cut-off does not give the best foundation for the classification procedure, since it produces instability in the group membership. However, there is an abundance of research that proclaims phonological difficulties as the core factor in dyslexia (Lundberg et al., 1980; Ramus & Szenkovits, 2008; Snowling, 2005). The problems are often manifested by difficulties in identifying words on a manifest level, which appears from underlying deficiencies in phonological skills on a cognitive level (see Frith, 2002; Lundberg, 1999; Svensson, 2003). Researchers have found evidence of the phonological factor even on a biological level and of the problem being universal (Paulesu et al., 1996; Pugh et al., 2000) Further, phonological difficulties seem to be stable over time, i.e. early childhood problems remain with grown-ups (Bruck, 1992; Svensson & Jacobson, 2006). Recently, there have been publications that have argued for the limitations of using a strict phonological criterion. Phonological deficits are not sufficient to explain dyslexia whether on a biological, behavioural or an etiological level, according to the researchers (Pennington, 2006; Plomin & Kovas, 2005; Snowling, 2008; Uppstad & Tonnessen, 2007). However, in a study by Ramus and Szenkovits (2008) it was argued that the phonological deficit hypothesis is still valid even if rethinking the formulation of the hypothesis might be necessary. The authors suggest that dyslexics might have difficulties with accessing phonological representations, not necessarily with the representations themselves. The cognitive deficit among dyslexics may be most pronounced in phonological domains but could also be found in other domains. Still, the phonological aspect is, so far, the best predictor for discerning dyslexia, even if it is not the only one. Thus, the discussion concerning the use of a discrepancy and/or a phonological definition is not finished yet and needs to be continued.

It is essential to select tests that are as sensitive as possible to measuring phonological skills, especially tests in the dimension of poor phonological awareness, poor verbal short-term memory and slow lexical retrieval (Wagner & Torgesen, 1987). An abundance of researchers highlight tests such as Spoonerism tests or those which include some kind of phoneme manipulation, non-word repetition and non-word reading for use in the demarcation procedure to describe dyslexic persons (Gathercole, Willis, Baddeley, & Emslie, 1994; Rack, Snowling, & Olson, 1992; Snowling, 1998; Snowling, Nation, Moxham, Gallagher, & Frith, 1997). Hence, it is of vital importance that valid tests are used when diagnosing dyslexia which in turn implies a well defined phenotype. The phenotype issue and the use of valid tests might be one explanation to the differences among studies regarding the prevalence.

Another issue that influences the prevalence aspect is where to set the cut-off point for being regarded as having difficulties with literacy. It is not an easy task to set a lowest level for adequate reading and writing ability because it will probably differ, depending on what kind of demands that exist concerning reading and writing ability, among countries. Several of the reviewed articles above have used grade 6 as the lowest level of functional literacy which may be appropriate (Lundberg, 1985; Wheldall & Watkins, 2004).

Additional aspects that have to be taken into account in a categorization process (e.g. dyslexics versus not dyslexics) are the inclusion or exclusion of immigrants, since it might affect the prevalence issue, i.e. more participants could be regarded as having reading and writing disabilities and dyslexia. It is a fact that literacy difficulties are much more frequent among inmates with an immigrant background compared to native-born inmates. In those studies that have presented separate results regarding immigrants, it was obvious that the prevalence of dyslexia was higher. In the study by Silenius et al. (2006) all the participants had an immigrant background and 39% was regarded as dyslexic. In both of the investigations by Samuelsson et al. (2000) and Svensson (2009) the prevalence of dyslexia was higher when immigrants were included. However, even if the complexity regarding phonological characteristics differs from language to language (Anthony & Francis, 2005) there is no reason to believe that dyslexia should be more pronounced in one specific language than in another. In fact the core factor in dyslexia seems to be universal both on a cognitive and a biological level (Fletcher et al., 2007; Grigorenko, Ngorosho, Jukes, & Bundy, 2006; Snowling, 2004). Especially the speed factor in reading appears to be a worldwide feature on a manifest level (Grigorenko et al., 2007; Torgesen et al., 2001).

Technical aspects of the language, such as the rapid decoding of printed words, seem to be incorporated faster than semantic knowledge and reading comprehension (Frederickson & Frith, 1998). This fact was obvious in the investigation regarding juvenile inmates by Svensson et al. (2001). The Swedish inmates outperformed the immigrant inmates on a reading comprehension test despite the same word decoding level. With this fact in mind it might be risky, from a prevalence point of view, to use different kinds of comprehension tests as a marker of dyslexia, especially for immigrants. It could be hazardous to use tests measuring reading comprehension as a marker of dyslexia even when including only native speakers in investigations, since there are several factors that might affect reading comprehension in a negative way. For example, the inattentiveness problem in ADAD (Samuelsson, Lundberg, & Herkner, 2004) and the ability to allocate sufficient mental resources for the comprehension part of reading, which might be particularly relevant among inmates since they quite often have psycho-emotional problems (Donnellan, Trzesniewski, Robins, Moffit, & Caspi, 2005; Harold, Aitken, & Shelton, 2007; Patterson, 1986; Svensson et al., 2003). Some of the reviewed studies have included a reading comprehension test when demarcating dyslexic individuals (Alm & Andersson, 1997; Jensen et al., 1999; Lindgren et al., 2002).

Nevertheless, in the investigation by Svensson (2009) there were no records regarding how long the inmates with an immigrant background had resided in Sweden, and it is therefore hazardous to draw any conclusions regarding dyslexia when including immigrants. Overall, the youngsters with an immigrant background had considerably greater difficulties with literacy skill than the native inmates, especially inmates with two immigrant parents (Svensson, Lundberg, & Jacobson, 2001, 2003, 2009). The explanation of the overrepresentation of immigrants with dyslexia in the studies by Silenius et al. (2006) and Svensson (2009) could be twofold. 1) The overrepresentation will sooner be explained by the insufficient use of the new language, e.g. how long the immigrants have stayed in the new country and how frequently the new language has been used in the immigrants' home settings, than as being a dyslexic problem. 2) With the reasoning in mind that technical aspects of the language are incorporated rather fast and that there was an overrepresentation of immigrants with phonological deficiencies in the investigation by Svensson (2009), the overrepresentation might be due to the fact that the immigrant youngsters have an extra burden to cope with if they also arrive with dyslexia in a new country. The feeling of isolation and alienation might increase in comparison with native inmates and thereby the risk of conduct behaviour might be enhanced.

For many decades reports have appeared claiming a link between a low IQ and offending behaviour (see Grigorenko, 2006; Guay, Ouimet, & Proulx, 2005). Recently there have been some publications in Sweden regarding an overrepresentation of pupils with a low IQ staying at juvenile institutions (Elmund, 2006; Kullman, 2006; Olsson & Vilhelmsson, 2006). However, there was no report suggesting an obvious reason for this. In the investigation by Svensson (2009) the participants with a low IQ were overrepresented and also performed the lowest on the reading and writing tests. Thus the results were in line with earlier findings. From the reasoning above it is possible to conclude that there is a link between a low IQ and offending, but it is not clear what the causes behind this link are. As a matter of fact, one underlying factor could be reading and writing disabilities. If IQs are measured with WISC or WAIS on the assumption that these tests are highly language-charged, which might be extra hard to carry out for pupils with reading and writing deficiencies, it could be one explanation of the disproportionate number of inmates with a low IQ in juvenile institutions.

Nevertheless, almost all of the investigations that have been reviewed in the text above emphasize literacy remediation as a cornerstone in the youngsters' way to break the vicious circle most of them have entered.

Considering the extensive amount of research that has been made regarding literacy difficulties among inmates in correctional institutions, it might be found remarkable that such few investigations (Bakker, 2006) concerning reading and writing interventions have been performed. A probable explanation is the methodological obstacles that often exist. However, since researchers know that literacy difficulties are very frequent among inmates and how these problems obstruct the inmates' readjustment into society, the next step must be taken, i.e. the time is ripe to make a powerful effort in order to improve the incarcerated' literacy ability. This is especially urgent, since researchers have found that more than half of the prisoners who have a low educational level reported that they wished to start upper secondary school. This fact was particularly true for the youngest inmates with reading and writing disabilities and with an immigrant background (Manger et al., 2006). If more investigations focused on intervention studies it would also, most likely, deepen the understanding behind the inmates' problem with the written language. Hence, longitudinal studies and investigations that measure the reading and writing ability over time would probably give a more certain prevalence value (Fletcher et al., 2007; Gellert & Elbro, 1999). Furthermore, the intervention procedure could be an additional piece in the puzzle of sharpening the definition part. "Inadequate responders would benefit from additional

cognitive assessment attempting to determine the reason for lack of response, e.g. severe phonological awareness difficulties" (Fletcher et al., 2007, p. 62).

The support for the three possible explanations, that reading disability leads to conduct disorder, that conduct disorder causes later reading difficulties or that there is a mutual underlying factor that causes both disorders, concerning the connections between literacy problems and offending behaviour that are presented in the introduction part of this paper varied among the investigations that have been carried out in Sweden in the last decade.

The chicken-and-egg issue depends in one way on how the definitions of literacy difficulties are defined. If we use the broader concept "reading and writing disabilities", it is a fact that there is an extensive overrepresentation of persons with reading and writing deficiencies in prisons and juvenile institutions. It is therefore possible to draw the conclusion that these difficulties might come first and cause behaviour problems, which in turn lead to criminality and residence at institutions. However, if a phonological definition of dyslexia is used, the prevalence of dyslexia is similar to that in the general population and there are most likely other factors that cause the high frequency of reading and writing disabilities. Insufficient parenting and an insecure home environment might be the reason for behaviour problems and later a troublesome schooling which includes difficulties with the written language. If this is so, the large number of inmates with literacy problems might be the effect of early emotional and behavioural problems which become obvious before the child attends school. Hence, as some researchers proclaim, there might be an underlying factor that causes both reading and writing disabilities and conduct disorder (for a review see Gellert & Elbro, 1999). Two of the Swedish publications (Lindgren et al., 2002; Rasmussen et al., 2001) argued that ADHD could be an underlying factor that causes both behaviour and literacy problems. In the study by Rasmussen et al. (2001) it was argued that there are two lines regarding the association between poor reading, "possible dyslexia" (Rasmussen et al., 2001, p.192), and ADHD: either it is neurobiological links or interference from the ADHD symptom with the learning process that causes reading problems. It seems reasonable to believe that ADHD symptoms might interfere with the learning process in school, e.g. reading acquisition, which in turn might cause difficulties with the written language. However, if we assume that dyslexia has a constitutional background where the cornerstone is phonological deficit, it could hardly be an obvious function of the learning process in school, i.e. dyslexia could not arise on account of ADHD symptoms. Nevertheless, ADHD symptoms such as inattentiveness might be background factors that are in part responsible for conduct disorder that may lead to criminal behaviour and a residence at juvenile institutions (Asbjørnsen et al., 2008; Brownlie et al., 2004; Carroll, Maughan, Goodman, & Meltzer, 2005).

Why is it important to make this distinction between reading and writing disabilities and dyslexia? The main reason is the treatment procedure. Dyslexia demands massive and sustained specialized pedagogical efforts. For those who have reading and writing deficiencies for other reasons than dyslexia, for example long periods of truancy, a general lack of interest in school work and an unsuccessful schooling on the whole, the treatment procedure ought to have a different focus. In the study by Svensson (2009) the intervention aims pinpointed both the technical aspects of reading, e.g. via assistive technology that has the intention to boost more shallow parts of the language such as decoding, and reinforcing the inmates' attitude to reading through reading aloud for them and supplying relevant and age-appropriate literature. Thus, for pupils with dyslexic problems it is necessary to boost the technical aspects of reading as well as the reading interest, reading habits and the core meaning of reading. For the pupils with literacy problems mainly caused by deprived home conditions and troublesome schooling it is

often not necessary to focus on the technical part of reading. In fact, it could actually worsen their literacy difficulties, since the pupils probably find this remediation as boring and lacking effect on their main problem, i.e. a general discomfort with reading and, particularly, unease with the school as a whole. For this group it might be more productive to start the work with the core meaning of reading, changing reading habits and practise reading (time on task), otherwise it is hard to become a fluent and skilful reader. Thus, it is essential with a thorough assessment to discern the pupils' specific problem with the written language and make sure that the remediation process focuses on their particular problem in order to bring about any improvement in their literacy skills whatsoever (Høien & Lundberg, 2004). Besides working with enhancing the inmates' literacy ability, it is of course necessary with parallel treatment of these youngsters' mental health.

In quite a few of the investigations that have been reviewed in this paper the definition of dyslexia and the distinction between general backward reading and dyslexia are rather indistinct. Therefore the results of these investigations with regard to the prevalence and the nature of the problem are hard to elucidate. However, there is quite substantial evidence that phonological deficits among inmates, regarded as the core factor in dyslexia, are similar to those of the population in general at least for those who are native-born. If the broader concept is used, that of reading and writing disabilities, there is an extensive overrepresentation of literacy difficulties among the incarcerated. In one sense this could be interpreted positively, since those persons with more general deficits in reading and writing might be easier to remediate, because their problem with the written language is often caused by troublesome schooling with a lot of truancy, and by low reading habits. With the focus on an improved literacy environment and more time for reading (time on task) for the offenders it might increase their motivation for reading and in turn develop their ability in literacy activities.

It is also obvious that the conditions that are predominant at prisons and institutions for compulsory care differ both between and within countries. The main focus for juvenile inmates below the age of 18 years in Sweden is on care and treatment. This makes it more possible for the superintendents of juvenile institutions to substantially upgrade the schooling part of the treatment procedure, which has been proclaimed from the Swedish National Agency for Education (Kristensson, 2008). If the focus on the young inmates' residence at the institutions is to serve a sentence and to be punished, it will worsen the pupils' schooling or even make it impossible (Grigorenko, 2006) and, furthermore, jeopardize the re-socialization process for the youngsters. The evidence is substantial regarding the positive effect of enhancing academic skills, particularly literacy ability, for juvenile delinquents. It will be more important to focus on education that is based on outcomes and visible goals rather than on correctional methods (Leone, Krezmien, Mason, & Meisel, 2005).

Reading and writing ability is an important skill for the youngsters at juvenile institutions and for the adult prisoners to acquire, i.e. an essential part of the treatment procedure. Not only to break vicious circles created by failure in school settings but also to facilitate access to emotional and moral experiences via enhanced literacy ability. Further, there is now evidence that an increasing reading ability opens up for continuing interrupted studies and decreases the risk for recidivism into criminality. It is therefore essential that researchers, teachers and treatment staff thoroughly elucidate what kind of reading and writing problems the inmates have and then with full power implement suitable methods to enhance their literacy ability. Consequently, more research regarding intervention as regards reading and writing disabilities among incarcerated persons in justice settings is greatly needed.

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