

THE INCIDENCE OF HIDDEN DISABILITIES IN THE PRISON POPULATION:

**Yorkshire and
Humberside Research**

The Incidence of Hidden Disabilities in the Prison Population: Yorkshire and Humberside Research

Executive Summary

The question of how many individuals in the prison system have a hidden disability has been much debated over recent years and a variety of studies have yielded different answers to this vexing issue. So why is an answer to this question so important? For individuals it is vital that they understand why they have specific difficulties and that they have the opportunity for a 'second chance' in learning and employment. For prison education services, understanding the scale of the problem will allow planning for appropriate provision. For the prison service, a robust progression from education to employment has a good chance of reducing re-offending. For the public purse this would represent a significant saving. Establishing the incidence of hidden disabilities in the prison population has implications not only for individuals but for society too.

Hidden Disabilities and the Prison Population

The term 'hidden disabilities' includes dyslexia and related specific learning difficulties such as dyspraxia and dyscalculia. It also includes disabilities that have more of an emotional or behavioural component such as attention deficit disorder (ADD) and the milder end of the autism spectrum. The effects of these are different, but similar approaches in terms of assessment and support are often needed. The key similarity is that the individual experiences barriers to learning and work as a result of specific difficulties which are not immediately visible. Often the individuals themselves are unaware that they have such difficulties.

There is no evidence to suggest that dyslexia or a related specific learning disability should predispose an individual to commit a crime, but it is well documented that there is a higher representation of such hidden disabilities within the prison and probation populations. Previous studies have shown a considerable amount of variation in the incidence of dyslexia within prison populations from 50% (Reid and Kirk, 2002) to 4% (Rice, 2002). However, in order for us to gain a better understanding of the reasons why many offenders have poor literacy and numeracy skills more conclusive information is required. This is important if we are to provide effective training and education programmes that have a greater chance of success.

Summary of Results

This research was funded by the Learning and Skills Council (LSC), and was undertaken with support from the Offenders Learning and Skills Unit (OLSU) and from staff from the eight prisons involved. The research took place from December 2003 to July 2004.

A sample of 357 offenders was drawn at random from eight prisons across Yorkshire and Humberside. The offenders were from all categories of prison, including young offender, women's and high security establishments. Unlike most previous studies the sample was therefore representative of the whole prison population.

In all, 159 offenders were identified as showing signs of a hidden disability through an interview process; 93 offenders in total were then given an in-depth assessment.

The results suggest that 20% of the prison population have some form of hidden disability which will affect and undermine their performance in both education and work settings. A further 32% of the sample who were given an in-depth assessment had literacy difficulties but did not show positive evidence of the characteristics of dyslexia, dyspraxia or other hidden disabilities. It seems more plausible that their literacy difficulties relate to social and experiential factors rather than a hidden disability.

In 'round figures' this study suggests that just over half of the total prison population (52%) have literacy difficulties which will limit learning and work opportunities, a figure consistent with previous studies.

Implications

The success of education and work preparation programmes in reducing re-offending rates is known to be variable. However, recent reviews indicate that programmes are more effective if they are delivered in a way that is sensitive to the specific needs of the individual or particular groups. This is consistent with the evidence from scientific research and practical experience, which shows that dyslexic individuals can learn if they are given access to appropriate, individualised, approaches, but that they often do not make progress with more generic support. This research suggests that 20% of the prison population may require this kind of approach. These individuals have hidden disabilities which are likely to result in barriers to full participation in learning, work and social activities, unless appropriate support is provided.

Recommendations

On the basis of the findings from this research, the Dyslexia Institute would make the following observations and recommendations.

Planning for prison education should recognise that approximately 50% of prisoners will need some support due to poor literacy and numeracy skills. This will involve systematic screening, direct teaching of literacy and numeracy and support in accessing other educational and vocational training. In addition there will need to be adaptation of general procedures and routines within prison to remove barriers that would exclude participation by those with low literacy levels and those with hidden disabilities.

Within the group of prisoners requiring literacy and numeracy support, 40% will require specialist support. This should include access to diagnostic assessments, support to individuals in understanding their strengths and weaknesses, specialist teaching of literacy and numeracy skills and the teaching of strategies and techniques to minimise the impact of hidden disabilities in work and learning situations.

In addition, there should be awareness and training for all personnel, giving them tools to better recognise and understand a hidden disability. The secure estate should develop policies and practices to comply with 'dyslexia friendly' standards and similar standards for other disabilities. In practice education providers will need to have access to specialist staff and to develop appropriate training. Prison education services should be linked more closely to employment services to assist offenders into appropriate jobs and to ensure that they have the requisite skills.

Ultimately, the benefit of this study should be in reducing re-offending rates by giving prisoners access to services and information that will enable them to improve their key skills, gain valuable qualifications and increase their chances of gaining employment.

Dr John Rack
Head of Assessment and Evaluation
The Dyslexia Institute
March 2005

The Incidence of Hidden Disabilities in the Prison Population: Yorkshire and Humberside Research Project

Background

The links between special educational needs in school, social exclusion and the risk of challenging and offending behaviour are well documented. The causal links in these associations are clearly complex and less well understood, but there can be no doubt that those leaving school without adequate literacy or numeracy skills are at a serious disadvantage in the labour market. It is also known that those leaving prison often face barriers to gaining employment because of a lack of foundation literacy and numeracy skills rather than their record of offending. A key question, therefore, is whether we can better understand the reasons why many offenders have poor literacy and numeracy skills in order to provide training and education programmes that have a greater chance of success, ultimately helping to break the cycle of re-offending (recidivism).

Prison

According to the Social Exclusion Unit's report on Reducing Offending by Ex-Offenders (2002) 80% of individuals leaving prison lack the skills for 96% of all jobs:

- Half of all prisoners are at or below Level 1 (the level expected of an 11-year-old) in reading
- Two-thirds are below Level 1 in numeracy
- Four-fifths are below Level 1 in writing
- 52 % of male and 71% of female adult prisoners have no qualifications
- 30 % of prisoners were regular truants during their school years
- 49 % of male prisoners were excluded from school
- 58% of those released from prison are reconvicted within 2 years
- 4 out of 5 prisoners have served a previous sentence

During 2004 there were 74,770 people in prison in England and Wales serving either a custodial sentence or on remand. This has risen 50% over the last decade (Department for Education and Skill (2004), Offenders' Learning Journey). According to the Prison Service Annual Report 2003-04 the cost of keeping an individual in prison during 2004 was £27,320. Therefore, there is both a social and economic argument for preventing re-offending and providing the appropriate skills for employment would seem to be a positive solution for many of those who have been involved in the criminal justice system.

However, there is relatively little scientific evidence on the effectiveness of literacy programmes in prison, although there is some evidence from small-scale projects, for example those at HMP Pentonville and Nottinghamshire Probation Service. A Canadian study in 1992 estimated that participation in basic skills classes reduced offending rates by 12% and an unpublished

Home Office report (Clark, 2001) found that those who did not participate in education or training while in prison were three times more likely to re-offend than those who did take part in such programmes.

There is now a need for a large-scale study to determine the most effective forms of intervention and to quantify the impact on literacy skills and rates of re-offending. The design of such a study would need to take into account the possible impact of hidden disabilities and, thus, as a first step, clear data about the characteristics of the prison population is required.

The 'Dyslexia Hypothesis'

The present research is designed to establish the incidence of dyslexia and related hidden disabilities in the prison population. This research is needed because the findings from previous studies appear contradictory. There are some studies that report an incidence of dyslexia well above what would be expected in the population at large, but other studies report no such difference. Before reviewing these studies and describing the present research, it is necessary to clarify the 'dyslexia hypotheses a little further and to outline the framework that is used for the assessment of hidden disabilities, including dyslexia.

One possibility is that there are common risk factors which increase the chances of dyslexia and increase the probability of offending. Epidemiological and longitudinal findings provide some support for this argument in suggesting that a common factor of socially disadvantaged backgrounds may predispose both antisocial behaviour and reading difficulties (Williams and McGee, 1994; Fergusson and Lynskey, 1997; Maughan et al. 1996). A further possibility is that the risk of offending is increased for those with dyslexia only when other risk factors are present; some of these risk factors might be to do with additional cognitive difficulties (e.g. attention), some to do with social factors and some to do with the impact of education. For example, if proper support is not provided at school for someone who is dyslexic, then there is a greater risk of failure and perhaps antisocial behaviour arising out of frustration. This, in turn, could lead to social exclusion and an increased risk of offending. The working hypothesis for this research is that the higher incidence of dyslexia in prisons, if any, is likely to reflect a combination of several risk factors, rather than any particular 'personality' factors intrinsic to the dyslexic person.

Whether or not we can fully understand the factors that may explain the association between dyslexia and offending behaviour, there is an unquestionable need to understand the nature of the literacy difficulties experienced by those in prison in order to deliver the most effective support. Although the evidence on intervention effectiveness in adult literacy is limited (Rice & Brooks 2004), there is good practical evidence that learners with dyslexia do not make progress unless they are given the kind of teaching that has been developed with their specific needs in mind. To plan for effective support in prison education departments, it is therefore necessary to have

reliable information about the numbers likely to require this kind of teaching and support.

Assessment Framework

Developmental dyslexia is now well understood. We know something of its neurological basis, something of the genetics; we know a lot about the characteristics at the cognitive level, in memory, language and information processing; we know a lot about its effects on reading, spelling and writing skills; we know a lot about effective support for dyslexic people to help improve key literacy skills and to develop compensatory strategies. However, despite this depth of knowledge, dyslexia can still provoke controversy and it is certainly true that we do not have clear answers to questions about its incidence in different populations and about the comparative effectiveness of different methods of intervention. One reason for these discrepancies is that there are differences in the criteria and 'cut-offs' used to define dyslexia. Another reason is that we are developing an understanding of different kinds of hidden disability that are different from, but which may have some features in common with, dyslexia.

The starting position taken in this research is that poor literacy skills could arise for a number of reasons, including, but not limited to, dyslexia. Difficulty in learning to read may be one of the first signs of dyslexia but it could also be a sign of something else such as, for example, a more general difficulty with language development or difficulties with attention and concentration. Conversely, a person who is dyslexic may not struggle very much when learning to read but their dyslexia may show itself later in spelling, writing or organisational skills. For both these reasons, a definition that equates dyslexia with poor reading is inadequate.

Assessment of dyslexia needs, therefore, to look beneath the surface to find what is at the root of the reading or spelling difficulty. This is the process of diagnosis – finding what is causing the problems. The diagnostic process is about understanding and not labelling; and a diagnosis should always be made tentatively and modified if new information suggests a different interpretation.

The outcome of a full diagnostic assessment is therefore an interpretation: diagnostic tests can help explain why certain skills have been difficult to learn, why certain mistakes tend to occur and why certain activities or ways of working may be preferred. This interpretation is, of course, highly individual, but there are consistencies in the patterns that are seen. The most consistent pattern involves difficulties in processing word-sounds and verbal sequences, which is the classic dyslexic pattern. Another consistent pattern is one involving co-ordination and sequencing difficulties which impact more on handwriting and spelling. Similarly, difficulties with attention and concentration may create barriers to learning and understanding. There is often overlap between these patterns, but sometimes they may be seen clearly as distinct conditions such as dyslexia, developmental coordination disorder (dyspraxia)

and attention deficit disorder (ADD) or attention deficit hyperactivity disorder (ADHD).

A Functional Approach

The emphasis of our screening and assessment procedure was on identifying barriers to learning. We therefore framed questions about the 'symptoms' (or diagnostic indicators) in functional terms covering such things as 'interpersonal communication' or 'organisational skills'. We felt that these would allow a report or feedback to be given in terms that were a) understandable and meaningful to the client and b) led naturally to guidance for areas to target through support.

Previous Studies

A number of studies have used an approach to identification based on interview and questionnaire data. Reid and Kirk (2002) used a computerised system called Quickscan which showed that 50% (25 out of 50) of a sample of young offenders had at least borderline indicators of dyslexia. Davies and Byatt (1998) in the STOP project found that 31% (160 of 517) of a sample of people on probation had positive indicators of dyslexia. Klein, (1998), also using a questionnaire approach in the Dyspel Project found that 38% of offenders had indicators of dyslexia. An approach based on screening and interviews can provide useful insights and enable the development of learning programmes but it is not conclusive in terms of identifying dyslexia or other specific learning difficulties.

Rice (2002) used a formal screening procedure, the Dyslexia Adult Screening Test or DAST (Nicholson and Fawcett), as well as structured interviews and measures of literacy, verbal and non-verbal ability. A sample of 323 prisoners were seen, 38% of whom were found to be below functional literacy levels but only 4% were identified as dyslexic. Rice argued that it was not possible to identify dyslexia when there were other plausible experiential factors that could explain the low attainments.

A Dyslexia Institute project with young offenders at Feltham (Turner and Allchorn, 2000) used a group screening procedure which involved testing of literacy skills and underlying cognitive abilities. 97 young offenders were given group tests of general ability, word reading, spelling, higher-level reasoning abilities and information processing skills. On the basis of these results a Dyslexia Index was calculated which reflected the unevenness of their test profile. Dyslexia was indicated by a combination of 1) a discrepancy between predicted and actual attainment levels and 2) specific difficulties on diagnostic tests. It was calculated that 17.5% of the sample showed evidence of dyslexia.

Snowling, Adams, Bowyer-Crane and Tobin (2000) assessed a group of 91 young offenders using measures of literacy attainment, verbal ability, non-verbal ability and phonological skills. The majority of the sample had weak

literacy skills with mean standard scores of 85 for reading and 75 for spelling on the Wechsler Objective Reading Dimensions. Measures of general intellectual ability were the block design and the vocabulary subtests of the Wechsler Intelligence Scales for Children. The sample as a whole were worse on vocabulary (standard score of 75) compared to block design (standard score of 89). Dyslexia was assessed by identifying those whose attainments fell significantly below expectations, calculated separately for verbal and non-verbal ability. 57% of the sample had attainments below the levels predicted from their non-verbal ability and 42% had attainments below predictions based on verbal ability.

Snowling *et al* also estimated the prevalence of dyslexia using the criteria of specific phonological deficits (Rack *et al*, 1993). 39% of the sample had phonological processing skills that were lower than would be expected given their general reading skills. Finally, if an exclusionary criterion of 'average verbal ability' was applied, only 8% of the sample were classified as dyslexic. Snowling *et al* argued that the majority of those with literacy difficulties had rather more widespread deficiencies in language processing and verbal skills.

Samuelson, Gustavsson, Herkner and Lundberg (2000) conducted a study using similar methodology looking at a sample of 48 inmates from an adult medium-security level prison in Sweden. Participants were given standardised measures of text and sentence reading, spelling, phonological decoding and orthographic skills. Performance was compared to norms for 12 year-old students because their number of years of schooling equated to that which was estimated for the inmates. The prisoners, on average, were reading and decoding words at a similar level to the 12 year-old comparison group and their spelling skills were significantly better. In contrast to the Snowling *et al* study, the majority, 81%, of the sample did not have phonological decoding skills that were significantly depressed in relation to their reading levels. This difference in findings may partly reflect differences in the transparency of the two orthographies. Of the 18% who did have severe phonological deficits, almost half were non-native speakers of Swedish, leaving the remainder as potentially dyslexic. Samuelson *et al* conclude that the incidence rate of 9% amongst the native speakers was comparable to that which is found in the general population.

In a second study, Samuelson, Herkner and Lundberg (2003), assessed 82 prisoners on a more extended battery including measures of non-verbal (Raven's Matrices) and verbal ability (vocabulary). Standardised measures of comprehension, single-word reading and spelling were given along with two measures of phonological decoding and phonological awareness (a spoonerism task). Using similar prediction procedures to those reported by Snowling *et al*, the incidence of dyslexia was found to be around 10%.

The studies conducted to date give estimates of dyslexia from 4% (Rice, 2002) to 50% (Reid and Kirk, 2002). These differences may reflect a number of factors including: a) differences in samples – some studies concentrated on young offenders and some on older adults; b) differences in assessment

methodology – some studies used screening procedures, others used cognitive testing; c) differences in the attention given to alternative explanations of poor literacy skills. These factors will be considered in the discussion section of this report, in the light of the findings from the present study.

YORKSHIRE AND HUMBERSIDE STUDY

Research Brief

The Learning and Skills Council (National Office) asked the Dyslexia Institute (DI) to conduct research into the incidence of dyslexia and related hidden disabilities in the prison population. The Offender Learning and Skills Unit (OLSU) have supported this research which focussed on the Yorkshire and Humberside Region as it was possible to gain access to a good cross-section of prisons that included young offender units, women's prisons and high-security establishments, something that most previous studies have not done. The research reflected a partnership between the DI, the Learning and Skills Council (LSC), the OLSU and the University of York.

Sample

Our target was to interview a sample of prisoners to be representative of the prison population as a whole. We were able to interview 357 prisoners across 8 different categories of prison, which are listed below. We gratefully acknowledge the support and cooperation of the governors and prison officers in these establishments.

HMP FULL SUTTON: High Security

Full Sutton, YORK, North Yorkshire

HMP EVERTHORPE: Closed Training Males Category C

BROUGH, East Yorkshire

HMP/YOI NEW HALL: Female – Closed Category C and Young Offenders Institution (YOI)

Flockton, WAKEFIELD, West Yorkshire

HMYOI NORTHALLERTON: Closed YOI (Males under 21)

NORTHALLERTON, North Yorkshire

(This prison withdrew from the study after the first phase)

HMP HULL: Local prison

Hull, East Yorkshire

HMP & YOI MOORLAND: Category C adult training prison and YOI

Doncaster, South Yorkshire

HMP HATFIELD: Category D open prison

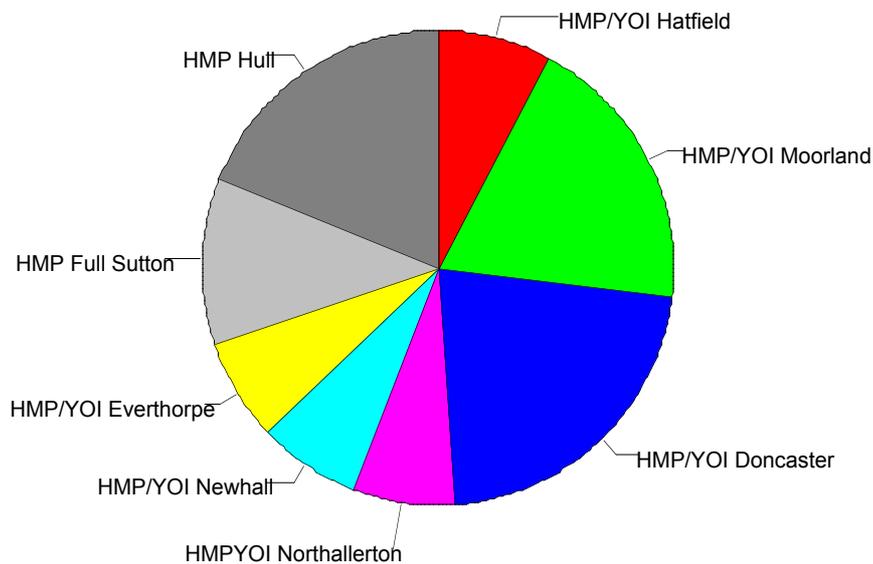
Doncaster, West Yorkshire

HMP & YOI DONCASTER: Category A local adult male prison and YOI
Doncaster, South Yorkshire

Sampling Procedure

To identify the sample for the study, we made use of the lists generated by the Mandatory Drug Testing (MDT) system. This system generates a random sample of 10% of those on the prison roll who are required to undergo checks on drug use. Based on the operational capacities of the prisons involved a pool of 470 participants was identified and 357 of these were interviewed. The breakdown of the total sample is shown in Figure 1.

Figure 1: Composition of the Interview Sample



Participation in the study was subject to the prisoners' informed consent, with refusal possible following the initial invitation for interview, which was given by prison staff, or following an explanation of the project at the start of the interview. Prisoners were not invited to take part in the study if there were security concerns or they were about to be released or transferred. The logistic challenges of working in a secure environment meant that some of those identified for interview could not be seen in the time available.

Procedure

1. Step one: Screening Interview

The initial screening took approximately 45 minutes and was conducted by one of the members of the research team. For security and supervision reasons, it was usual to work in groups of 2-4 researchers in a large area

such as the visiting area or chapel, where participants could talk in confidence but be supervised by a prison officer.

The interview and screening questionnaire was designed to identify features of hidden disabilities across the spectrum of dyslexia, dyspraxia, attention deficit disorder and Asperger's Syndrome. It was originally constructed as part of a project with Job Centre Plus and therefore the questions are framed within a work context for use with adults. The questionnaire was designed as a structured interview providing the opportunity to give clarification or ask for examples as appropriate. All questions were read aloud by the interviewer.

The questionnaire was divided into sections organised on a functional basis, for example *literacy and numeracy, learning and thinking style*. Wherever possible, questions from established screening questionnaires were used, supplemented by questions suggested by consultation with practitioners and by reference to definitional criteria and checklists. Thus there were not sets of questions about specific hidden disabilities; rather indicators of hidden disabilities could be collected from the various functional sections. For example, in Section 1, *Social and Interpersonal Communication*, there were 16 questions, and 11 of these were relevant to characteristics of dyslexia, 10 were relevant to characteristics of dyspraxia, 8 to Asperger's Syndrome and 8 to attention deficit disorder. Section 2, *Motor Co-ordination and Visual/Spatial*, contained 13 questions that were mainly relevant to dyspraxia (12 questions). The section on *Learning and Thinking Styles* contained questions related to features of Asperger's Syndrome, with 13 out of 16 questions concerning, for example, tendencies to enjoy routine, having a high attention to detail and having a preference for unusual hobbies or hobbies that require a great deal of detailed attention. Section 5, *Literacy and Numeracy*, contained the highest number of questions relevant to dyslexia with questions about spelling and reading and understanding text. Also included in this section were questions about difficulties in carrying out numerical tasks and other tasks requiring working memory skills. Other questions were concerned with writing skills, organising information and thoughts and difficulties in putting thoughts into words

Responses to questions were judged to give positive 'indicators' for particular hidden disabilities and a numerical 'hidden disabilities' score was calculated for each of the 4 main patterns of hidden disability. Participants were selected for the second phase of the study on the basis of the interview and questionnaire results.

2. Step two: Assessment

The assessment consisted of the individual administration of a series of tests lasting approximately 1 hour 40 minutes. Tests used were:

- i. *Verbal and Nonverbal Abilities* were assessed using the Wide Range Intelligence Test (WRIT). This test gives an indication of overall verbal ability based on scores from two tests. In an expressive vocabulary test, the task is to explain the meaning of a series of words which

increase in difficulty; in the verbal reasoning test the task is to work out the relationship, or rule, between two words and then apply the rule to complete a second pair. The non-verbal ability score is derived from results on a pattern design test, involving recreating a design using patterned tiles, and results on a matrices test, involving working out the rules and relationships amongst visual patterns and shapes. An overall composite IQ was calculated from all 4 subtest scores.

- ii. *Reading and Spelling* were assessed using the Wide Range Achievement Test (3rd Edition) WRAT-3. The reading test is a single-word naming test involving words of increasing difficulty, and the spelling test involves spelling a series of dictated words, each given in isolation and in a sentence context. In both tests, there is a discontinuation rule so that participants are not asked to attempt too many words that are beyond their abilities.
- iii. *Diagnostic tests of memory and information processing* were given to assess short-term memory, visual information processing speed and phonological (word-sound) skills. Digit Span from the Wechsler Adult Intelligence Scales (WAIS) involves repeating digit sequences of increasing length in both forwards and backwards directions. Digit Symbol Coding, also from the WAIS involves copying shapes into numbered boxes, at speed, using a digit-symbol coding key shown at the top of the page. In the Rosner Test of Auditory Analysis Skills (Rosner, 1979) the task is to first repeat a word (e.g. 'same') and then say the word without one of the sounds (e.g. without the 's'). The Spoonerisms task is a more demanding test of phonological analysis and manipulation skills, involving switching initial phonemes of a name to create a Spoonerism. Finally, participants were given a non-word repetition task (Gathercole and Baddeley), in which they had to listen to and repeat a series of 'made-up' words, again increasing in length and complexity.

Understanding and Explanation

Although this was primarily a research study, it was important to provide individual feedback for those assessed. With prisoners' consent, a report of the main findings was sent to the head of resettlement or education department at the prisons concerned. Providing a possible explanation for difficulties in learning and in work can be very empowering. To learn that the reason for underachievement in school might be dyslexia rather than limited general ability or poor motivation can make an enormous difference at an individual level. For many, assessment is a turning point, showing that the individual has the potential to achieve, which opens up opportunities to receive additional support. Whether or not individuals were assessed as having some recognisable pattern of hidden disability, the assessment report provided a description of strengths and weaknesses and that information can be used to help plan for learning and work that best suits the individual's

characteristics. This is therefore very important for the individual's progression and future prospects.

RESULTS

Interview Sample

The numbers of prisoners interviewed, in relation to the target sample is shown in table 1.

Table 1: The number of prisoners interviewed compared to the target sample

Establishment	10% operational capacity	Not interviewed	Total Sample
HMP/YOI Moorland	75	6	69
HMP/YOI Hatfield open	25		27
HMP Everthorpe	40	15	25
HMP/YOI New Hall	35	11	24
HMP/YOI Northallerton	25	0	25
HMP Hull	100	32	68
HMP Full Sutton	60	19	41
HMP/YOI Doncaster	110	32	78
TOTAL	470	115	357

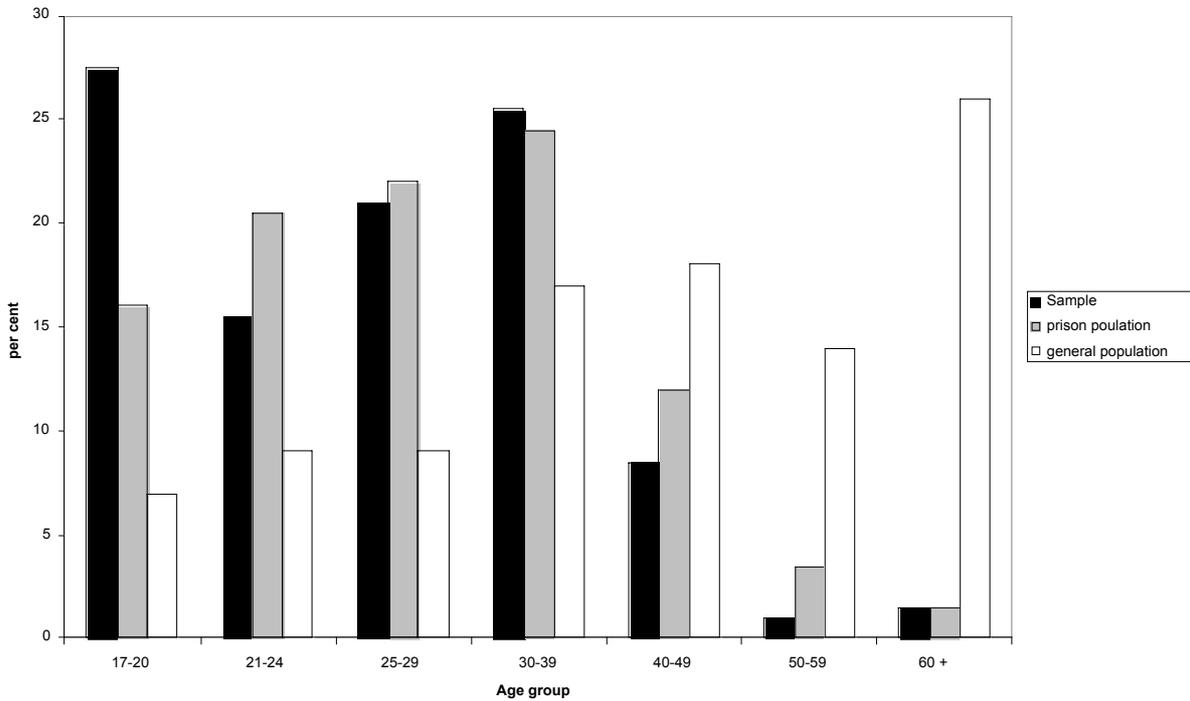
Gender

New Hall was the only women's prison in the study and the women from there made up approximately 7% of the total sample. This compares to figures of about 4% from The National Prison Survey (1992) and 5% from more recent government figures (Social Inclusion Unit, 2002)

Age

As is typical of the prison population, the distribution of ages is heavily biased towards the 17 to 25 year old age group, as is seen in figure 2.

Figure 2: The Distribution within the Sample compared to the Prison Survey (1992) and the population as a whole



Socio-economic grouping

Given the constraints on the interview time, it was not possible to obtain detailed information about family background. However, a broad classification was possible using the General Register Office Classification of Occupations (1966). The breakdown is shown in table 2.

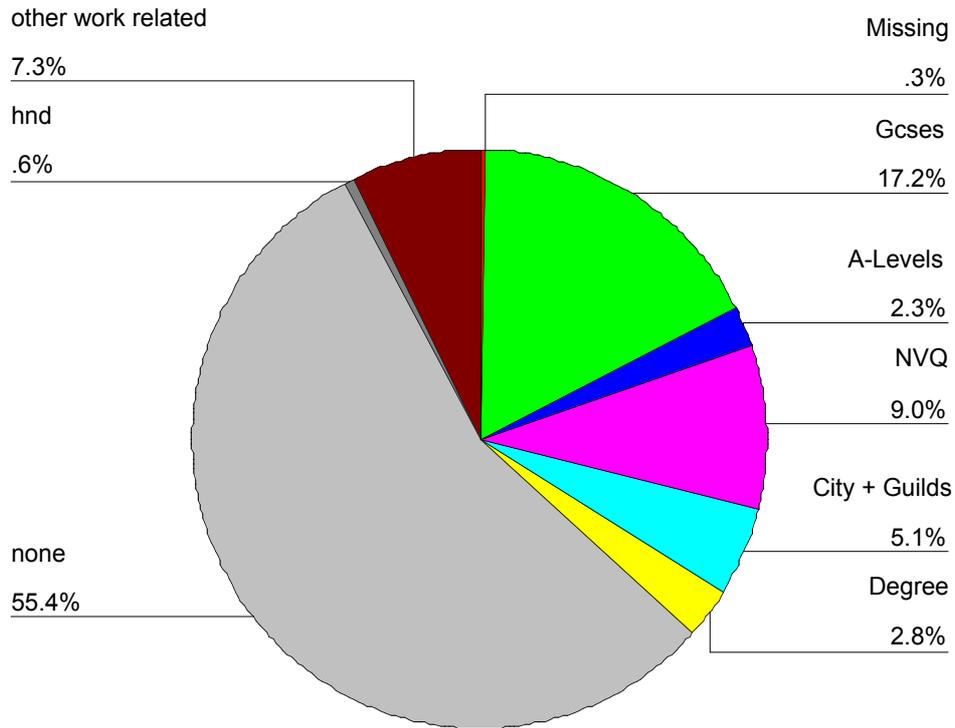
Table 2: General Register Office Classification of Occupations for the offenders in the sample compared to the Prison Survey (1992) and the population as a whole

	Sample %	Population %	Prison Population %
A, B, C1	23	18	45
C2	18	41	37
D, E	70	41	19

Qualifications

Consistent with previous surveys, over 50% of the sample had obtained no formal qualifications from school or further education and training. The remainder had a mixture of qualifications as shown in Figure 3.

Figure 3: The qualifications of the offenders



Tuancy

Reports of truancy for extended periods were very high for all age groups, although greater numbers of those over 30 reported never having truanted. The findings are shown in table 3.

Table 3: The extent of truancy while at school

Age Group	Truancy			
	Never %	Lessons %	Days %	A week or longer
17-20	15	21	25	39
21-24	17	19	26	40
25-29	11	25	22	32
30-39	33	23	15	27
40-49	27	18	21	37

Language and Ethnicity

93% of the sample reported English to be their first language and 95% identified themselves as British or English.

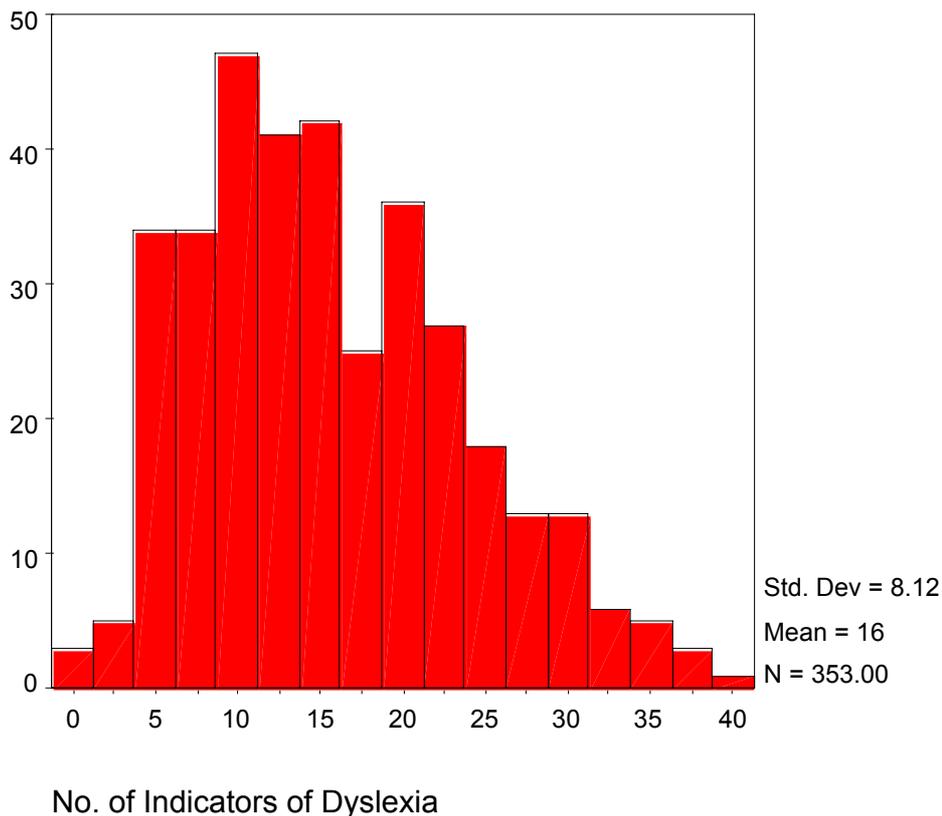
HDQ Screening Results

Cases were ranked according to the number of indicators on the subscales of the Hidden Disabilities Questionnaire and allocated to high, low or borderline

categories. The primary purpose was to identify those showing signs of a hidden disability for further testing, but a number of participants who were in the low and borderline bands were included for validation purposes.

The distribution of the dyslexia indicator scores on the HDQ is shown in figure 4. The distribution for dyspraxia indicators was very similar.

Figure 4: The distribution of dyslexia indicators



Prisoners were selected for participation in the second stage of the study if they had 18 or more indicators on either the dyslexia or dyspraxia indicators, or 14 or more for ADD. In addition, a number of prisoners were invited to take part in the second stage whose scores were low, or in a borderline category. This was done for validation purposes and in order to provide data about the cut-off level that might be best used in practice.

In practice, few additional people were included on dyspraxia indicators who were not already included on dyslexia indicators. Thus, of the 137 people identified as having indicators of dyslexia, only 16 did not also meet the criteria on indicators of dyspraxia. Of the 128 people identified as having high indicators of dyspraxia, only 7 did not also meet the criteria on indicators of dyslexia. The overlap between indicators of dyslexia and indicators of ADD was also high. Only 26 out of the 137 who met the criteria on indicators of dyslexia did not also meet the criteria on indicators of ADD. Out of 132 people who met the criteria on indicators of ADD, only 21 did not also meet the criteria on indicators of dyslexia. Further analyses will be needed to look at those questions that discriminate the different groups and to look at the

qualitative aspects of the responses which are more relevant to Asperger's Syndrome.

Assessed Sample

The numbers identified by the screening procedure and the numbers who were tested are shown in table 4.

Table 4: The number of those screened falling into high, borderline and low categories on the Hidden Disability Questionnaire, and numbers assessed

Indicators of hidden disability	Identified from screening	Numbers assessed (Phase 2)
High	137	62
Borderline	71	15
Low	148	16
Missing	-	-
Total	357	93

Characteristics of Sample Tested

The mean standard scores on the reading, spelling and general intellectual ability tests are shown below for the sample of 93 prisoners who completed Phase 2. The mean for the general population is 100 with a standard deviation of 15 in each case.

Table 5: The mean standard scores of the offenders for reading, spelling and intellectual ability

	General Intellectual Ability Standard Score	Reading Standard Score	Spelling Standard Score
Mean	81.3	89.9	79.5
Standard Deviation	14.0	16.3	15.40

The distribution of reading against intellectual ability is shown in figure 5. Lines have been drawn on the graph at standard score of 85, which represents 1 standard deviation below the population mean and is the conventionally accepted boundary of the average range. Thus the upper right quadrant contains individuals whose scores on reading fall within the average range. The two lower quadrants contain those whose scores on reading are below average.

Figure 5: Plot of reading ability against general intellectual ability

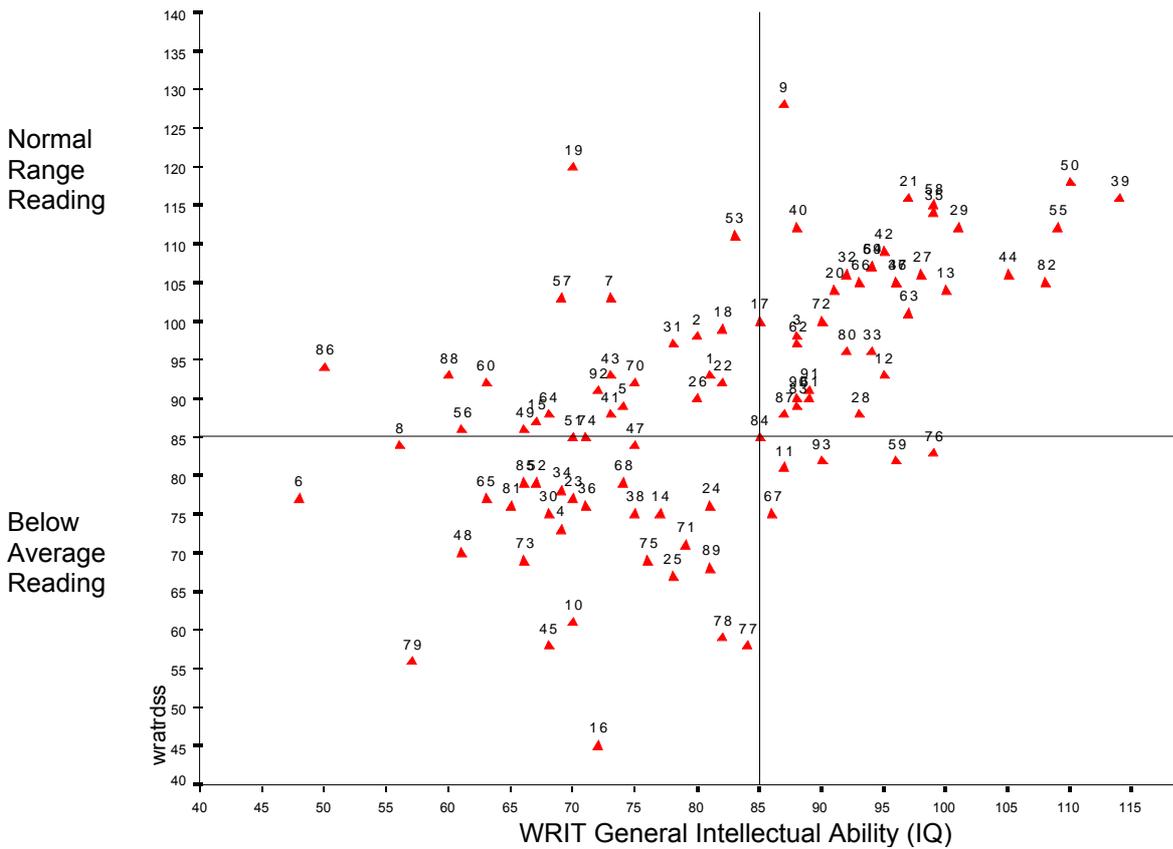
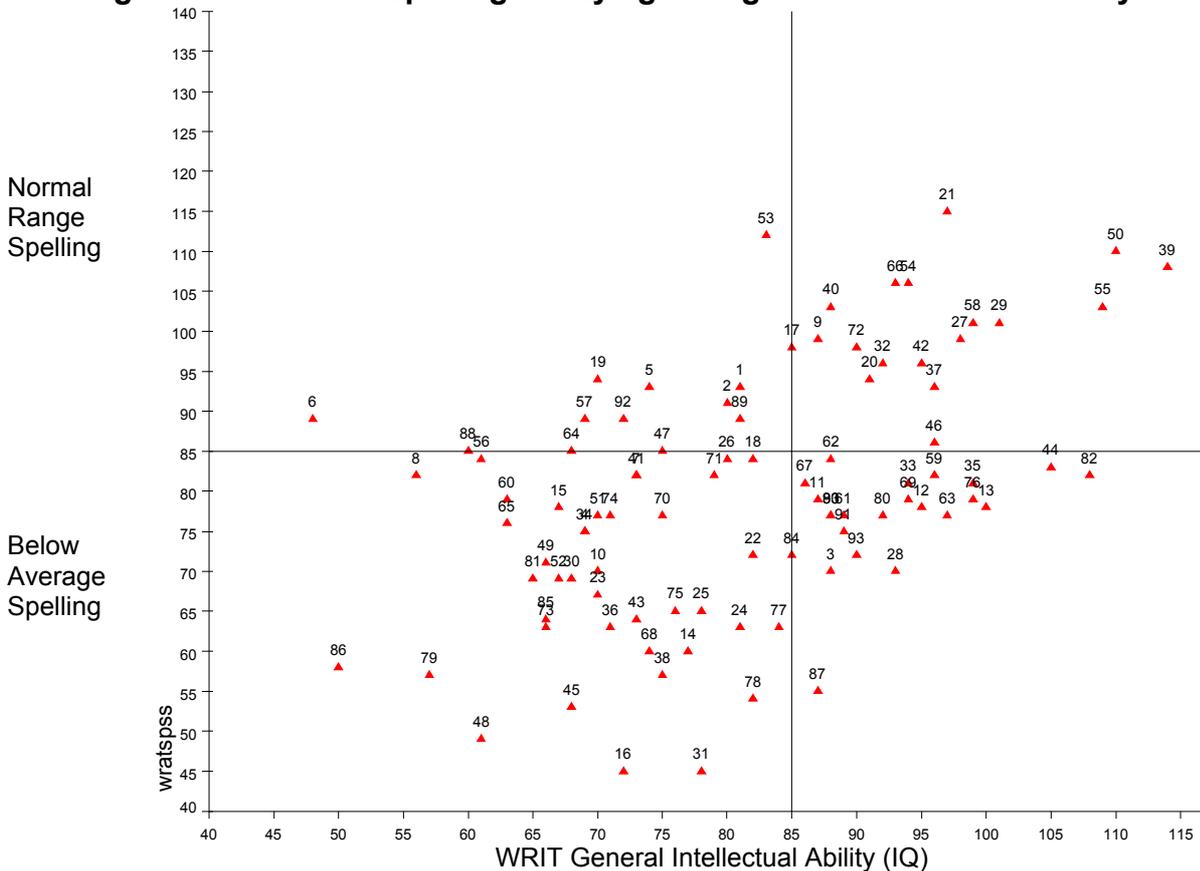


Figure 6 shows the distribution of spelling scores against general ability.

Figure 6: Plot of spelling ability against general intellectual ability



As an alternative to taking a straightforward cut-off, the Wide Range Test scores can be used to identify those people whose attainment scores fall significantly below the expected level for their ability. This is shown in table 6 for the 0.01 level of significance.

Table 6: Attainment scores significantly below expected level for ability

	Reading at Expected Level	Reading Below Expected Level	Total
Spelling at Expected Level	41	2	43
Spelling Below Expected Level	32	18	50
Total	73	20	93

20 people (21%) had scores in reading below expectations and the vast majority of these people (18/20) also had scores on spelling below expectations. Only 2 people (2.2%) were below expectations in reading only.

Almost half of the sample (50/93, 53%) were below expectations in spelling and the majority of these people (32/50) were below expectations in spelling but not reading. Thus 34% of the total sample tested were achieving spelling scores significantly below expectations based on their general intellectual ability and a further 19% were below expectations on both reading and spelling.

Diagnostic Indicators

As outlined in the introduction, the finding of attainment levels below expectation is not a diagnosis in itself. Rather, it signals the need to explore factors that might explain the so-called 'underachievement'. The mean scores for the assessed sample on the diagnostic tests are shown in table 7 along with the cut-off scores used to determine an impairment.

In the case of digit span and coding, a scaled score of 7 reflects performance in the lower 16% and therefore that is an objective indicator of difficulties. The cut offs on the other tests were based more on clinical judgement and experience of using the tests with other populations. The TAAS, for example, is something on which most 9 year olds would gain perfect scores.

Table 7: The mean scores for the assessed sample using diagnostic tests

	Digit Span Scaled Score	Coding Scaled Score	Nonword Repetition Raw Score Max=40	TAAS Raw Score Max=13	Spoonerisms Raw Score Max=18
Mean	8.9	7.05	37.04	11.13	8.16
Standard Deviation	3.2	2.56	4.45	1.91	7.29
Cut off score for impairment	≤ 7	≤ 7	≤ 34	≤ 11	≤ 8

To assess the validity of the diagnostic measures as predictors of reading and spelling in this population a series of regression analyses were carried out.

Using Regression Analyses, the diagnostic measures were found to relate to literacy skills, over and above any relationship that might be related to general intellectual ability (IQ). For example, the test of auditory analysis skills accounted for a substantial 26% of the variance in reading and IQ accounted for an additional 18% (its unique contribution). IQ when entered first in the regression equation accounted for 34% but TAAS accounted for an additional 9% over and above - its unique contribution. Thus, these variables together accounted for 16% of shared variance in reading and each made an additional independent contribution.

The outcome was similar for Spoonerisms and digit span with non-word repetition and coding proving less predictive. These results show that the strong relationship between measures of phonological processing skill and reading remains even in a sample where a wider range of causal factors might be thought to be at play.

Assessment of Hidden Disabilities

Dyslexia may be positively diagnosed when there is a) evidence of specific difficulties in learning to read and spell and b) a typically dyslexic profile of strengths and weaknesses on diagnostic tasks. We therefore subdivided the poor readers into those showing weaknesses on diagnostic tests and those who did not show weaknesses. Our criterion for showing weaknesses was a score below the cut-offs (indicated in table 7) on 3 or more diagnostic tests. However, when ability scores are very low it is difficult to rule out the possibility that the person has a rather more general problem in understanding the requirements of an unfamiliar task. The sample contained 4 people whose IQ scores were below 60 and it was not felt advisable to try to interpret their results on the diagnostic tasks in terms of specific learning difficulties.

Table 8 shows the number of good and poor readers in the assessed sample of 93 people, sub-divided into those identified as showing high, medium and low indicators on the Hidden Disabilities Questionnaire (HDQ).

Amongst the 62 tested who had high indicators:

- 31 (50%) were relatively good readers (standard score above 85)
- 29 (roughly 50%) were poor readers.
- 17 out of the 29, or 27% of those assessed also met the criterion of showing difficulties on diagnostic tests.

Thus we conclude that 27% of those who showed high indicators on the HDQ were, on testing, found to show a typically dyslexic pattern. Applying this percentage to the numbers in the sample who had high indicators gives an estimated frequency of 37 from the sample as a whole.

Table 8: Numbers of good readers, poor readers and poor readers showing signs of specific learning difficulties for the assessed sample, subdivided by indicator group on the HDQ, and estimated frequency of those with hidden disabilities in the sample as a whole.

HDQ Score	Screened	Tested	<60	Good Readers	Poor Readers	Poor Readers + SpLD	Frequency	
High Indicators	137	62	2	31 50%	29 47%	17 27%	37	
Medium	71	15	1	11 73%	3 20%	3 20%	14	
Low	148	16	1	14 88%	1 6%	0 0%	0	
Missing	1							
Total	357	93					51	14%

Consider next those who had low indicators on the HDQ. Of the 16 of these people who were tested, only 1 was poor at reading and he did not show evidence of difficulties on diagnostic tests. Thus we estimate that amongst the 148 people from the total sample who had low scores on the HDQ, there are no individuals who show a pattern of a hidden disability on testing.

The medium, or borderline, category was included in order to calibrate the HDQ cut-off; it was also the category into which the majority of those who were high on ADD, but not dyslexia indicators, fell. Of the 21 who met the criteria on ADD indicators, but not dyslexia indicators, 16 were in the borderline category (15-17) on dyslexia indicators. Thus it is to be expected that we would find some in this group who had specific difficulties on

diagnostic tests when assessed. Of the 15 assessed, 3 were poor readers and all of these 3 were found to show weaknesses on diagnostic tests. This represents 20% of those with medium/borderline indicators who were assessed. Applying this to the number on the total sample with medium/borderline indicators, gives us an estimation of a further 14 people who are dyslexic in the total sample.

In summary, when looking at the poor readers identified without regard to IQ scores, we calculate that 51 show signs of specific difficulties on diagnostic tests and would thus meet the criteria for dyslexia. This constitutes 14% of the total sample.

Spelling

Table 9 shows the same analysis but looking at poor spellers.

Table 9: Numbers of good spellers, poor spellers and poor spellers showing signs of specific learning difficulties for the assessed sample, subdivided by indicator group on the HDQ, and estimated frequency of those with hidden disabilities in the sample as a whole.

	Screened	Tested	<60	Good Spellers	Poor Spellers	Poor Spellers + SpLD	Frequency	
High Indicators	137	62	2	11 18%	49 79%	24 39%	53	
Medium	71	24	1	5 33%	9 60%	5 33%	23	
Low	148	15	1	9 56%	6 38%	0 0%	0	
Missing	1							
Total	357	93					76	21%

It is interesting that many more of those in the high indicator group are found to be poor at spelling (79%) compared to reading (47%), suggesting that spelling difficulties are a more common feature of hidden disabilities, defined more widely. However, amongst the 49 poor spellers there are more who do not show signs of difficulties on diagnostic tests, suggesting that poor spelling may also result from social and environmental factors.

In summary, when looking at the poor spellers, and applying the percentage calculations for the high-indicator and the medium/borderline indicator groups, we calculate that 76 show signs of specific difficulties on diagnostic tests and would thus meet the criteria for dyslexia. This constitutes 21% of the total sample.

Summary of Study 2

Due to practical difficulties such as the high turnover rate in YOIs and because Northallerton YOI withdrew from the study after the first phase, the sample assessed was smaller than originally planned. Fortunately, the Dyslexia Institute was conducting a project at HMP Brixton at the same time, which focused on the 17-19 year age range. This study has been written up but not published (Henderson, 2004) and so the results are summarised here.

70 participants were assessed using very similar methodology to that used in the Feltham study (Turner and Allchorn, 2002). The mean standard scores are shown in table 10.

Table 10: Mean standard scores on ability, attainment and diagnostic tests from the Brixton Sample

Non-verbal ability	75.46
Verbal ability	75.07
Reading attainment	89.58
Spelling attainment	77.78
Diagnostic - Speed of Processing	73.57
Diagnostic – Non Word Reading	92.98

In this sample, if 'low literacy', reading and spelling below the population average, is used as a definition of learning disability, approximately 50% of the sample would be identified as 'dyslexic.' However, if we take those whose literacy difficulties are more specific, i.e. their reading and spelling skills are below that expected for their general ability, the figure then drops to 31%. By including the need for 'positive indicators', on tests of phonological decoding and processing speed, the overall figure drops to 25%. Of these 18 (25%) who showed indicators of dyslexia to a varying degree, 8 participants, or 11%, appeared also to have 'moderate learning difficulties'; they were low on ability but even lower on attainment and diagnostic tests.

The findings from the Brixton study are therefore very similar to that in the Yorkshire and Humberside sample. Positive signs of dyslexia are found in about 20-25% of the sample but if an exclusionary criterion was used only half of those would be described as dyslexic.

DISCUSSION

This report began by acknowledging that the factors that contribute to a cycle of offending and re-offending behaviour are many and complex. Poor educational skills, especially literacy skills, are recognised as one of the critical factors that make it difficult for offenders to break out of this cycle. The goal must be to understand the factors that are behind poor literacy skills and to take preventative action to improve skills at school. Ultimately, it is this that reduces the chances of social exclusion and offending behaviour in the first instance.

The working hypothesis in this study is that dyslexia and related hidden disabilities, if not identified and not addressed appropriately at school will, perhaps in combination with other factors, increase the risk of social exclusion and offending behaviour. Under this hypothesis it would be expected that the incidence of dyslexia in the prison population would be significantly above the baseline incidence rate. Although up to 10% of the population may show some features of dyslexia, the number showing significant difficulties of the degree found in this study is thought to be between 4 and 5%. The Yorkshire and Humberside study shows an incidence rate in the prison population of 14%, using the criterion of reading difficulties and evidence of specific difficulties on diagnostic tests, and a figure of 21%, using the criteria of spelling difficulties and specific difficulties on diagnostic tests. Thus we conclude that the incidence of dyslexia in the prison population is between three to four times that found in the general population.

The figures from this study are higher than other studies, such as Rice's 4% and Samuelsson *et al's* 8%, but lower than others, such as Reid and Kirk's 50%. This study, along with others, shows that dyslexia will be over-identified if a screening procedure or checklist is used. Only about a quarter of those reporting characteristics of dyslexia using our HDQ were found, on testing, to be dyslexic. Similarly we found, consistent with previous surveys of literacy levels, that about half the prison population experienced significant difficulties but not all of those showed positive signs of dyslexia. Our estimate is that two-fifths, or 40%, of those with literacy difficulties are dyslexic.

These results are also consistent with the study by Snowling *et al* (2000), although at first sight there would appear to be differences. Snowling *et al* explored different methods and cut-offs producing estimates ranging from 8%, if a criterion of average verbal IQ was used, to 57%, using the criterion of literacy attainments below expectations based on non-verbal ability. Similarly our estimated incidence of approximately 20% would be reduced to about 10% if an IQ cut-off is used. We argue that in planning educational provision, it is not appropriate to use such a cut-off because hidden disabilities can occur at any level of ability. Indeed, it seems quite likely that those with hidden disabilities and additional difficulties with language and cognitive processing, as indexed by IQ tests, will find it even more difficult to make progress than those learners who are more able and who have additional compensatory resources and strategies to draw on.

Consistent with the above argument, it is interesting to note that there are relatively few who have a profile of dyslexia of the kind that is often seen in the university and other adult populations, where it is often the case that literacy skills are within the average range but lower than might be expected given other skills. The implication from this research is that it is those with dyslexia and other hidden disabilities who lack other cognitive and cultural resources who are more likely to be found amongst the prison population.

It is acknowledged that other factors contribute to literacy difficulties, but our argument is that the presence of a dyslexic pattern of strengths and weaknesses can be identified even amongst those who have other risk factors for educational failure and social exclusion.

The results of this study and the analyses reported show how the apparent inconsistency in previous studies may reflect differences in methodology and the framework for dyslexia that is used. Dyslexia is over-identified by simple interview and screening procedures and by equating it with poor literacy. It is under-identified if those with low IQ are excluded. Our results show overlaps between different patterns of hidden disability and these emphasise the need to take an individual and an inclusive approach.

RECOMMENDATIONS

On the basis of the findings from the Dyslexia Institute's study into the incidence of hidden disabilities in the prison population, we make the following recommendations.

1. Literacy Support

Planning of prison education should recognise that approximately 50% of offenders will need some support because of poor literacy skills. This will include:

- i. Direct teaching of key literacy and numeracy skills
- ii. Support in accessing other educational and vocational training programmes
- iii. Adaptation of general procedures and routines within the establishment to remove barriers that would exclude participation by those with hidden disabilities
- iv. Linking the literacy support to the working environment

2. Specialist Teaching

20% of the population will require specialist support.

The research suggests that 2 in 5 of those with literacy difficulties are dyslexic or show features of a hidden disability which will create a barrier to their

accessing learning/training and employment opportunities. These individuals will need to be given highly individualised support, including:

- i. Access to diagnostic assessments and support to individuals in understanding their strengths and weaknesses
- ii. Individual advice, guidance and support to create realistic action plans
- iii. Specialist teaching of literacy and numeracy skills
- iv. Teaching of strategies and techniques to minimise the impact of hidden disabilities in work and learning situations

3. Work Focus

Education services should be linked more closely to employment services to support and assist offenders into appropriate jobs and ensuring that they have the requisite skills.

4. Awareness and Training

To include:

- i. Awareness - All educational, training and resettlement staff need to be aware of the implications of hidden disabilities. Establishments should develop policies and practices to comply with 'dyslexia friendly' standards and similar standards for other hidden disabilities
- ii. Education providers should provide a systematic screening and assessment procedure, leading to individual action plans that support those with hidden disabilities and other individual needs. In practice, education providers will need to have access to specialist staff and to develop appropriate training
- iii. Those delivering education in offender settings should ensure that 50% of their staff are trained in the methods of literacy skills teaching and support programmes that are recognised as effective for dyslexic learners.

Dr John Rack
Head of Assessment and Evaluation
The Dyslexia Institute
March 2005

ACKNOWLEDGEMENTS

- **Funding:** This research was funded by the Learning and Skills Council.
- **Research Assistants:** Sam Collyer, Sarah Edwards and Clare Richardson contributed to the design of the questionnaire, they co-ordinated the arrangements for visiting the prisons and processed the data.
- **Interviews and Assessments conducted by:** Ros Lehany, Helen Graham, Andrea Manton, Kate Lutley, Pauline Welsh, Isobel Ericson, Ruth James, Sam Collyer and Clare Richardson.
- **Technical Advice and Support provided by:** Professor Margaret Snowling and Professor Cynthia McDougall of the University of York; Katherine D'Arcy Brown of Oriel Business Consultancy; Keith Hughes and John Orange of the Offender Learning and Skills Unit.
- **Prison Service staff** at the Yorkshire and Humberside Area Office and the eight prisons involved were particularly helpful. We particularly thank Vicki Read and Norman Heywood, and we especially thank John Orange for providing training and much encouragement.
- **Dyslexia Institute staff** have provided support and supervision and assisted with the development of the ideas. I particularly thank Kerry Bennett, Shirley Cramer, Margaret Rooms, Richard Drewe and Geoff Grant for comments on, and production of, the final report.
- **Project Director and report author:** Dr John Rack, Chartered Psychologist, The Dyslexia Institute

REFERENCES

Alm, J. and Andersson, J. (1995) Reading and Writing Difficulties in Prisons in the County of Uppsala. The Dyslexia Project, National Labour Market Board of Sweden at the Employability Institute of Uppsala.

Basic Skills Agency, *Basic Skills and Crime*, 2002.

Clark, D (2001) *Effective Regimes Measurement Research*, Home Office Prison Service unpublished paper.

Correctional Services of Canada, *Can Educating Adult Offenders Counteract Recidivism?* Research Report 22, 1992.

Davies, K. and Byatt, J. (1998) Something Can Be Done! Shropshire STOP Project: Shrewsbury.

Dyslexia Adult Screening Test (Fawcett, A & Nicolson). The Psychological Corporation DfEE, *Skills for life, The national strategy for improving adult literacy and numeracy skills*, 2001.

Fergusson, D.M & Lynskey, M.T. (1997). Early reading difficulties and later conduct problems. *Journal of Child Psychology and Psychiatry* 38, 485-497.

The Dyslexia Institute
The incidence of hidden disabilities in the prison population
March, 2005

Henderson, C (2004). Findings and Recommendations Arising from a Study into the Prevalence of Dyslexia amongst Inmates at HMP Brixton. The Dyslexia Institute, unpublished.

Haigler, K.O., Harlow, C., O'Connor, O. and Campbell, A. (1994) Literacy behind Prison Walls: Profiles of the Prison Population from the National Adult Literacy Survey. U.S. Department of Education: Washington, DC.

Klein, C. (1998) Dyslexia and Offending. Dyspel: London.

National Prison Survey (1992). Home Office Research Study 128

Rack, J.P., Snowling, M.J., & Olson, R.K. 1992: The nonword reading deficit in developmental dyslexia: A review. *Reading Research Quarterly*, 27, p. 29-53.

Rice, M. (1998) Dyslexia and Crime: Some Notes on the Dyspel Claim. Institute of Criminology, University of Cambridge: unpublished.

Rice, M., Howes, M. & Connel, P. (2002). The Prison Reading Survey. A report to HM Prison Service Planning Group. Criminology, University of Cambridge

Rice, M & Brooks, G. (2004). Developmental Dyslexia in adults: a research review. National Research and Development Centre: Institute of Education.

Reid, G. and Kirk, J. (2002) Dyslexia in Adults: Education and Employment. Wiley: Chichester.

Rosner, J. (1979). Test of auditory analysis (TAAS) in Helping children overcome learning difficulties : A step-by-step guide for parents and teachers (pp 77-80). *New York: Academic Therapy*.

Samuelsson, S., Gustavsson, A, Herkner, D, & Lundberg, I, (2000). Is the frequency of dyslexic problems among prison inmates higher than in a normal population? *Reading and writing*, 13, 297-12.

Samuelsson, S., Herkner, B. & Lundberg, I. (2003). Reading and writing difficulties among prison inmates: A matter of experiential factors rather than dyslexic problems. *Scientific Studies of Reading*, Vol. 7. no.1.

Snowling, M., Adams, J., Bowyer-Crane, C & Tobin, V. (2000). Levels of literacy among juvenile offenders: the incidence of specific reading difficulties. *Criminal Behaviour and mental Health*, 10, 229-241.

Social Exclusion Unit (2002) Reducing re-offending by ex-prisoners

Stanovich, K.E., 1986: Mathew effects in reading: Some consequences of the individual differences in the acquisition of literacy. *Reading Research Quarterly*, 26, p. 7-29.

Turner, M & Allchorn, L (2000). Dyslexia and Crime. *Dyslexia Review* Vol 12 No 1.

Wechsler, D. (1981) Wechsler Adult Intelligence Scale-Revised (WAIS-R). *Psychological Corporation: New York*.

Wilkinson, G.S. (1993) Wide Range Achievement Test (WRAT-3). Delaware: Wide Range Inc.

Zdzienski, D. (1997) QuickScan. Interactive Services Limited: Dublin.

**The Incidence of Hidden Disabilities
in the Prison Population
© The Dyslexia Institute**

First published 2005

Published by

**The Dyslexia Institute,
Park House, Wick Road,
Egham, Surrey TW20 0HH**

Reg Charity No. 268502

Web: www.dyslexia-inst.org.uk