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Reading Skills and Dyslexia in offending and non-offending adults

Samantha Louise Tett 2007

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Abstract

Reading Skills and Dyslexia in offending and non-offending adults

There have been a number of studies examining the reading abilities of prisoners (Alm and Andersson, 1995; Klein, 1998), and in particular the relationship between dyslexia and offending behaviour (Klein, 1998).

These studies have produced conflicting results with some attributing offending behaviour directly to dyslexia, and others suggesting that there is no link. There have been no studies comparing the reading skills of offenders with a non-offending matched sample.

In this study, 52 inmates who were remanded or sentenced to custody in a local category B prison for a range of offences, were compared to 32 non-offending job seekers in the community. The offending behaviour was measured by their meeting the diagnostic criteria for Antisocial Personality Disorder.

It was found that the reading ability and phonological skills of the inmate group were higher than the community control group. In addition to this, the inmate group were more likely to read on a regular basis, and had experienced different social disadvantages to the community group.

These findings suggest that there is no link between reading attainment and offending behaviour.

Introduction

Risk factors in Reading acquisition.

Defining Dyslexia.

Dyslexia has long been recognised as a brain-based disorder that has aspects of heritability and is on the continuum of language disorders (Orton, 1925). In researching this area, it is necessary to define the subject matter we are dealing with, however despite the wealth of literature on this disorder, there is yet to be a single definition agreed by researchers (Stanovich, 1994).

This is a very real issue because as Stanovich stated five years earlier, 'Differing definitions will have implications for which children will be classified as reading disabled'. This will be further discussed later, however, it is clear that with varying definitions, some children with very real difficulties are excluded by some dyslexia definitions, and sometimes do not receive the support in addressing their problems due to a definition lottery. The World Federation of Neurology (1968) stated that the term, Dyslexia, 'should be applied to all children who fail to read despite adequate intelligence, conventional instruction and socio-cultural opportunity' this view was rejected because of a lack of agreement on the positive signs of dyslexia, and because of the number of children it had excluded who had not experienced other difficulties (e.g. poor behavioural control), that could have affected their reading development. For these children, it provided no explanation for their reading difficulties.

Another problem with defining dyslexia is the lack of emphasis placed on empirical evidence as a basis for the definition and that policy makers are often unaware of the psychometric implications of definitions that are based primarily on educational politics rather than research evidence (Stanovich, 1989). It is easy to see how 'outside influences' and opinions can affect definition, rather than empirical evidence, when many are searching for a cause or reason for a child's difficulties in reading. A common lay view of dyslexia is that a dyslexic child is a creative individual who excels in most things other than reading and writing. It is understandable that people need to know why a child who appears to be developing normally in all other areas of cognitive development, would struggle with reading. It is important to remember that not all dyslexic children are like this, and it is vital that empirical research is the basis of any definition, so that children who are experiencing difficulties should have appropriate intervention, and are not excluded from support due to unsubstantiated viewpoints.

The most commonly accepted definition is the discrepancy definition (American Psychiatric Association, 1987). This states that there is a significant correlation between cognitive ability and educational achievement. Thus, there is a discrepancy between observed achievement and expected achievement. This achievement is usually based on the child's IQ (Stanovich, 1994) and the expected norms for that age group. The assumption made, without empirical evidence, was that the degree of discrepancy from the IQ alone was the crucial factor in

defining dyslexia. Rutter and Yule (1975) believed that the reading difficulties experienced by a child with reading-IQ discrepancy, were etiologically and neurologically distinct from those characterizing the reading-disabled child without IQ discrepancy. Thus, a child experiencing IQ-reading discrepancy would be considered to have a 'specific learning difficulty' (dyslexia), whilst children experiencing reading difficulties in the absence of reading-IQ discrepancy. These difficulties would be viewed as general difficulties, and would be referred to as 'garden variety' poor readers.

It is known that an individual's socio-economic status can impact upon their IQ. Taylor, Fletcher and Satz (1984) stated that a processing deficiency in language, which may be associated with reading problems, might in addition reduce verbal IQ scores. The role of social behaviour and specific information processing skills in reading acquisition are not taken into account within this theory. It was noted that the Wechsler Intelligence Scale for Children (WISC-R), does not provide a measurement for these aspects of functioning, and these are aspects of a child's adaptive functioning that could affect IQ. Similarly, Fletcher, Espy, Davidson, Rourke and Saywitz (1989) did not agree that most IQ scores, which represent combined measurements of several co varying abilities, could amount to a single measurement that represents potential.

Stanovich (1986) also highlighted problems with this approach, in particular that the discrepancy definition could yield false positives and

false negatives. 'False Positives' referred to children who may have reading difficulties alongside emotional or behavioural problems, thus their problems may be hindering their learning rather than there being an inherent difficulty in learning how to read. 'False negatives' on the other hand, may be children who have overcome their problems through remediation, so would no longer meet the criteria for specific reading problems, however continue to experience considerable problems with spelling and written work. This has been supported by the Mathew Effect'. This is reference to the biblical statement that 'to all those who have more will be given, and they will have in abundance: but to those who have nothing, even what they have will be taken away' (Matthew 13:12, The Bible). This effect was first described in relation to scientific productivity in Merton (1968), and has since been applied to reading attainment.

It has been observed in educational settings (Walberg and Tsai, 1983), that children with lower IQ scores, who would not normally be considered to perform well in reading skills, have improved their ability, with practice and more exposure to reading. A similar outcome was observed by Cook and Campbell (1979) who found that children who scored the highest at the beginning of treatment improved in a task compared to children with a lesser ability who are exposed to the same experience. Stanovich (1986) stated that the Matthew effect should be considered when examining the influences of initial reading experience on later reading attainment. He suggested a 'rich get richer' phenomenon where 'the very children who are reading well and who have good vocabularies, will read even more, learn more word meanings, and hence read even better. Children with

inadequate vocabularies, who read slowly and without enjoyment read less, and as a result have slower development of vocabulary knowledge, which inhibits further growth in reading ability'. Stanovich supports this hypothesis by citing studies such as Juel (1988) and Lundberg (1984), where it was shown that children reading at the lowest levels in their early school years, continue to read at the lowest levels later on in their schooling, whilst children reading at average or above average levels, earlier on, continue to read well over time. Van de Bos (1989) support this by showing a Matthew effect in children with learning disabilities who were experiencing reading acquisition difficulties, where IQ scores were shown to decline, as they grew older.

If then, a person's reading ability can improve with practice as illustrated by the Matthew effect, is there indeed such a thing as dyslexia, where there is a specific reading deficit? If there is a specific deficit, what could be the cause for it? The Phonological deficit model (Snowling 1995, 1998) is the most widely accepted theory for the cause of dyslexia. This states that dyslexic individuals have poor phonological skills and it is this that hinders reading acquisition, rather than simply a discrepancy between IQ and reading ability. Stanovich (1986) proposed dyslexia as a core phonological deficit. Thus skills close to the 'core' of dyslexia such as non-word reading and aspects of phonological awareness would be affected by this deficiency.

According to Ehri (1989) 'the individual differences in reading that are predicted by phonological awareness span the entire range of reading

skill, not just the lower end consisting of disabled readers. That is, high correlations reflect the fact that differences in phonological awareness are associated with accelerated reading as well as retarded reading, not just retarded reading'. Thus, the phonological deficit experienced by dyslexic readers is more pronounced than milder deficits experienced by more proficient readers who experience milder difficulties. This is supported by Stanovich and Siegel (1994) who found that phonological deficits are related to poor reading performance irrespective of IQ. When a child learns to read, they develop a set of mappings between orthographic and phonological information. It is this system of mapping that allows a child to make the connection between written words to produce the spoken output. This is what enables a child to make assumptions about words they have explicitly been taught to read (Plaut, 1996). With this in mind, there is impairment in the development of this system within dyslexic readers where they have difficulties connecting written word with spoken words, and later in generalizing in order to read new words (Rack, Snowling and Olson, 1992).

It has been hypothesized from this information that children who are dyslexic, have poor phonological skills prior to learning to read, thus the way that they code information phonetically is less effective than normally developing children. This in turn produces problems with verbal short-term memory, nonword repetition deficits, poor phonological learning of new verbal information, word retrieval and rapid naming problems (Snowling, 2000). It has been shown in a number of studies of

reading disabled children that children with poor phonological skills are often poor readers (Snowling, 1981, 1995; Stanovich and Siegel, 1994). Seymore (1987) stated that 'A standard proposal...is that the contribution of phonetic segmentation might be mediated via the establishment of a system of grapheme-phoneme correspondences'. Stanovich (1986) found that dyslexic children experience difficulties in applying orthographic-phonological conversion rules. As stated in Beaton (2005), if a child encounters difficulty in segmenting a word into its constituent parts, then they will be unable to learn that particular letters or letter combinations represent particular sounds. This in turn will hamper their development of a phonological reading strategy.

The definition of dyslexia we shall use in this study, is that dyslexia occurs when there is a discrepancy between an individual's performance IQ and expected reading ability, in the presence of a phonological skills deficit. This is because, it is accepted that performance IQ is not affected by educational experience or socio economic class (Sattler, 2006), thus it would be fair to use this as an expected measure of achievement in individuals who have had limited educational experience. This also prevents the assumption being made of an individual's expected level of reading attainment for an individual's chronological age, without taking into account their actual ability. A deficit in phonological processing must also be present for such a diagnosis, as this will illustrate whether or not an individual has developed the necessary level of phonological processing in order to learn how to read effectively. With this definition in

mind, dyslexia would be considered a specific unexpected reading disability.

Dyslexia and offending behaviour

There have been a limited number of studies examining the prevalence of dyslexia within the forensic population, and less still of the impact of this upon behaviour. Academic failure, especially difficulties in reading, is often cited as a link to offending behaviour in adolescence (Maguin and Loeber, 1996). It has even been suggested that basic reading skills may be associated with recidivism. Katsiyannis and Archwamety (1999) compared recidivists with non-recidivists and found that non-recidivists had higher intelligence scores, were older at the time of their first offence and performed at a higher level on educational measures. Similarly a study by Malgrem and Leone (2002) found that 'While illiteracy and low reading skills are not necessarily direct causes of delinquency- reading illiteracy through quality education in correctional facilities has been shown to reduce recidivism'.

It is widely recognised that reading difficulties are common within prison populations and certainly over-represented when compared to the general population (Alm and Andersson, 1997; Rack, 2005). A view frequently expressed within the literature is that the cause of the reading difficulties of offenders is due to dyslexia (Klein, 1995; Davis and Byatt, 1998). If this is the case, then it would be fair to assume that dyslexia has an impact on behaviour, with particular relation to antisocial behaviours. It would also be fair to expect such a significant condition that elicits such a

powerful effect on behaviour to also impact upon the development of the individual's personality as it is recognised that dyslexia is an enduring condition that continues into adulthood. Wheldall and Watkins (2004) in a study of the literacy levels of male juvenile offenders suggested that there were a number of possible hypotheses in relation to the higher incidence of reading disability within offending populations. These include:

- 1) School failure hypothesis: this suggests that a lack of success in school impacts upon an individual's self-esteem causing frustration, acting out behaviour, truancy and delinquency. (Cornwall and Bawden, 1992; Hayes, 1997; Larson, 1988).
- 2) Differential Treatment Hypothesis: this implies that juveniles with literacy problems are engaged in the same degree of delinquency as their more literate peers, and it is the criminal justice system, which is harsher towards them, possibly because of their previous school performance (Cornwall and Bawden, 1992; Malmgren, Abbott and Hawkins, 1999).
- 3) Socio-demographic hypothesis: this suggests that parents from deprived backgrounds are more likely to have children who display delinquent behaviours. Due to literacy problems being more prevalent in lower socio-economic groups, this in turn would suggest that there is a higher proportion of reading disabled and offenders within disadvantaged groups (Hayes, 1997).

- 4) Response bias hypothesis: this proposes that both learning and non-learning disabled children participate in crime to the same extent, but those with higher literacy skills are better able to 'get away with it', and conceal their involvement than those with lower skills (Hayes, 1997).

Much of the existing evidence in supporting a causal link between dyslexia and offending concentrates on the role that self-esteem plays in this process. Many of the studies discussed here suggest that many young people when faced with difficulties learning to read will begin to display frustration at not being able to develop these skills. As they grow older, this frustration continues and may lead to aggressive and antisocial behaviour, often accumulation in exclusions from school and ultimately mainstream education. This negative behaviour then continues outside of the school, and will often result in persistent offending and eventually a custodial sentence. This paints a grim picture, given that this belief implies that dyslexia is constitutional in nature and downplays the role of experiential and environmental factors on development.

Riddick et al (1999) who examined the difference in perceived self-esteem of two groups of students within a higher education- the experimental group, which consisted of dyslexic students, compared to controls who did not have dyslexia. Low levels of self esteem and high levels of anxiety was found within the dyslexic group compared to the

controls who exhibited high levels of self-esteem and were more positive about their academic achievements. Kirk and Reid (2001) commented that if this were true of those who had shown a degree of academic achievement by gaining a place in higher education, how much more profound would this difference be if compared with young offenders in a custodial establishment. Kirk and Reid (2001) stated that 'today the relationship between dyslexia and antisocial behaviour is arguably one of the most controversial in the field of dyslexia'. This is because if it is true that there is a causal relationship between dyslexia and offending, then it may be that this alone pre-disposes individuals to offending behaviours. While this study does not go so far as to diagnose dyslexia within its participant group, it does suggest that dyslexia has a significant impact on offending behaviour. They allude to the skill and training of prison staff when dealing with such individuals, and being able to challenge the challenging behaviour of such a client group. In this study a computerised self-assessment screening tool was used which examined 8 areas (out of a potential 24) that the authors considered to be particularly informative in indicating dyslexia. These areas included: sequencing, memory, family history, general language, self-esteem, concentration difficulties, organisational difficulties and laterality difficulties.

There were fifty inmates who participated in this study, and of this group it was suggested that 50% displayed borderline indicators of dyslexia.

Alm and Andersson (1997) examined the incidence of reading difficulties within a sample of Swedish prisoners and found that 64% were significantly handicapped by literacy difficulties of some kind. In addition

to suggesting a higher prevalence rate, they state that the cause of offending may relate to difficulties on remembering long explanations, a weakness frequently observed in dyslexics. Thus, those suffering from dyslexia may find the world 'inconsistent and difficult to handle' as a result of not remembering what they are permitted or forbidden from doing. This sentiment was reflected by Cox (2001) who attributed his criminal convictions to dyslexia and ADHD. Two other studies of British offenders- evaluations of the STOP project (Davies and Byatt, 1998) and Dyspel project (Klein, 1995) produced similar high incidence of dyslexia, 31% and 38% respectively. Given that these rates are considerably higher than the population norm of between 2% -15% (Parliamentary Office of Science and Technology, 2004), this would suggest that dyslexia plays a significant role in forensic populations.

Upon examining that diagnostic information from these studies, it is apparent that all are using different definitions of dyslexia in researching this subject area. In some cases, data analysis is being completed using supporting evidence from other studies that have considered an alternative definition. A recent study by the British Dyslexia Association (2005) went so far as to say that classroom difficulties from some children, formed a 'route to offending'. These difficulties contributed to low self-esteem, poor behaviour and school exclusion, which ultimately leads to offending, and that dyslexic children would be more susceptible to this path. This research examined the causes of dyslexia and its relationship of lifestyle risk factors. Even though this study used a screening tool

which does not claim to provide a diagnosis for dyslexia rather indicators for the disorder, it nevertheless implied that the 'dyslexic' young people within the sample were experiencing their difficulties as a direct result of dyslexia. The difficulties experienced by 'non-dyslexic' offenders were attributed to social and emotional disadvantage. If such a serious suggestion as dyslexia being a precursor to an offending lifestyle, it is important that a consensus is reached on what definition is going to be used. While all of the research has given some consideration as to the definition they use, in many studies of prisoners, the amount of time that they are given to test inmates is a common reason given as to why more comprehensive data is not gathered (Snowling et al, 2000).

Wheldal and Watkins (2004) argued that the notion of attributing offending behaviour to a single causal factor- poor reading attainment- to be over simplistic and stated 'it would also need to be shown convincingly that the typical literacy levels of young offenders are so low, in comparison to their peers, as to make it difficult for them to cope in the world other than their criminal activity. They examined the reading ability of 68 males who were on remand within a secure care setting, in order to establish the extent to which their low reading attainment affected their day-to-day life. The aim of the study was to examine the notion of 'functional literacy' referring to this as the minimum level of reading skill necessary to engage in work and social activities. It was found that 75% of their sample were able to read at or above the functional literacy level, and indeed 70% were functioning at well above this level. The participant's self rating of their ability and their actual scores were highly

correlated, implying that they were able to gauge their level of reading ability in comparison to their peers accurately. This evidence would suggest that in the majority of the cases in this study, that the participant's level of functioning was sufficient for day-to-day functioning. This would imply that this level of reading ability should not cause the feelings of frustration and alienation, ultimately leading to offending behaviour, that has previously been described by other authors.

There are a number of studies of dyslexia within prison samples which suggest that the prevalence rate of dyslexia within such populations is no higher than the general population (Rice, Howes and Connell, 1998; Samuelsson, Herkner, Nykping and Lundberg, 2003). Rice, Howes and Connell (1998) in a report to the H M Prison Service Planning Group, found little evidence to support that prisoners are less literate than the general population. They concluded that the cause of reading difficulties within this sample was due to 'inadequate instruction, emotional disturbance, low motivation and low aptitude'. Samuelsson, Herkner, Nykping and Lundberg (2003) defined dyslexia as those experiencing reading difficulties who were also exhibiting phonological decoding difficulties. They compared the word decoding, reading and writing abilities of a sample of inmates from a medium secure prison and compared the results to the expected norms for 12 year olds. This comparison group was chosen because the majority of the inmates had only attended education up to the age of 12 years. Svensson, Lundberg and Jacobson (2001) looked at the prevalence of reading and writing

difficulties among juvenile offenders, and whilst a high level of deficiency was found among this group, 11% were defined as experiencing serious reading and writing difficulties. In another study, Svensson, Lundberg and Jacobson (2003) took this a step further, to examine the nature of reading difficulties within offending populations, in particular, whether or not the reading difficulties experienced were due to dyslexia as defined by deficiencies within phonological processing. They examined a sample of male and female inmates of juvenile institutions and this yielded the same result as the earlier study with 11% meeting the criteria for dyslexia. Similar results were found by Snowling, (2000), where the prevalence of dyslexia ranged between 8% and 57% depending on the definition of dyslexia applied.

In all of these studies the role of early living environment was described as contributory factor to the reading and writing difficulties experienced by offenders. Svensson, Lundberg and Jacobson (2001) concluded that all of the inmates regardless of whether they were defined as dyslexic or not had been living in sub-optimal conditions from a pre-school age. Such factors as parental neglect, lack of emotional and cognitive support and cultural deprivation, which are known to impact upon conduct problems applied to all of the inmates within their study. This suggests that the conduct problems experienced by this group begin long before reading acquisition, given that most children begin to read at around 5 years of age (Ehri, 1995), thus are not directly related to this particular difficulty. If indeed this is correct, then this would suggest that there are other factors relating to the offending behaviour, possibly in combination with the lower

literacy attainment as a contributory factor.

Whilst there is no explicit evidence to suggest specific personality traits pertaining to dyslexic individuals (as suggested in the 'Susceptibility Hypothesis'), there is some evidence which suggests that Attention Deficit Hyperactivity Disorder (ADHD) and Conduct Disorder may play a role in these particular traits, and it is a complex combination of interaction between these two disorders in addition to lower literacy skills which may be that causal factor in offending (Dåderman, Meurling and Levander, 2006). It has been recognized in much of the literature relating to ADHD that there is a high co-morbidity rate of ADHD and conduct disorder (Pliszka, 2006), and whilst the direct relationship continues to be examined, what is clear is that both disorders are frequently observed within offending groups (Babinski, Hartsough and Lambert, 1999).

ADHD is one of the most common disorders in child and adolescent psychiatry, with prevalence rates of between 3-9% in the normal population (Biederman et al, 1993; Wender 1995). It is characterised by attention difficulties, motor hyperactivity and impulsivity. Conduct Disorder (CD), has a prevalence rate for males and females of 7.4% and 3.2% respectively (National Statistics, 2004). It is described as 'a repetitive and persistent pattern of behaviour in which the basic rights or major age-appropriate societal norms or rules are violated' (APA, 1987). It is recognised that these two disorders commonly co-occur (Silberg et al, 1996; Seiderman et al, 1998).

It is difficult to ascertain the extent to which each disorder has on

socialisation, as in the case of those experiencing ADHD it is recognised that they are less likely to attain expected academic achievements in relation to their intellectual capacity. Similarly, one of the characteristics of conduct disorder is frequent truancy and academic underachievement. Indeed it is recognised that almost 50% of children who suffer with ADHD will in addition develop conduct disorder (Jensen, Martin and Cantwell, 1997). Rosler, Retz, Petra, Thome, Rosler (2004) examined the prevalence of ADHD and co morbid disorders within a sample of 129 German prison inmates and compared them to 54 controls. They found that 16.3% of the prisoners compared to 1.9% controls had co-morbid ADHD with CD. Within this study, substance misuse and alcoholism were also referred to as conduct problems, 85.5% of the prison sample exhibited substance and alcohol abuse and dependence compared to 0% of the controls.

Sujanski (1998) examined the relationship between dyslexia, ADHD and social competence by examining 123 children who attended mainstream school and were aged between 8-11 years old. It was found that children diagnosed as dyslexic showed significantly more behavioural problems. This group were found to be less popular and experienced lower peer acceptance than the other children in the study, and this was attributed to the negative interaction that hyperactivity and poor impulse control had on the expression of social behaviours. In conclusion Sujanski suggested that educational planning for dyslexic children should not only include work to remediate their reading difficulties, but also provide social skills training to improve peer relations.

Whilst this is fairly weak support for the notion that dyslexia and ADHD negatively influence behaviour, this is supported by Dåderman, Meurling and Levander (2004) who stated that 'the prevalence of dyslexia and ADHD is markedly increased among those who are sentenced for criminal offences'. Dåderman, Meurling and Levander (2004), examined a group of 10 males who were serving sentences for rape in a Swedish forensic secure hospital. The aim of the study was to establish the prevalence of dyslexia and ADHD in this population. The DSM IV definition of dyslexia was used to provide a diagnosis of dyslexia, and this definition refers to dyslexia as a disorder of both reading and written expression. It is interesting to note that when the backgrounds of the participants were researched prior to the study, not one of the participants had received a diagnosis of either ADHD or dyslexia.

The experimental groups results were compared to the results obtained from two previous studies, which provided two comparison groups. These were a group of Swedish men (representative of the normal population) who had completed tests in non-verbal reasoning, decoding of words, spelling and perceptual ability. The other comparison group consisted a group of Swedish inmates who did not have a diagnosis of dyslexia and had completed tests assessing non-verbal reasoning, visuo-spatial capacity, decoding of words and spelling and reading aloud. The experimental group were tested for dyslexia by using a range of academic tests normally used to assess dyslexia in the normal Swedish population. In order for participants to gain a diagnosis of dyslexia, they

had to fulfil both diagnostic criteria of disorder of reading and written expression. This disorder was reflected by participants performing significantly below the expected level in three of the four academic tests of ability presented to them. These tests included measures of speed and comprehension of reading, spelling, reading aloud and decoding of words. Participants also completed a range of neuropsychological tests to establish levels of visuo perceptual speed, verbal ability, non-verbal IQ, visuo-constructive functions and visual and learning memory. Participants were also interviewed in relation to their educational history and attainment. The results concluded that of the ten participants, seven of them fulfilled the criteria for dyslexia. Interestingly, the dyslexic group performed higher than the Swedish population controls on the non-verbal IQ task. They showed a lower ability than this group in the tests of reading speed and perceptual ability.

When compared to the non-dyslexic inmate comparison group, they performed at a similar level in tests relating to verbal learning and memory, and scored higher than them in tests assessing memory retention. While in the interview all seven of the dyslexic experimental group stated that they had been offended by teachers in school, it is difficult to see what specific impact this had on their behaviour as compared to the inmate control group. Despite this, the main theme of the paper is to illustrate that dyslexia and ADHD are not being diagnosed and thus remedied in childhood, and suggests that it is this lack of treatment which is a vital factor in future offending behaviour. It suggests that this

lack of emphasis on ADHD and dyslexia will have an impact on how offenders are supported. Thus individuals who work with offenders who are dyslexic (e.g. social workers) may not have the level of training to understand the frustration that these individuals may suffer as a result of their dyslexia. Again, the study does not consider that causes of 'frustration' of the offenders control group that lead them into custody.

Conduct disorder can form part of the continuum into adult antisocial behaviour, and indeed a positive diagnosis of conduct disorder before the age of 15, in order for an antisocial adult to be diagnosed with ASPD,. Much of the information gleaned about the progression of CD to ASPD was gained from the Robins (1966) study. The results of this longitudinal study found that while a large proportion of the participants followed up had developed ASPD, a proportion did not.

Most recent research focussing on CD examines how young people develop CD in the first place, what are the predictors for future ASPD in CD children, and what prevents some CD children from progressing onto ASPD. In Frick, Cornell, Barry, Bodin, Dane (2003), a table outlining the risk factors associated with CD was proposed (Table 1) .

Table 1: Risk Factors Associated with Conduct Disorder

Summary of major risk factors associated with Conduct Disorder	
<i>Dispositional risk factors</i>	<i>Contextual risk factors</i>
Neurochemical abnormalities	Pre-natal exposure to toxins
Autonomic irregularity	Early exposure to poor quality child care
Birth Complications	Parental psychopathology
Difficult child temperament	Family conflict
Impulsivity	Inadequate parental supervision and discipline
Preference for dangerous and novel activities	Lack of parental involvement and neglect
Reward dominant response style	Peer rejection
Low verbal intelligence	Association with deviant peer group
Academic underachievement	Impoverished living conditions
Deficits in processing social information	Exposure to violence

The purpose of this table to was to summarise the factors associated with the development of conduct disorder. Frick stated that all potential risk factors had to be viewed from a culminative risk perspective. That is, the number of risk factors present is more important than the type of risk factor. From this perspective, any one risk factor would make a child more vulnerable to developing CD, but when in combination with a number of risk factor, this would significantly increase the risk of antisocial behaviour . This model is similar to the 'Risk and Protective Factors associated with offending' (Table 2), that was proposed by the Youth Justice Board (2005).

Table 2: Youth Justice Board ‘Risk and Protective Factors associated with offending’

Risk Factor
Aggressive Behaviour (including bullying)
Low achievement beginning in primary school
Family history of problem behaviour
Alienation and lack of social commitment
Peer attitudes condoning problem behaviour
Parents condoning problem behaviour
Family conflict
Lack of commitment to school (including truancy)
Friends involved in problem behaviour
Availability of drugs
Early involvement in problem behaviour
Community disorganization
Poor parental support and discipline
School disorganization

The above risk factors were documented in terms of prevalence, however the YJB were keen to note that “the fact that one risk factor ranks higher in this table than another does not necessarily mean it is a more serious problem; the table shows instead how widespread a problem it is”. The YJB proposed that it is possible to predict future offending when the above risk factors are taken into account as well as the impact of protective factors (e.g. good relationship with parents, positive aspects of school life and positive recognition from teachers). While the YJB work does not directly link the risk factor with risk of CD and persistent offending, clearly some of the ideas surrounding these concepts are addressed within this work.

Frick (2004) discussed the view that there are various subtypes of CD, which differ due to their developmental pathway. He makes the distinction

between children who begin to show severe conduct problems in childhood and those whose antisocial behaviour occurs at the onset of puberty (Hinshaw, Lahey and Hart, 1993). The distinction between these two groups has led to theoretical models that propose different causal mechanisms operating across the different groups. Moffitt (1993) suggested that children in the childhood onset group develop antisocial behaviours through a 'transactional process involving a difficult and vulnerable child (e.g. impulsive, with verbal deficits with a difficult temperament) who experiences an inadequate rearing environment (e.g. poor parental supervision, poor quality schools). This transactional process then disrupts the child's socialisation, which then leads to poor relationships both inside and outside of the family. The resulting poor socialisation then hinders the child's future development across multiple developmental stages.

The development of antisocial behaviour in adolescence onset group is viewed differently. It is essentially seen as an exaggeration of the normal adolescent development process. In an attempt to gain autonomy and a self-identity, most adolescents will 'push the boundaries'. In the case of adolescent-onset CD, this process has been taken even further by the young person by engaging in delinquent behaviours in an attempt to gain a subjective sense of maturity. Such behaviours are displayed in the presence of, and encouraged by an antisocial peer group. As this behaviour is viewed as an extension of normal adolescent development, the associated antisocial behaviours are unlikely to persist beyond

adolescence. Despite this, some young people will suffer future impairments as a result of their antisocial behaviours such as criminal record or substance misuse. This form of CD however does not cause enduring behavioural problems (Moffitt and Caspi, 2001).

Another distinction of CD subtypes has been suggested where young people display a more severe and aggressive pattern of behaviour that usually seen in CD cases. Such young people have been found in samples from Juvenile forensic facilities (Caputo, Frick, Brodsky, 1999; Silverthorn, Frick and Reynolds, 2001), outpatient mental health clinics (Silverthorn, Frick and Reynolds, 2001), and school-based samples (Frick, Bodin and Barry, 2000). This group differ from other CD samples because they display higher rates of callous and unemotional traits, such as lacking empathy and guilt. CU CD (callous-unemotional conduct disorder) children tend to display overt aggressive behaviours either in response to real or perceived provocation, in an impulsive manner to achieve a desired outcome, or in a pre-meditated fashion in order to 'right a wrong'.

Frick, Cornell, Barry et al (2003) studied a group on non-referred school children and found that children with CU traits and conduct disorder showed more aggression and overall more instrumental aggression than other conduct disordered children. Other characteristics that have been found in CU CD individuals, is a preference for novel, exciting and dangerous activities (Frick, Lilenfeld, Ellis, Loney and Sliverton, 1999). These children have been shown to be less reactive to threatening and

emotionally distressing stimuli than other antisocial children. They are also less sensitive to the cues of punishment, especially when a reward-orientated response is primed (Frick, Cornell, Bodin et al, 2003). This has been shown in social situations where high CU children who emphasise the positive aspects of solving peer conflicts with aggression in order to achieve their goal, and de-emphasise the punishment for doing this. It is as if the potential outcome for reward is the all important factor, and providing this is met, then this out ways all of the potential negatives of punishment.

As you will read later, this way of thinking is closely entwined with adult ASPD patients whose primary concern is meeting their own needs, with no thought at all for the needs of others. The lack of emotional responsiveness to negative emotional material, and lack of sensitivity to cues of punishment coupled with the need for novelty and excitement are all characteristic of a temperamental style which has been labelled variously as low fearfulness, low harm avoidance, low behavioural inhibition, and high daring. Various hypotheses have emerged as to how this temperament style is linked to the development of conscience. It has been suggests that if a child is of a temperament where the sensitivity to the negative cues of punishment is low, then the feelings of guilt associated with antisocial acts can be impaired (Kagan, 1998; Kochanska, 1993). Similarly, CU CD children are less responsive to parental socialisation practices than other CD children (Oxford, Cavell and Hughes, 2003). With this in mind, it is possible that despite any

intervention offered in an attempt to prevent the young person persisting in a pattern of antisocial behaviour that will accumulate in an adult ASPD diagnosis, their socialisation does not allow them to take on board new skills when dealing with challenging situations. One possible way of addressing this grim picture is to look at the risk factors associated with CD, to find if addressing these could encourage a better prognosis for CD children.

Risk factors and CD.

Many retrospective studies of predictors of adult ASPD have found childhood CD to be the best predictor of this outcome. Fonbonne, Wostear, Cooper, Harrington, and Rutter (2001) followed up 60% of a sample of a previous study of children who had attended a psychiatric clinic. As children, the entire sample had met an unspecified definition of depression, with about half also meeting an ad-hoc definition for conduct disorder. In adulthood, 45% of the sample who were said to have diagnoses of depression and CD met the criteria for ASPD, and this was compared to only 1% of the participants who as children were diagnosed with depression only. Prospective studies conducted in this area have yielded similar results, and unfortunately, most have begun in adolescence rather than childhood. This only, allows us to examine CD, which is apparent in adolescence (and thus could be attributable to 'adolescent-onset' CD, rather than a possible more enduring behavioural problem).

Rey, Morris-Yates, Singh, Andrews and Stewart (1995) examined 145 clinic-referred adolescents (mean age 13.7 years) and used unstructured clinical interviews to diagnose DSM III CD in adolescence. These participants were followed up at mean age 19.6 years and were interviewed using unstructured clinical interviews to diagnose DSM III ASPD. It was found that the adolescents with CD were more likely at follow up to meet the criteria for ASPD, than those without CD. Lober, Burke and Applegate (2005), however aimed to predict future ASPD from clinical assessments conducted in childhood. They used the data from a previous study (Development Trends Study), which included assessments of 177 males who had been referred to one of three mental health clinics, when they were aged between 7 and 12 years. The results of this study confirmed Robins 1966) finding of an association between the number of childhood CD symptoms and ASPD in adulthood. It was found that the odds of developing subsequent ASPD were 37% greater at each higher number of childhood CD symptoms. While these results do not confirm the existing view that childhood CD alone is a good predictor of ASPD, it has implications for providing appropriate interventions in attempting to prevent this outcome.

Lahey et al (1995) stated that by applying this theory to all cases of childhood CD, you would get relatively few 'false negatives' (children who do not meet CD criteria but become ASPD anyway). This would however trigger 'false positives' (children who meet criteria for childhood CD, but do not go on to become adult antisocials). If intervention is provided to CD children, it must be appropriate and target where it will achieve

benefits. Thus it is necessary to examine other predictive factors so that this can be achieved. They suggested that a way to reduce false positives maybe by taking into account SES and types of CD behaviours. Among the children in this study who met the criteria for CD, those from a higher SES were less likely to meet criteria for ASPD as adults (20%) compared to those from lower SES (65%). When SES was controlled, each additional covert CD symptom was associated with 89% risk of progressing to ASPD. It was felt that this may reflect the definition of ASPD where only one of the nine behaviour symptoms relate to aggression, while there are three criteria relating to covert antisocial behaviours. It maybe that covert conduct problems (such as deceiving others) may predict covert antisocial behaviours better than overt childhood CD problems. In balancing this, it is important to note that the number of aggressive CD symptoms fails to improve the prediction of ASPD in boys who meet the diagnostic criteria for childhood CD.

A 4-year longitudinal study (Lahey, Hart, Loeber, Aopplegate and Frick, 1995) was conducted to examine the natural history of CD, and outcomes for the young person when they reached adulthood. While "conduct disorder is conceptualised as a disorder which is usually chronic" (Kazdin 1997), it was noted by the researchers that evidence suggested it is only a moderately persistent disorder. It has been found in some research that approximately half of youths at time one did not meet the criteria for the disorder at time two. It was also suggested in some research, which examined the stability of antisocial behaviour, did not distinguish between

those who had exhibited a single delinquent behaviour compared to those who were persistently delinquent. It was felt that many past studies had included childhood CDs who did not engage in enough antisocial behaviour, to meet the criteria in DSM III R.

In a review of related research Loeber et al (2000) found that nearly all of the available studies had only reassessed participants a single time, after intervals of four years or more. This leaves many gaps in the information surrounding CD, its persistence and ongoing development into adult ASPD.

A history of conduct disorder is necessary in order to meet the diagnostic criteria for Antisocial Personality disorder, and indeed a high proportion of conduct disordered children will go on to develop ASPD." An essential feature of ASPD is a pervasive pattern of disregard for and violation of, the rights of others, that begins in childhood or early adolescence and continues into adulthood" (DSM IV, 1994). This statement may well account for the fact that of all the personality disorders, ASPD is one of the most studied within research literature (Moran, 1999). This is all the more remarkable given that it is a disorder, which affects a small proportion of the general population (2-3%, Bland 1988: Robins and Rieger, 1991).

It is agreed that there are higher prevalence rates among the following groups:

- 1) Males (estimates between 6:1 and 8:1, male: female)

- 2) Younger age groups (25-44 in Epidemiological Catchment Area Study)
- 3) The poorly educated- the odds of being diagnosed with ASPD when leaving school at 11 was five times that for those remaining in education until age 15).

As we have previously discussed, some individuals who present with Personality Disorder may not agree that there is anything wrong with them "Some patients report painful inner experiences but others may not even agree that they have a pathology" (Paris, 1998). With this in mind, it is surprising that so much resource has been placed into this minority group, who may not feel any personal suffering. Could the answer to this lie in the direct, frequent negative effects felt by society as a result of this group's disorder? ASPD is significantly represented within prison populations, with prevalence rates ranging between 40-60% (Moran, 1999), and it is the most common personality pathology within UK male prisoner populations (63% Male remands, and 49% male sentenced).

The definition of ASPD and the emphasis it places on antisocial acts means that it overlaps with criminality. This is unfortunate as the ASPD diagnosis has been viewed by some as an attempt to 'medicalise' criminal behaviour, as there are also examples of 'antisocial' individuals excelling in areas other than criminality (these will be discussed later). It is interesting to note from the conclusion of the ECA data, that the most common predictors of ASPD was not a significant arrest record, rather employment difficulties, violence and marital problems. ASPD is an

enduring lifelong condition, and on the whole the behaviour of individuals diagnosed with ASPD does not improve over time (APA, 1987).

Most of the information gained on the natural history of ASPD comes from Robins's (1966) classic study of children referred to a child guidance clinic. The data gathered from this study, formed the basis for the criteria for Sociopathic Personality Disorder (criteria used prior to ASPD). Robins found in her follow up study that 30 years following their initial referral (when the participants would be in their fourth or fifth decade), that 12% of antisocials were in remission, 27% showed a greatly reduced propensity to antisocial behaviour while 60% showed little or no improvement.

In addition to this, she also concluded:

- 1) Adult antisocial behaviour requires childhood antisocial behaviour as a pre-cursor. In her follow up study 95% of males with four or more adult symptoms, had at least one childhood symptom (Robins, 1991).
- 2) Most antisocial children do not become antisocial adults. In the original study, only 27% males showing 3 or more childhood symptoms also showed 4 or more adult symptoms. This suggests that a small proportion of the original group went on to become antisocial adults

- 3) The diversity of antisocial behaviour is a better predictor of adult antisocial behaviour than any particular behaviour.
- 4) Adult antisocial behaviour is better predicted by childhood behaviour than family background or social class.

Another study conducted by Black et al (1995) showed a similar lifelong prevalence from the disorder. They conducted a follow up study of 71 patients discharged from an Iowa Psychiatric hospital, who at their time of admission had met the DSM III criteria for ASPD. The follow up study consisted of the administration of the National Institute of Mental Health Diagnostic Interview Schedule and completion of a semi-structured interview to review the participant's life and which focussed on the symptoms of ASPD. Of the original 71 participants, this study managed to contact 36, and 26 of these agreed to participate in providing follow up data. Within this sample, they found that over a third (34.8%) had lived in more than 12 towns and had moved more than 6 times in the past 10 years (30.4%). While the majority had graduated from high school (56.5%), only 17.4% had graduated from college. All of the interviewed participants had been married and of this sample, 39.1% had been married more than twice. Surprisingly 47.8% reported being cruel to their spouses. The majority of this sample had children, and several reported that their children had behavioural and learning problems. Also reported were issues with frequent lying or substance misuse problem, both of these being characteristic of an antisocial personality.

It has been suggested that ASPD carries with it an increased risk of substance misuse and self harm behaviours than the normal population (Moran, 1999), however other studies provide conflicting evidence. In a study of ASPD and Borderline Personality Disorder (BPD) and risk taking in a group of heroin users (Darke et al, 2003), it appeared that ASPD was related to attempted suicide, lifetime overdose risk, depression and psychological stress. When this data was further analysed and the sample divided into two groups- those presenting exclusively with ASPD, and those with a co morbidity of ASPD and BPD, substantially different results were yielded. In this case, the risk of suicide and psychopathology was no different between the pure 'ASPD' group and the 'no disorder' control group.

Conflicting evidence is seen in a study conducted by Goodwin & Hamilton (2003), which examined the co morbidity of ASPD and anxiety disorders and risk of suicide associated with these conditions. They compared the onset of ASPD to the development of anxiety disorders, and stated that the onset of anxiety disorders is usually early on in life, and is frequently followed by substance misuse disorders. This was felt to be due to the self-medicating anxiolytic effects of alcohol. They hypothesised that anxiety disorders may be related to ASPD by similar mechanisms. They believed that it is possible that some antisocial behaviour develops as a way of coping with anxiety among young people who do not have the emotional skills that enable them to solve problems and manage frustration in more effective ways. Thus, such individuals display

antisocial behaviours as a means of coping with difficult circumstances.

The results found that in this sample, there was a 3.3% lifetime prevalence of ASPD, 9.4% of conduct disorder that did not develop into ASPD, and 23.9% for anxiety disorder in the absence of ASPD. While 54% of adults with ASPD met the criteria for lifetime anxiety disorder, after all data was adjusted for demographic and co-morbidities, only social phobia, alcohol dependence and substance dependence were associated with increased likelihood of ASPD.

Despite the acknowledged relationship between childhood conduct disorder and reading difficulties, and the reading difficulties of offenders, it is surprising that no research has been completed on ASPD. With the high proportion of prisoners fulfilling the criteria for ASPD and high incidence of reading difficulties within this population, it is possible to examine whether or not dyslexic individuals do indeed have traits that make them susceptible to offending and antisocial behaviours. It would be fair to expect that while dyslexia is acknowledged as an enduring condition, that such traits would be observed, if indeed they exist within the 'grown up' children who had experienced academic and conduct difficulties in their earlier years. Thus, the purpose of this study is to examine whether or not the incidence of dyslexia where there is a presence of phonological difficulties is higher within the prison population than the non-offending community. This will be achieved by examining the reading and phonological skills of a prison sample who meet the criteria for ASPD and comparing them to a matched community sample who do

not meet the criteria for ASPD. Similarly does the presence of ASPD have any impact on dyslexia or are the reading difficulties experienced by this group no different to the general population. This is important as ASPD is indeed a contributory factor to offending behaviour and this diagnosis will allow the researchers to determine offending behaviour as well as the effect that reading attainment may have had on this.

In this study, the relationship between reading attainment and offending behaviour was examined. This study is unique in that it compares a group of adult offenders, with a non-offending community sample, thus examines not only the results of both groups, but also possible contributory factors for such results.

Methodology

Participants

The experimental group consisted 52 males who were sentenced or remanded to custody by the courts, for offences ranging from theft through to murder. The mean age was 26.2 years (range 21-35). They were recruited from a category B local prison, as there is a higher prevalence of ASPD within prison populations (Moran, 1991).

Participation in the study was on a voluntary basis, and the tests were conducted in an interview room away from the mail wing area of the prison.

The control groups were 34 male job seekers who were attending a 'Basic skills through woodwork' course. This was a community based project, run as part of a community regeneration programme in the Neath Port Talbot area. The aim of the course was to act as a pathway into employment by equipping attendees with basic skills as well as increasing their confidence and self esteem. The course entailed attending the 'Unit 19' carpentry workshop where they would gain basic skills accreditations (numeracy and literacy), through the completion of carpentry tasks and activities. The criteria for accessing this project was that the participants lived in the Neath Port Talbot area, had a desire to gain employment and had no previous educational qualifications. The mean age of this group was 27.2 years. It was anticipated that this group would be of a similar educational experience and socio economic class to the experimental group, and less likely to be involved in an offending

lifestyle. Participation by the community group was also on a voluntary basis. Course attendees were made aware of the nature and purpose of the study, and were invited to volunteer as participants. The tests were conducted in an interview room, within the centre where the course was being held.

Materials and Procedure

A battery of tests was administered in order to examine the cognitive ability, attainment and phonological ability of the participants.

For reasons of practicality and in consideration of the participants (many of whom had a negative experience of education, and were easily demotivated), the test were designed to be completed in a single session of no more that one and a half hours duration, or be easily divided into two sessions. It was explained to participants that the tasks were not to measure how 'good or bad' they were at their completion, rather a way of measuring 'strengths and weaknesses' between individuals.

General Ability

Non-Verbal IQ

Non- verbal IQ was assessed by the block design subtest of the WAIS III (Wechsler, 1997). This was used to provide a measure of performance IQ, in order to match the two groups, and to establish the level of participants' ability that would not be impacted by educational opportunity

and attainment. The block design is known to be highly correlated to overall measures of performance IQ.

Verbal IQ

This was measured by using the vocabulary subtest of the WAIS III (Wechsler, 1997). This test required participants to define the meaning of a word presented to them, which increased in difficulty as the test progressed. Participants were scored on the definition they provided. It is recognized that verbal IQ is affected by educational opportunity.

Reading Attainment

The participant's reading ability was measured by the Wide Range Achievement Test 3rd edition (WRAT 3, Wilkinson, 1993).

Phonological Ability

Spoonerism Task

Participants completed a spoonerism task, which was devised for this study. This task was based on the Perin Spoonerism Task (Perin, 1983), however participants were presented with more contemporary word pairings. The task examined the participants' ability to manipulate sounds and words, by transposing the initial sounds of the word pairings aloud.

Non-word reading

A non-word reading test devised for this study where participants were presented with a list of 16 non-words and asked to read aloud from the list. Participants were scored on the accuracy of their reading. The words ranged between two and four syllables in length and increased in complexity and syllable length as the test progressed.

Socio Economic Status

The National Statistics Socio Economic Classification (NS-SEC, 2001) was used to determine the socio economic class of the participants. This was used in the 2001 UK census and details eight social classes ranging from 'professionals' in class one through to 'never worked or long term unemployed' in class 8. This information was used to match the experimental and control groups.

Antisocial Personality Disorder

The DSM IV definition for Antisocial Personality Disorder was used, and a diagnosis was gained by using the SCID- II (Structured clinical interview for DSM IV Axis II disorders, American Psychiatric Association, 1994). The SCID-II is a semi-structured interview for making DSM-IV Axis II (Personality Disorder) diagnoses. In the first part of the interview, the participant is asked a series of questions in relation to their past and more recent behaviours. The second part of the interview further explores the area of the first checklist, which have been scored as significant

indicators of possible antisocial behaviours. This diagnosis was chosen as it has been proven to have good inter-rater reliability and has been used in many areas of research (Widiger and Corbitt, 1995; Robins, 1995). In order for a diagnosis of ASPD to be met, the individual must be 18 years of age or older and there must be evidence of conduct disorder prior to the age of 15 years, and evidence of antisocial behaviour from the age of 18 years and over.

Educational and reading experience questionnaire

A questionnaire was compiled for this study, which asked the participants about their experience of education and reading. The educational questions examined the age that participants had left school and any qualifications obtained. It also explored the incidence of truancy, difficulties experienced in school, any disruption to schooling and family history or reading difficulties. Participants were asked about whether they enjoyed reading, their reading habits and the kind of reading matter they enjoyed.

The Dyslexia Checklist

The British Dyslexia Association checklist was also administered to the participants, as this is often used as a screening tool to determine whether there is a strong indication that an individual is suffering from dyslexia. Nine or more positive responses to the questionnaire questions, are considered to be a strong indicator that an individual could be dyslexic.

Results

In order to establish whether or not ASPD had any impact on reading ability, the experimental and control groups were selected in terms of their likelihood of meeting the diagnostic criteria for this disorder. It is known that ASPD is prevalent in prison populations, thus inmates from a local category B prison were selected as the experimental group. Within this group, 81% (N 42) met the criteria for ASPD diagnosis.

In contrast a control group of individuals, who had similar social and educational experience, who were not offenders were recruited. The control group consisted of 34 men who were attending a 'Basic Skills through Woodwork' course, with the aim of gaining employment on its completion. None of the control group participants met the diagnostic criteria for ASPD. The comparison was therefore between a group of offenders most of whom met the diagnostic criteria for ASPD with a non-offending community matched sample.

Matched Groups

Participants were matched on performance IQ (block design task), verbal IQ (vocabulary task) and reading ability (WRAT). T-tests revealed no significant differences between the two groups on either performance, $t(-0.38) = 0.35$ $p=1.66$, or verbal IQ measures $t(-0.61) = 0.27$, $p=0.67$. A marginal difference was shown between the prison and community groups in terms of reading ability with the prison group performing more effectively on this task than the community group, $t(1,69) = 1.99$, $p=0.05$.

The IQ scale scoring for the average population diagnostic category on the WAIS test is within the range of 90-109 which corresponds to the standard scores 9-11. The mean score for the prison group and community group shows that on both measures of performance IQ and verbal IQ, both groups were performing lower than the average expected for the normal population, and were performing, on average, within the low average range 80-89 (standard score 8-9).

Phonological Tasks

The experimental and control groups were compared on tasks of phonological ability. For the spoonerism measure, there was a significant difference between the groups with the prison group performing more accurately than the control group, $t(1,74)=2.01, p=0.04$. A similar difference was observed with the non-word reading task, where again the prison group obtained higher scores than the community group, $t(2,35)=2.00, p=0.01$.

Correlations and regressions

Inmate group

Correlations were carried out to examine the relationships between reading skills, IQ measures, phonological skills and scores on the dyslexia checklist (see Table 1). Raw scores, rather than standardised scores, were used for these correlations. Reading attainment correlated significantly with vocabulary sub-test scores on the WAIS but not on the block design sub-test. Correlations between reading and tests of

phonological skills were also significant, particularly with nonword reading. There was a significant negative correlation between reading skills and scores on the dyslexia checklist showing that as the number of indicators of dyslexia increase reading scores become lower. It is interesting to note that scores on the block design task did not correlate with nonsense word reading or with scores on the dyslexia checklist which appear to be strongly correlated with the vocabulary sub-test. However, scores on this task did correlate significantly with performance on the Spoonerism task.

Table 1

Correlations between reading skills, IQ measures, phonological skills and scores on the dyslexia checklist in the inmate group

	WRAT reading	Block design	Vocabulary	Nonword reading	Spoonerisms	Dyslexia checklist
WRAT reading	-					
Block design	.21	-				
Vocabulary	.50**	.40**	-			
Nonword reading	.67**	.24	.59**	-		
Spoonerisms	.34*	.30*	.56**	.60**	-	
Dyslexia checklist	-.39**	-.17	-.43**	-.51**	-.38**	-

*p<.05; **p<.01

A fixed order regression analysis was also carried out to examine the extent to which phonological skills predicted reading attainment after differences in socio-economic status and scores on both the verbal and non-verbal subtests of the WAIS had been taken into account (for similar

analyses of this nature see McDougall, Hulme, Ellis & Monk, 1994; Muter, Hulme, Snowling & Taylor, 1998). The regression analysis (see Table 2) revealed that nonword reading scores, but not spoonerism performance, was a significant predictor of reading attainment. Block design scores were entered first into the regression because previous research suggests that this is not a major predictor of reading ability and is less likely to be correlated with educational attainment in general (Sattler, 2006). The vocabulary sub-test is known to be closely associated with both general educational attainment and reading skill. It was therefore entered second as the second entry as it was also a measure of IQ.

Inmate group

Table 2

Regression analysis examining predictors of reading attainment in the inmate group

Entry order	Predictor variables	% variance in reading accounted for	Df	F value	P
1	Block design sub-test	4.3	1,50	2.26	.14
2	Vocabulary sub-test	20.7**	1,48	13.56	.00
3	Spoonerism	0.5	1,47	.34	.58
4	Nonword reading	22.3**	1,46	20.16	.00

**p<.01

Community group

Identical analyses were carried out for the community group to examine the relationships between variables and to examine whether or not predictors of reading attainment in this group were similar to those for the inmate group (see Table 3).

Table 3

Correlations between reading skills, IQ measures, phonological skills and scores on the dyslexia checklist in the community group

	WRAT reading	Block design	Vocabulary	Nonword reading	Spoonerisms	Dyslexia checklist
WRAT reading	-					
Block design	.37*	-				
Vocabulary	.34*	.70**	-			
Nonword reading	.50**	.57**	.63**	-		
Spoonerisms	.42**	.53**	.61**	.80**	-	
Dyslexia checklist	-.46**	-.55**	-.50**	-.73**	-.60**	-

* $p < .05$; ** $p < .01$

Correlations between reading attainment and both vocabulary and performance sub-test scores on the WAIS were significant as were correlations with phonological skills. The pattern of correlations differs from the inmate group in that correlations are generally higher and there is a much closer correlation between performance and verbal WAIS sub-tests. As a result, block design scores correlate significantly with reading attainment as well as the vocabulary subtest. Performance on both phonological tasks also correlated significantly with reading. It is interesting to note that correlations between WAIS scores and

phonological tasks were very high indeed and generally higher than those with reading attainment.

When regression analyses were carried out, phonological skills did not predict reading attainment after IQ scores had been taken into account. One reason for this is the high correlations between performance on all these tasks which means that when IQ scores are entered first into the analyses, they mop up all the common variance. However, what this analysis does show is that phonological skills in the community group do not predict reading skills over and above that which might be explained by IQ. This contrasts with the inmate group. It is worth noting that subsidiary regression analyses revealed that when scores on the spoonerism task and the nonword reading task were entered first into the regression analyses they significantly predicted reading scores (accounting 17.3% and 24.6% of the variance in reading skills respectively).

Table 4

Regression analysis examining predictors of reading attainment in the inmate group

Entry order	Predictor variables	% variance in reading accounted for	Df	F value	p value
1	Block design sub-test	13.9*	1,32	5.17	.03
2	Vocabulary sub-test	7.8	1,31	3.10	.09
3	Spoonerism	2.5	1,30	1.00	.32
4	Nonword reading	3.5	1,29	1.39	.24

*p<.05

Reading and educational experience

When responses to the brief questionnaire given to participants were considered a number of important differences emerged between the prison and community groups. The responses show that, despite being closely matched on IQ and socio-economic status, their experiences at school, education after school, and their experience of reading differed considerably. Where frequencies between groups are contrasted binomial tests were carried out. The p values associated with the binomial test are given in brackets where relevant.

Truancy and exclusion

A higher proportion of the prison group (53.8%) stated that they truanted from school on a frequent basis compared to the community group (11.8%, $p < .001$). The mean days of absence per week were similar for both the experimental group ($M = 1.4$ days) compared to community group ($M = 1$ day).

A similar difference was observed with school exclusions, with a higher proportion of prisoners (61.5%) reporting a history of being excluded from school compared to controls (17.6%, $p < .001$).

Difficulties in school

Similar numbers of the experimental sample (57.7%) and controls (52.9%, $p > .05$) had experienced difficulties in school. The participants were asked to describe the nature of these difficulties and a broader

range of difficulties was reported by the prison group than the community group. These are detailed in the below table.

Table 5

Educational problems experienced by the inmate and community groups

<i>Type of Difficulty</i>	<i>Prison Group</i>	<i>Community Group</i>
Reading and/ or writing	4 (7.69%)	14 (41.2%)
Behaviour	10 (19.2%)	
Concentration	11 (21.2%)	3 (8.8%)
Drug Use	1 (1.9%)	
Didn't like school	1 (1.9%)	
Not doing homework	1 (1.9%)	
Lack of interest	1 (1.9%)	
Problems with teachers	1 (1.9%)	1 (2.9%)

The contrast between the two groups in the types of difficulties they report are dramatic. The community group report reading difficulties more frequently than the prison group ($p=.001$). In contrast, behaviour difficulties and difficulties with concentration are both reported much more frequently in the prison group (both $ps<.001$).

Disruption of Schooling

A higher level of disruption of schooling was observed in the experimental group (38.5%) compared to the control group (23.5%). The reasons for this disruption are detailed in the table below. Again the difference between groups is readily apparent with the prison group reporting exclusion and being in prison as the major reasons for disruptions whilst these are only reported by one of the community group. The reasons for disruption of schooling are detailed in table 6.

Table 6

Reasons for disruption of the education of the inmate and community groups

<i>Reason for disruption</i>	<i>Prison Group</i>	<i>Community Group</i>
Court Appearances	1 (1.9%)	
Exclusion from school	6 (11.5%)	1 (2.9%)
Being sent to prison	5 (9.6%)	
Drug use	1 (1.9%)	
Illness	1 (1.9%)	4 (11.8%)
Travelling/ family moved area	3 (5.8%)	1 (2.9%)
Family difficulties	3 (5.8%)	
Left early		2 (5.9%)

Qualifications

The community group gained a similar number of qualifications *from school* (23.5%) compared to the prison group (19.2%, $p > .05$), and in all cases, these were GCSE qualifications. Almost half of the prisoners who had gained GCSE qualifications from school had gained A level or equivalent qualifications. Two of this group had also gained higher education qualifications. Of those who had *not* gained GCSE or A levels in the community, twenty had gained qualifications whilst in prison. These were mainly basic skills qualifications in English and Maths. These basic skills courses were low level accreditations, delivered within the Prison Service due to their short duration, so that prisoners can achieve evidence of their achievements in a short space of time. For many prisoners this is extremely positive as most will not have achieved any level of qualification prior to going to prison. Gaining extra qualifications in prison mean that overall a considerably higher proportion of the prison

sample (71.2%) reported as having a qualification of some description compared to the community group (23.5%, $p < .001$).

Reading experience

A higher number of the prison group (86.5%) compared to the community group reported that they enjoyed reading (32.4%, $p < .001$). Similarly a difference in frequency of reading was observed with almost all of the experimental group (98.1%) stating that they read regularly compared the to the control group (73.5%). As can be seen from Table 7 the prison group are more likely to read novels ($p < .001$) while the community group are more likely to read newspapers and magazines ($p < .001$).

Below is a table detailing the preferred reading matter of the two groups.

Table 7

Reading preferences of inmate and community groups

<i>Reading Material</i>	<i>Prison Group</i>	<i>Community Group</i>
Novels	37 (71.2%)	5 (14.7%)
Biographies/ Autobiographies	6 (11.6%)	2 (5.9%)
Newspapers/ Magazines	5 (9.6%)	15 (44.1%)
Text/ Reference Books	2 (3.8%)	
Horoscope	1 (1.9%)	3 (8.8%)
TV Guide		9 (26.5%)

time as a result of lack of reading experience (Stanovich, 1984). Matched pairs did not differ by more than 2 years in age or by more than 1 standard score in the Block Design design test. Twenty-eight pairs of participants met these criteria. Table 8 shows the descriptive statistics for each measure along with paired t-test comparisons.

Table 8 shows that while the inmate and community groups do not differ on the Vocabulary sub-test of the WAIS or the dyslexia checklist, the inmate group are significantly better at both tests of phonological skill and the difference between groups on reading skills is close to significance ($p=.051$). Because the latter finding was marginal a further t-test was carried out using the raw reading scores obtained for the Wide Range Achievement Test (WRAT) since this provides a more sensitive measure of differences between the groups. The difference between groups was significant using this more sensitive measure, $t(27) = 2.06$, $p=.025$.

Correlations and regressions

As previously, correlations were carried out to examine inter-relationships between variables and predictors of reading for each group. Raw scores, rather than standardised scores, were used for these analyses. These are detailed in table 9.

Inmate group

There were no correlations between scores on the spoonerism task and the dyslexia checklist and other variables. In contrast, scores on the phonological tasks and the vocabulary sub-test were strongly correlated.

Only the vocabulary sub-test and the nonword reading task correlated with reading scores in this group.

A fixed order regression analysis was carried out to examine which variables were the best predictors of reading attainment in the inmate groups. These are shown in Table 10.

Table 9
Correlations between reading skills, IQ measures, phonological skills and scores on the dyslexia checklist in the inmate group

	WRAT reading	Block design	Vocabulary	Nonword reading	Spoonerisms	Dyslexia checklist
WRAT reading	-					
Block design	.03	-				
Vocabulary	.61**	.02	-			
Nonword reading	.65**	.07	.59**	-		
Spoonerisms	.15	.13	.47**	.43**	-	
Dyslexia checklist	-.26	.04	-.13	-.20	.02	-

*p<.05; **p<.01

As previously, the regression analysis revealed that scores on the vocabulary sub-test, but not block design, predicted reading skills. Similarly nonword reading performance, rather than scores on the spoonerism task, significantly predicted reading after differences in IQ had been accounted for.

Table 10

**Regression analysis examining predictors of reading attainment
in the matched inmate group**

Entry order	Predictor variables	% variance in reading accounted for	Df	F value	P
1	Block design sub-test	0.1	1,26	0.02	.88
2	Vocabulary sub-test	37.2**	1,25	14.86	.00
3	Spoonerism	2.7	1,24	1.07	.31
4	Nonword reading	16.3**	1,23	8.55	.00

**p<.01

Community Group

Table 11

Correlations between reading skills, IQ measures, phonological skills and scores on the dyslexia checklist in the community group

	WRAT reading	Block design	Vocabulary	Nonword reading	Spoonerisms	Dyslexia checklist
WRAT reading	-					
Block design	.38*	-				
Vocabulary	.48*	.74**	-			
Nonword reading	.59**	.63**	.68**	-		
Spoonerisms	.48**	.61**	.64**	.82**	-	
Dyslexia checklist	-.48**	.60**	-.51**	-.84**	-.69**	-

*p<.05; **p<.01

The pattern of correlations for the community group was quite different to that observed for the inmate group. All of the experimental variables, including scores on the block design sub-test and the dyslexia checklist, were highly intercorrelated.

There were no correlations between scores on the spoonerism task and the dyslexia checklist and other variables. In contrast, scores on the phonological tasks and the vocabulary sub-test were strongly correlated. Only the vocabulary sub-test and the nonword reading task correlated with reading scores in this group.

A fixed order regression analysis was carried out to examine which variables were the best predictors of reading attainment in the inmate groups. These are shown in Table 12.

Table 12
Regression analysis examining predictors of reading attainment
in the matched community group

Entry order	Predictor variables	% variance in reading accounted for	Df	F value	P
1	Block design sub-test	14.3*	1,26	4.33	.047
2	Vocabulary sub-test	8.6	1,25	2.77	.11
3	Spoonerism	5.1	1,24	1.71	.20
4	Nonword reading	8.2	1,23	8.55	.10

*p<.05

As previously, the regression analysis revealed that the scores on the block design sub-test, rather than the vocabulary sub-test, predicted

reading attainment. No measures of phonological skill significantly predicted reading.

This second set of analyses using the more conservative pairwise matching of participants, rather than attenuating the original findings, served to bring them into sharper relief. When raw reading scores were used, the reading skills of the two groups differ significantly and their reading skills appear to be underpinned by quite different cognitive skills. Verbal learning skills and 'word attack' skills, as measured by the nonword reading task, predict the reading of the inmate group. In contrast, non-verbal learning skills, as measured by the block design sub-test, predict the reading scores of the community group.

Discussion

A difference in reading ability was observed with prisoners performing better than controls. This could be attributable to a number of factors. Firstly, the regime in the prison for the majority of prisoners at the prison consisted of an hour's outside exercise a day and four hours of either work in the prison workshops or education time. The workshop jobs were basic tasks, usually producing products for retail suppliers (e.g. packing items such as screws into bags for retail, rolling wrapping paper onto tubes). The alternative education time involved participating in a basic skills curriculum, which included literacy, mathematics, computing and woodwork, with inmates working towards accreditation from entry level (basic introductory level) to level 2 (GCSE equivalent standard). Even though the work required for these accreditations was pitched at these levels, the accreditation itself was not a qualification equivalent to a GCSE.

At the time of this study, there was considerable overcrowding in the prison, and because of this, most inmates were only able to access two hours worth of either education or workshops. For both of these activities, inmates were in receipt of extra pay. Inmates would normally receive 50p a day without engaging in either workshops or education, which they could use to purchase items from the prison canteen (e.g. tobacco, sweets). Working or attending education could increase these earnings, and for those attending education, there was the added incentive of being given an additional visiting order, which enabled them to receive, and additional visit per week if they were sentenced. The

increased uptake of education was not only restricted to those sentenced (and receiving incentives for their attendance), but also remanded inmates as the alternative was to remain in cell for approximately twenty-three and a half hours day. Another reason that inmates would chose to attend education as opposed to workshops, was that many enjoyed the woodwork and computing lessons, as they could produce gifts for their families. Inmates could not chose to only attend these lessons, so would be acquiring skills within the other lessons, even if their primary reason for choosing to attend was not improve their reading and writing skills. Thus, the inmates reading ability would have been improved by the remediation obtained by the education provision within the prison.

A majority of the inmate (n=52) participants had received custodial sentences before and this is reflected in the number of inmate participants who were in receipt of prison qualifications. Indeed, the prison group had a higher proportion of individuals who had qualifications than the control group. Due to the low level of the prison accreditations, it cannot be argued that they were more highly qualified thus more likely to have enhanced reading skills by virtue of this qualification alone. Indeed, the basic skills accreditation that the community group were working towards, was a higher level qualification in that it required significantly more classroom time and completed work in order for it to be achieved. Another factor, which may have contributed to the higher reading ability scores of the prison group, is the reading habits that the prison group had in comparison to the controls. The majority of the experimental group

reported reading on a regular basis relative to controls.

Given that it is accepted that individuals who experience difficulty in reading often avoid this task, and that the mean score for reading ability the prison group was below the expected average for the normal population, this makes this result all the more striking. The one prisoner who said that he never read, stated his reason for this as being that reading stimulated his imagination, which in turn affected his mental health and ability to cope within the confines of his cell.

Not only did prisoners read more regularly, but the reading matter they favoured was likely to enhance their reading skills and increase their vocabulary. The inmate group reported preferring novels while the community group favoured newspapers and TV guides. It is important to remember that participants were likely to be reporting their reading habits at the present time, and this has an important implication for the experimental group. At the time of this study, most of the prisoners only had access to television for approximately an hour a day during their association time. Thus, the leisure activities that could take place during their time in cell were limited to crafts and reading.

There was a common thread in the preferred authors of the prisoner group, with a preference for horror and crime writers. This could be attributed to the former lifestyles of the inmates, but also reflective of the books stored by the prison library. In the same way that people in the community would discuss the latest happenings in a soap opera, it was common for inmates to discuss with each other the latest book that they had read.

There was a marked difference between the phonological skills of the prison group and the community group, with the prison group performing these tasks more effectively than the controls. This suggests a reciprocal relationship between effective phonological skills and enhanced reading ability, however this only applies to the prison group. This difference was more marked when groups were matched pairwise. The results showed that for the prisoners, the vocabulary subtest and nonword reading task were predictive of reading performance, whereas the only factor that correlated with reading ability for the community sample was performance IQ. This would suggest that the reading difficulties experienced by the prisoners were not unexpected, as there was no specific reason for the failure in reading acquisition. In this case you could expect the 'Matthew effect', whereby prisoners reading skill were improving as a result of them practicing this skill, and this could provide another explanation for the enhanced performance of the prisoners over the control in the reading group.

As there was a similar level of truancy between the two groups but the cause of this truancy may have been different for the two groups. When asked about problems in school, the majority of controls cited problems with reading and writing. In comparison, the experimental group mainly stated reasons to do with concentration and behaviour. This is consistent with literature suggesting that many young people who are conduct disordered also have ADHD.

A weakness of this study is that it only examined a history of CD and not ADHD. However many of the characteristics of ADHD are shared with CD, and it may be that each had a considerable impact on behaviour. It is necessary for there to be a diagnosis of CD to be made in order for an individual to be diagnosed as ASPD. Thus the majority of the prison sample had a diagnosis of CD. It is possible, however, that many of the prison group also suffered from undiagnosed ADHD (or if it were diagnosed they were unaware of it) as not one of the prisoners reported that their schooling difficulties were due to ADHD. The fact that many felt that their inability to concentrate caused them difficulties in school indicates that ADHD may be a possible cause.

It is important to note, that the other main reason for school difficulties in the prison group were related to not wanting to do the school work or arguing with teachers (represented as 'Poor behaviour' or 'Problems with teachers' in the results). If there was no presence of a specific deficit in reading ability that would hamper the prisoner's ability to read and write in the classroom, it is possible that the failure to learn in school be solely related to behavioural difficulties stemming from a failure to conform rather than feelings of frustration at not being able to reach educational potential due to a failure to acquire reading skills.

As might be expected there were close correlations between reading attainment, phonological skills and scores on the WAIS vocabulary sub-test for both participant groups. However, only in the community participant group did the non-verbal WAIS sub-test correlate with the

reading attainment. When regression analyses were carried out nonword reading skills predicted reading attainment in the inmate group even after differences in IQ-related scores and socio-economic status had been accounted for. However, this was not the case for the community group where only scores on the block design sub-test predicted reading skills.

One possible reason for the difference in predictors between groups is likely to be the enforced reading experience of inmates, who read because they were in their cells for several hours a day, as well as having to read court papers and other documentation relevant to their legal issues. This led them to have generally higher reading attainment suggesting that their reading skills may have been improved as a result of their greater reading experience. One could interpret the choice of reading matter of the community group as a reflection of the fact that if an individual is experiencing reading difficulties, they may opt to avoid reading. With the majority of the community group's chosen reading matter being TV guides or newspapers, one may surmise that the reason for this reading was solely to gain information. When compared to the information that prisoners were required to absorb from legal paperwork, the enforced nature of the reading is clearly illustrated. Inmates most likely to benefit from this extra experience were participants who had good 'word attack' skills and could tackle reading new words when they encountered them during reading. Nonword reading is the task most likely to tap into these skills. One reason why the Spoonerism task did not significantly predict reading in the inmate group may be because as a

task it does not tap so closely the skills required for the single word reading required for the WRAT test.

The different pattern of findings for the inmate and community group appears to be the result of their educational experience and current reading experience. As can be seen from the interview responses the prison group reported truanting more frequently and disruption of schooling as a result of exclusion or imprisonment. Given their ASPD profiles this is not surprising. However, despite the disruption of their schooling this group gained similar qualifications at school to the community control group and subsequently, through prison education, were able to enhance their learning. Moreover, being in their cells without televisions, and less access to newspapers and magazines, meant that they were more likely to read novels. What seems likely is that those with good nonword reading skills, and therefore the ability to read new words and acquire new vocabulary, probably enhanced their reading skills. This ties in to some extent with the self-teaching mechanism thought to apply for younger readers (see Share, 1995, 1999; Kyte & Johnson, 2006). The differences between the groups here need to be treated with some caution because they have yet to be replicated.

This study is unique because of the groups of participants used. Although a number of studies have examined reading in the prison population, no comparison has ever been made with a group matched on IQ and socioeconomic status and very little indeed is known about the reading profile of disadvantaged groups in the adult population. Further research is clearly required to replicate and extend these findings to

explore more about the possible differences between the two comparison groups so that more is known about the causes of reading difficulty, how reading difficulties might be ameliorated in adults, and what the long term results which accumulate from different responses to difficulties at school.

Conclusion

As a result of this study, it can be concluded that the reading attainment of offenders, differs to that of matched non-offenders in the community. The results suggest that reading ability is not a cause of offending, given that the reading attainment of the prison sample was higher than that of the matched controls.

It is clear that the two groups experienced different kinds of social disadvantage, which may well have impacted upon the course of their offending or non-offending futures.

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Appendix

Spoonerism Task

A spoonerism is where the first sounds of two words are reversed.

For example:

Bones and Joints

Jones and Boints

Paddington Bear

Baddington Pear

Chuck Berry

Buck Cherry

In this section, I would like you to reverse the first sounds of the two words on the list. We will go through the list, to as far as you can go.

Bob Marley

Jay Kay

Puff Daddy

Meat Loaf

Mariah Carey

Jennifer Lopez

David Grey

Simply Red

Kylie Minogue

Hear Say

Michael Jackson

Craig David

Lenny Kravitz

Shania Twain

Non-word Reading Task

Below is a list on nonsense words. Please read each word on the list as far as you can go.

Ballop

Bannow

Diller

Glistow

Prindle

Bannifer

Barrazon

Thickery

Doppelate

Glistering

Wooglamic

Pennerful

Contramponist

Fenneriser

Stopograttic

Confrantually

Detrapillic

Sepretnial

Altupatory

Pristoractional

Criteria for the diagnosis of Antisocial Personality Disorder

The individual is at least age 18 years

There is evidence of Conduct Disorder with onset before age 15 years (as evidenced by at least two of the following:

Before age 15

1. Often bullied, threatened, or intimidated others
2. Often initiated physical fights
3. Used a weapon that can cause serious physical harm to others (e.g., a bat, brick, broken bottle, knife, gun)
4. Was physically cruel to people
5. Was physically cruel to animals
6. Stole while confronting a victim (e.g., mugging, purse snatching, extortion, armed robbery)
7. Forced someone into sexual activity
8. Deliberately engaged in fire setting with the intention of causing serious damage
9. Deliberately destroyed others' property (other than by fire setting)
10. Broke into someone else's house, building, or car
11. Often lied to obtain goods or favours or to avoid obligations (i.e., "cons" others)
12. Stole item of nontrivial value without confronting a victim (e.g., shoplifting, stealing but without breaking and entering, forgery)
13. Ran away from home overnight at least twice while living in parental or parental surrogate home (or once without returning for a lengthy period)

Before age 13

14. Often stayed out late despite parental prohibitions
15. Often truant from school

There is a pervasive pattern of disregard for and violation of the rights of others occurring since age 15 years, as indicated by three or more of the following:

1. Failure to conform to social norms with respect to lawful behaviours as indicated by repeatedly performing acts that are grounds for arrest
2. Deceitfulness, as indicated by repeated lying, use of aliases, or "conning" others for personal profit or pleasure
3. Impulsivity or failure to plan ahead
4. Irritability and aggressiveness, as indicated by repeated physical fights or assaults
5. Reckless disregard for safety of self or others

6. Consistent irresponsibility, as indicated by repeated failure to sustain consistent work behaviour or honour financial obligations
7. Lacks remorse, as indicated by being indifferent to or rationalizing having hurt, mistreated, or stolen from another

British Dyslexia Association: The adult dyslexia checklist.

Look at the questions in the checklist. The questions are all related to different areas of dyslexia.

Read the questions carefully and be as honest as you can when answering them.

Please tick **Yes** or **No** to each question. Don't miss any questions out. If in doubt tick the answer that you feel is true most often.

	Yes	No
1. Do you find difficulty telling left from right?		
2. Is map reading or finding your way to a strange place confusing?		
3. Do you dislike reading aloud?		
4. Do you take longer than you should to read a page of a book?		
5. Do you find it difficult to remember the sense of what you have read?		
6. Do you dislike reading long books?		
7. Is your spelling poor?		
8. Is your writing difficult to read?		
9. Do you get confused if you have to speak in public?		
10. Do you find it difficult to take messages on the telephone and pass them on correctly?		
11. When you say a long word, do you sometimes find it difficult to get all the sounds in the right order?		
12. Do you find it difficult to do sums in your head without using your fingers or paper?		
13. When using the telephone, do you tend to get the numbers mixed up when you dial?		
14. Do you find it difficult to say the months of the year forwards in a fluent manner?		
15. Do you find it difficult to say the months of the year backwards?		
16. Do you mix up dates and times and miss appointments?		
17. When writing cheques do you frequently find yourself making mistakes?		
18. Do you find forms difficult and confusing?		
19. Do you mix up bus numbers like 95 and 59?		
20. Did you find it hard to learn your multiplication tables at school?		