Computerised screening for dyslexia in offender populations

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The Offender’s Learning Journey


Policy implications [Sect 1.23]
- Flexibility to meet individual learning needs
- Effective screening and assessment
- Early production of individual learning plans

Assessing the learner [Sect 02]
1. Initial screening linked to ASSET [Sect 0201]
2. Diagnostic assessment for language literacy and numeracy [Sect 0203]
3. “The learning provider will ensure that a trained specialist dyslexia assessor is available to enable formal dyslexia assessment to take place ‘in-house’ where a need is identified.” [Sect 0206]
Some unanswered questions

1. Who is going to carry out dyslexia screening?
2. Are the suggested screening materials up to the task?
3. How is the need for a formal dyslexia assessment to be identified in the diagnostic assessment stage, given that assessors will not necessarily be dyslexia specialists?
4. Can learning providers find enough ‘specialist dyslexia assessors’ to carry out formal dyslexia assessment? (And can they afford it?)
5. How are education staff going to support dyslexic offenders once they have been identified?
There have been about 20 different studies of the prevalence of dyslexia amongst offenders.

Prevalence rates vary enormously from study to study: range 4% – 56%.

Studies vary in many different respects:
- methods of assessment used
- diagnostic criteria applied
- exclusion or inclusion of low IQ offenders
- age
- type of offenders

Making allowances for expected low literacy skills and often low general ability in offender populations is problematic.
Non-psychometric screening studies

- These studies rely mainly on
  - self-report rating scales and/or
  - positive indicators of dyslexia determined from assessment of reading, writing and spelling.
- They don’t use psychometric tests; high degree of subjectivity.
- Incidence amongst offenders has generally been reported in the range 40 – 50%.
- These figures are probably an overestimate because they don’t have good procedures that allow for false positive cases – i.e. those whose literacy difficulties may be due to other causes.
Phonological deficit studies

- These studies have used psychometric tests to identify offenders whose literacy skills are significantly poorer than expected and who also show evidence of phonological processing difficulties.
- Incidence has generally been reported in the 40-50% range for literacy difficulties, but only about 10% have been classified as having dyslexia on the basis of showing phonological deficits.
- These figures are probably an underestimate because use of phonological deficits as the single diagnostic criterion is probably too restrictive.
Psychometric studies

- These studies have used psychometric tests to identify offenders whose literacy skills are significantly poorer than would be expected for their intelligence, plus evidence of a range of cognitive processing difficulties (e.g. in phonology, memory, or processing speed).
- Incidence has generally been reported in the range 14 – 31%.
- On this basis it seems safe to conclude that dyslexia is 3 – 4 times more common in offenders than in the general population (rate 5-10%).
- Turner & Allchorn (2000); Rack (2005)
Rice (1999, 2001) argues that where social disadvantage could be a cause of literacy difficulties, then this is a more plausible explanation than dyslexia. He maintains that most of the ‘dyslexics’ found in these studies are false positives.

In Rice’s study of 196 prisoners he found 34% poor readers but only 6% dyslexics.

Rice used the Dyslexia Adult Screening Test (DAST), which has been found to produce a high level of false negatives [Harrison & Nichols, Journal of Research in Reading, 2005, 28, 423-434].

Rice is right to highlight the problem of false positives, but social disadvantage does not provide a satisfactory explanation for the broader cognitive processing difficulties of dyslexics (e.g. in phonology, memory, or processing speed).
Why is dyslexia more common in offenders?

- **Cumulative risk model**
  - Dyslexia just another risk factor in offending, together with social disadvantage, low IQ, unemployment, adverse upbringing, impulsivity, etc.

- **Causal chain model**
  - Dyslexia has an indirect effect on offending, mediated through factors such as poor school attainment and low self esteem.

- **Amplification model**
  - Dyslexia may amplify the effects of social disadvantage or low ability because the dyslexic person does not have the personal resources to deal effectively with the problems of everyday life.
Problems with conventional methods of identification

- High cost
- Difficulty of securing the services of staff who can carry out such assessments
- Methods need to be **swift, easy to administer and interpret** by staff who are not necessarily experts in dyslexia.
- Conventional approaches can **take too long** to be practical in offender settings.
- Tests and assessments may be perceived as **threatening** by the prisoner or young offender.
- Tests standardised on non-offender populations may be **less accurate or reliable** when used with prisoners or young offenders.
Computer-based screening

- Testing is completely objective
- Standardised presentation of test items
- Improved accuracy of measurement
- Easier, speedier administration
- Less training of administrators needed
- Very cost-effective – average cost less than £5 per individual
- Results available instantly
- Less intimidating than conventional assessment
LADS and LADS Plus are adaptive computer-based dyslexia screening tests for adults aged 16 years and over.

Based on phonological deficit model of dyslexia (Snowling, 200).

Easy to use – does not require psychological qualifications or specialist expertise to administer or interpret.

The screening takes about 20 – 25 minutes.

Can be run on a computer network or stand-alone computer.

Results are available immediately, in the form of an on-screen profile, which can be printed out.

Results includes automatic interpretation and guidance on the next steps to take.

A comprehensive Administrator’s Manual is provided.
LADS was first published in 2002 and is widely used throughout the UK in universities, colleges, employment and careers centres.

LADS contains four tests, three of which are dyslexia-sensitive and the fourth is a non-verbal reasoning test.

LADS Plus (released in 2006) is a new version of LADS developed in further research that included projects in prisons and youth offender institutions.

The aim was to improve screening accuracy in populations that may include individuals with non-standard educational backgrounds, or who may be false positives because of low general ability or poor language skills.

A fifth test was added to measure verbal reasoning and the decision rules built into the program were modified to improve its accuracy.
The tests in LADS and LADS Plus

- **Nonverbal reasoning**
  - matrix reasoning test

- **Word recognition**
  - speeded identification of real words amongst non-words and misspelled words (draws on lexical recognition, spelling ability and phonological decoding skills)

- **Word construction**
  - speeded assembly of non-words from syllables (draws on working memory and phonological encoding skills)

- **Working memory**
  - backwards digit span

- **Verbal reasoning** [LADS Plus only]
  - verbal conceptual relationships

[Each test takes about 5 minutes.]
Verbal reasoning test
Word Recognition test

- monie
- moundy
- money
- montey
- monney
Word Construction test

sub  ro  mast

mor  sum
rost  sur
  bast

tub
Working memory test
Reports module

Mosswick College
Lucid Adult Dyslexia Screening - Individual Report
Billy Bernson
User ID: BRRR626RLJ  DOB: 01/01/80  Age when assessed: 25.04  Printed on: 29/11/05

Graphical Profile

<table>
<thead>
<tr>
<th>Function</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word recognition</td>
<td>Medium</td>
</tr>
<tr>
<td>Word construction</td>
<td>High</td>
</tr>
<tr>
<td>Memory</td>
<td>High</td>
</tr>
</tbody>
</table>

Probability of dyslexia: High

Reasoning Ability

Guidance for interpretation
Major difficulties shown in the Word Construction, Word Recognition and Working Memory tests. These results are unexpected even though verbal ability is weak. Dyslexia is therefore suspected, but results should be treated with caution. For assistance in interpreting and acting on these findings please consult the Administrator's Manual.

Assessor’s comments

Automatic interpretation

Reasoning tests results

Space for assessor’s comments

Graphical profile of dyslexia sensitive test results
BDA & Wetherby YOI Dyslexia Project 2004-05

- **Phase 1 (Spring 2004)**
  - 116 juvenile offenders aged 15-17 tested using LADS and conventional tests of reading and spelling.

- **Phase 2 (Summer and Autumn, 2004)**
  - 36 juvenile offenders aged 15-17 (18 dyslexic and 18 non-dyslexic, based on full psychological assessment) compared on a variety of cognitive tests.

- **Phase 3 (Early 2005)**
  - New modified version of the screening program (LADS Plus) administered to 62 juvenile offenders aged 15-17.
Reading ages of the sample in Phase 1

[CA = 15-17]

- 6 - 8 yrs: 12%
- 9 - 11 yrs: 26%
- 12 - 14 yrs: 20%
- 15 - 17+ yrs: 42%
Spelling ages of the sample in Phase 1

[CA = 15-17]
LADS Results for Wetherby YOI, March 2004

Mean Scores

- Reasoning
- Word Recognition
- Word Construction
- Working Memory

- All
- High
- Not High
Conclusions from Phase 1

- High level of acceptability of LADS by young offenders.
- Staff at Wetherby YOI found LADS easy to use.
- Overall percentage of participants classified by LADS as having a high probability of dyslexia was 64%.
- This figure is suspiciously high and suggests that the category contains a considerable number of false positives.
- LADS risk scores for this offender sample as a whole were markedly higher than in the non-offender population.
- Risk scores on the Word Recognition test were particularly high.
- These findings suggest some modification to LADS is necessary to reduce levels of false positives and improve screening accuracy.
Phase 2 results

- Comparison of dyslexic and non-dyslexic offenders showed expected differences in reading, spelling and phonological skills.
- The results indicated that linguistic deficits were more closely associated with poor literacy skills in the dyslexic group, but less closely associated with poor literacy skills in the non-dyslexic group.
- These findings were consistent with the view that the poor literacy skills of the non-dyslexic group were more likely to be due to educational deficiencies, while poor literacy skills of the dyslexic group were more likely to be due to cognitive deficiencies.
- But there was a high incidence of low verbal IQ in both groups (see next slide).
Verbal IQ of the sample in Phase 2
Conclusions from Phase 2

- When working with offender samples a dyslexia screening device must allow for low levels of reading and spelling, below average verbal IQ and lack of educational opportunities.

- The results of Phase 2 suggested that low verbal IQ can be used as an indicator of individuals who will probably have poor general attainment in literacy and may have had disrupted schooling.

- A verbal reasoning test was incorporated into LADS to create LADS Plus, the information from this was used to modify the algorithms that classify individuals on the basis of probability of dyslexia, and thus improve the accuracy of the screening.
### Results of Phase 3

<table>
<thead>
<tr>
<th>Risk of dyslexia</th>
<th>N</th>
<th>Percent of total sample</th>
<th>Mean total of LADS dyslexia sensitive test scores (max. 27)</th>
<th>Mean (&amp; SD) Verbal IQ</th>
<th>Mean (&amp; SD) Nonverbal IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>22</td>
<td>36%</td>
<td>11.95 (5.00)</td>
<td>92.11 (13.23)</td>
<td>97.95 (8.40)</td>
</tr>
<tr>
<td>Border-line</td>
<td>20</td>
<td>32%</td>
<td>16.45 (4.47)</td>
<td>94.87 (9.48)</td>
<td>96.50 (13.68)</td>
</tr>
<tr>
<td>Moderate or High</td>
<td>19</td>
<td>31%</td>
<td>23.37 (2.14)</td>
<td>82.07 (17.83)</td>
<td>94.47 (7.43)</td>
</tr>
</tbody>
</table>
Conclusions

- Our studies support the view that dyslexia is more common in offenders than in members of the general population.

- To identify dyslexia in offender populations with an acceptable degree of accuracy a screening tool is required which is:
  - (a) easy and practical in administration,
  - (b) objective and suitable for administration and interpretation by staff who are not necessarily experts in dyslexia, and
  - (c) designed to allow for low levels of reading ability, below average verbal intellectual skills, and lack of educational opportunities.

- Conventional screening methods fail to meet these criteria.

- Computer-based screening offers a sensible and cost-effective solution.
Currently more than 30 prisons and YOIs are using **LADS Plus**.

Further information about the **LADS Plus** program and free demo copies can be obtained from the publishers:

Lucid Research Ltd
Tel: 01482 882121
Email: info@lucid-research.com
www.lucid-research.com

**Reference**

‘Practical solutions to identifying dyslexia in juvenile offenders’