

# LADS

## A new computerised dyslexia screening system for adults

### What is LADS?

LADS (Lucid Adult Dyslexia Screening) is a computerised test designed to screen for dyslexia in persons 16 years and older. It has been produced by Lucid Research Ltd, the company responsible for producing CoPS and LASS, which are now used in over 4,000 schools in the UK for assessing children aged 4–15 for dyslexia. The research work to develop LADS was directed by Dr Chris Singleton, Senior Lecturer in Educational Psychology at the University of Hull.

LADS comprises four assessment modules, which measure:

- 1) **Word Recognition** (Lexical decoding involving speeded recognition of real word from non-words).
- 2) **Word Construction** (Speeded lexical encoding of non-words from syllables)
- 3) **Working Memory** (Backwards digit span)
- 4) **Reasoning** (Non-verbal matrix reasoning)

The first three of these are *dyslexia sensitive* measures: it is well established in the research literature that all these tasks are difficult for most people with dyslexia. The Reasoning test has been included in order to calibrate the Word recognition and Word construction tests to increase the accuracy of detection of dyslexia in bright, well-compensated adults. It also enables the administrator to reach a rough estimate of the person's intellectual ability, which may be important when making decisions about further action after screening.

The tests in LADS are adaptive; that is, the program varies the items given according to the performance of the individual taking the test. This means that the assessment is swift and efficient. (Please note that progressively harder items will be delivered to those individuals who get many items correct; and easier items delivered to those who make incorrect responses). Each of the four modules in LADS takes about five minutes, so the whole screening can usually be completed in about 20 minutes. Results can be viewed on screen or printed out immediately. The test is accompanied by a comprehensive Administrator's Manual, which explains how to use the program and how to interpret results. The final section of the Manual (which has been written by E.A. Draffan of Sussex University's Assistive Technology Unit) covers a range of strategies for supporting adults with dyslexia, particularly using computer technology.

It must be emphasised that LADS is not a diagnostic test and does not purport to provide a definitive assessment of dyslexia. Nor does it assess reading and spelling abilities *per se*. Rather, LADS is designed to provide a quick screen of unselected or selected adults in order to indicate which of them is most likely to have dyslexia.

### How can LADS be used?

Administration of LADS does not require professional training in education or psychology. The tests are self-administered and results very easy to interpret. LADS is designed to be used for both routine group screening for dyslexia; and also for individual screening for dyslexia in adults referred because of literacy difficulties or other learning problems.

LADS can be used in any adult setting, e.g. universities or higher education colleges, further education colleges, 6<sup>th</sup> form colleges, adult literacy centres, dyslexia centres, basic skills centres, learning support units, prison and youth offender education units, careers centres, and employment centres. Where the aim is routine group screening it is recommended that the network version of LADS is used (this is scheduled for release towards the end of 2002). This enables many persons to be screened simultaneously using a computer network, and gives greater efficiencies of both time and cost than using the single user version. Another advantage of using the test for group screening on entry to the institution is that it provides early warning of those individuals who are likely to be dyslexic, rather than waiting until problems emerge, which may in some cases be too late for effective action to be taken (e.g. because a student's course has almost come to an end).

Many institutions and individuals prefer to have confirmation of dyslexia provided by a report from an educational psychologist. This is an expensive service: average fees for psychological assessments in the UK are currently in excess of £250. Whoever bears the cost – the institution, employer, or the test-taker personally – this is a considerable expense. By carrying out a screening assessment beforehand the chances of this money being wasted (because the subsequent psychological assessment turns out to be negative) is reduced. In higher education, a psychologist's report may be necessary if a student with dyslexia wishes to apply for a Disabled Students Allowance. In many cases, however, an adult will not need to go to the lengths of obtaining a psychologist's report, but the results of LADS will be sufficient for their requirements.

## How was LADS developed?

Since adults with dyslexia typically have problems with reading, writing and spelling, why not simply measure those skills in order to identify the individuals who have dyslexia? The problems with this approach are (a) the differences in literacy skills between dyslexic and non-dyslexic persons are largely quantitative rather than qualitative, and (b) the development of compensatory strategies (especially by individuals with higher intelligence) often masks such differences. If one were to take a group of dyslexic and a group of non-dyslexic adults, statistically significant differences between these groups in reading, writing and spelling would almost certainly be found. But if one took an individual adult with dyslexia, he or she may have literacy skills in the average range (although below that which might be reasonably expected from their intelligence and education), while an individual adult who does not have dyslexia may have below average literacy skills.

A screening test has to be capable of identifying which individuals do, and do not, have dyslexia to a reasonable degree of accuracy, and for that job measures that are more reliable than those based on literacy skills are needed. The compensation strategies which adults with dyslexia often develop in order to cope with literacy tasks can mask their dyslexia and make it difficult to determine whether a person genuinely does have dyslexia. For this reason, literacy tasks, when used alone are unreliable in the identification of dyslexia. Furthermore, any task that relies strongly on acquired knowledge (e.g. vocabulary) would not be suitable as results would be likely to be masked by educational factors.

However, the cognitive difficulties that underpin dyslexia – particularly in phonological processing, lexical access and working memory, and speed of information processing – are much more fundamental and difficult to compensate. They are also less likely to be masked by educational factors. There is extensive evidence that, in adulthood, persons with dyslexia (even dyslexic university students) still exhibit limitations in tasks involving these cognitive domains. In designing LADS it was decided to build a system that had a strong scientific research basis and therefore to centre this in phonological processing, lexical access, working memory and speed of information processing.

## How accurate is LADS?

The process of developing LADS has involved detailed studies of the validation of the separate tests, first in their full form, and then in their adaptive forms, including verification of the accuracy of the adaptive algorithm devised for the program, and checking for gender bias. Participants from several different institutions have been involved. The final trials of the program during spring 2002 involved over 250 independent trialists including institutions, organisations, and individuals. LADS meets established

psychometric criteria for validity and accuracy and can therefore be used with confidence as a screening test for dyslexia. Full details of research findings on LADS are published in the Administrator's Manual.

The individual dyslexia-sensitive tests in LADS have good accuracy to discriminate between dyslexic and non-dyslexic adults and are free of gender bias. Furthermore, the profile of the three LADS scores, provides a very high degree of accuracy — much greater than reliance on the individual test results alone. However, it should not be forgotten that LADS is a screening test and like any screening system is inevitably subject to a certain — although relatively small — degree of classification inaccuracy. The careful development and validation process that LADS has been subjected to has sought to minimise classification inaccuracy as far as has been practically possible, given the brevity of the tests in the program.

The tests in LADS assess the core cognitive skills that are typically weak in dyslexia (phonological processing, lexical access and working memory) within appropriate speed of information processing constraints. Thus LADS should detect the majority of adults with dyslexia – i.e. those with the classical, inherited form of the disorder. However, adults with atypical forms of dyslexia (e.g. cases in which phonological processing deficits are not found or where visual processing deficits predominate) may not be detected by LADS.

### **When will LADS be available?**

It is anticipated that LADS will be published in the summer 2002. For further information, or to order a demo CD, please visit the Lucid website [www.lucid-research.com](http://www.lucid-research.com) or telephone Lucid on 01482 882121.