

PREVALENCE OF 'DYSLEXIA' WORLDWIDE, AND IMPLICATIONS FOR TEACHING AND EDUCATIONAL POLICIES

Dyslexia International is often asked to justify the figure of 'about 10 %' of the population having dyslexia.

In March this year we put this question to the distinguished researchers on our Scientific Advisory Panel.

General agreement

Those replying agreed that dyslexia is a multivariate condition which means that it is caused by numerous causal, principally inherited, genetic factors, and that it is a neurobiological condition. This means that dyslexia is distinct from 'reading difficulties' in general although it can be associated with developmental and environmental factors such as early childhood influences, socio-economic status, and quality of teaching.

It is important to distinguish poor readers from dyslexics – they may or may not be the same.

Since therefore dyslexia is not one thing and since it manifests itself differently in different people there has been a move towards adopting the definition of dyslexia in the DSM-5, 'Specific reading difficulties'. These Specific reading difficulties can affect literacy acquisition – in particular being able to read fluently, concentrate, express ideas, organize text, memorize and, invariably, to spell correctly.

Different criteria when identifying dyslexia

Different countries usually insist on their own criteria when it comes to officially diagnosing dyslexia since it is their own legal systems that oblige them to arrange for their students who are officially recognized with dyslexia, to have a) extra time in exam, b) use of a computer, c) individual support including the use of spell-checkers etc, and even their own scribe or amanuensis. For understandable reasons, there is often a stringent cut-off point for official recognition, which unkind to children just above the cut-off point.

'The right for help and support shouldn't be made dependent on a diagnosis', wrote Pol Ghesquière, a view supported by Franck Ramus.

A confounding factor is the orthography of the language.

This means that an opaque language like English, where the correspondences between letters and sounds is most irregular, will be more evident in children with reading difficulties in the early years. However, it is generally agreed that dyslexia may be manifested anywhere in the world regardless of the kind of alphabetic or ideographic system (e.g. Chinese).

Suggested new statement

We realize that we risk simplifying a complex matter but, when filling in application forms for grants for example or producing publicity, we have to be concise.

1.

Figures from 3 % to 7 % are proposed for innate causes of difficulties in reading and writing with a bias to the lower figure;

and

between 10 % to 20 % or more worldwide for illiteracy, arising from various causes, socio-economic status being a major factor, even after teaching has been provided.

or:

2.

About 5 ± 2 % of the population are likely to have risk factors for 'developmental dyslexia'.

Between 5 and 20 % or more of the population need appropriate teaching to achieve functional literacy.

All the experts agree that:

- a very large percentage of children need remedial help;
- there are marked differences between cultures and languages;
- there is no undisputed biological marker for dyslexia because its causes are not yet fully understood. Statistical measures are therefore used but these are fraught with problems of definitions, policies for educational care, research protocols and cultural differences.

Individual comments

Dr Harry Chasty (see below)

Professor Pol Ghesquière, Centre for Disability, Special Needs Education and Child Care, University of Leuven, Belgium: 'Dyslexia is for me the description of only a small group of struggling readers (those with very severe and resistant difficulties – and percentile 10 is a rather arbitrary cut-off we agreed upon here in Flanders).'

Prevalence figures are very dependent on the definition and the cut-off used for diagnosis. Here in Flanders and the Netherlands we use three criteria to decide about a diagnosis of dyslexia:

- a) Serious difficulties with word recognition and/or spelling (score on standardized tests below percentile 10);
- b) The difficulties are persistent and resistant to state-of-the-art reading and spelling instruction and individual remedial teaching (at least six months);
- c) The difficulties cannot be explained better by other problems in the individual (intellectual disabilities, uncorrected vision, auditory acuity, psychosocial problems ...) or in the educational environment bad instruction - regardless of comorbidities.

When we use these criteria, prevalence is about 5 - 7 % (maximum). DSM-5 uses percentile 7 for the first criterion. So their prevalence numbers will be lower than ours for the specific problems with word recognition and spelling.'

[DSM is the *Diagnostic and Statistical Manual of Mental Disorders*, published by the American Psychiatric Association.]

Professor Elena Grigorenko, Department of Epidemiology and Public Health, and Department of Psychology, Yale's Child Study Center, USA; Adjunct Professor of Psychology, Columbia University, USA, and Moscow State University, Russian Federation: '10 % is not justified. It depends on the definition and the intervention that has been provided. The Connecticut Longitudinal Study found 7 – 8 % for a large, non-clinical, sample'.

Dr Maria-Luisa Lorusso, developmental neuropsychology and dyslexia, Universities of Pavia and Milan, Italy: ' ... I think we should be aware of another difference leading to different positions in terms of inclusion in the countries where dyslexia is considered to be a matter for school only, whereas in in countries where it is considered to be a matter for health systems more stringent criteria are applied. In Italy, which belongs to the second group of countries, the estimates are between 3 % and 5 %.

... our understanding of the causes is still too far from optimal to have a clear (and especially a single) biological marker, but that is why I think we need to rely on statistical grounds for the moment.'

Professor José Morais, Cognitive neurosciences and teaching of reading, Université Libre de Bruxelles, Belgium; L'Observatoire National de la Lecture, France: 'For diagnostic purposes we must rely on a scientific understanding of what dyslexia is, unfortunately we do not know precisely what it is. I am still impressed by a study [Ziegler, in Paris, involving more than 1000 children] showing that backward readers (6 month reading level after 18 months of instruction) were only 3 % in medium to high class schools, but more than 24 % in low-class ones ... I am really worried that not enough attention is paid to the situation of these poor readers (above 20 % ...).'

Professor Franck Ramus, Institut d'Etude de la Cognition (Department of Cognitive Studies), Ecole normale supérieure de Paris, France: 'If the goal is to define diagnostic criteria ... then a set of relatively stringent criteria such as those described by Ghesquière makes sense; ... if the goal is to identify all the poor readers who deserve some help then Siegel's criteria make more sense as they are more inclusive ...'

[Ramus also draws attention to 'tweaking' of the statistics by some clinicians, which may include more children than those who have a 'disorder'.]

Professor Linda Siegel, Professor Emirata, University of British Columbia, Canada: 'From my experience in the schools, and with adults and children who are struggling with reading, spelling and writing, I think the percentile 10 is too low. I think that 1 standard deviation below the mean (or lower) is fairer. Also, fluency tests of word and pseudoword reading must be included, as with some people accuracy is ok but

fluency is not, especially of pseudoword reading. Tests of pseudoword spelling are also particularly helpful. In my experience dyslexics do not catch up on this task and remain at low levels throughout life ...'

['pseudoword' reading tests the indirect, phonological decoding path, whereas reading tests of irregular words probe the direct, faster path for the orthographic lexicon, which is especially important for fluent, automatized reading, particularly in English.]

Dr Harry Chasty, Educational psychologist, International consultant in learning abilities, sent a longer submission, from which we have extracted the essentials for the present purpose: 'The 10% incidence figure, quoted for dyslexia has come down from the early beginnings of research into dyslexia in the 1970s. This figure has been very widely accepted, and is still quoted by the dyslexia movement's stalwarts, such as British Dyslexia Association, which asserts; "ten per cent of the population are dyslexic, 4% severely so." Dyslexia Action in its article, "Facts and Figures About Dyslexia", also quotes this 10% figure. Dyslexia International in its "Overview" article states that, "dyslexia occurs in at least one in ten people, putting more than 700 million children and adults worldwide at risk of life-long illiteracy and social exclusion." In this latter case, Dyslexia International's extrapolation of the 10% incidence figure world-wide, across all global languages, is particularly questionable.

But there is another important aspect to this incidence problem: Across world languages, differences in language structural complexity have very significant effects upon the observed forms and incidences of dyslexia. ...The incidence of "dyslexia" across world languages, is not a consistent 10%, but varies (i) with how dyslexia is defined within each language; and (ii) with the structural semantic complexity of each language.

Structural differences between languages are so significant that each should be regarded as unique.'

[Chasty also draws attention to the developmental stage at which assessments are made; stating that age 'x' is not enough as there are marked differences between children of the same age, especially when young. His complete paper may be obtained from amy(at)dyslexia-international.org.]