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# DYSLEXIA COMPASS

National Dyslexia Measurements  
Across Europe  
Report



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National Dyslexia Measurements

Across Europe: Report

June 1st 2021 – February 28th 2022

## Introduction

The Dyslexia Compass was born out of a recognition that globally, people with dyslexia are being underserved – educationally, socially, economically, and politically – and that this could partially be traced to a lack of international (and in some cases national) agreement on how to identify and measure levels of dyslexia. This report seeks to explain these differences in measurement with a view to providing a grounding for future progress in aligning measurements and opening up conversations about how different organisations can agree on testing procedures and protocols within the continent of Europe and ultimately beyond.

The report has been produced as a trans-national effort in accordance with the European Union's Erasmus+ guidelines, and may be used for dissemination purposes by partner organisations, and for reference by interested parties.

### Acknowledgements

The authors would like to thank the research participants for their openness, expertise, and experience. Without them, this report would not have been complete.



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# Contributors

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## Executive Summary

This report deals with an Erasmus+, European funded project called The Dyslexia Compass. The name of the project reflects two important themes: first, the notion of “compass as mapping tool”: the project seeks to discover, elucidate, clarify, and map different national organisations’ views of dyslexia, methodologies and tools for testing dyslexia, and the differing measurements of dyslexia themselves. Second, the name reflects the notion of “compass as wayfinder”: a compass as a tool for discovering new, clear, and acceptable ways forward in the midst of confusion.

The report will present, synthesise, and make sense of, data collected from desk research and focus group discussions from around the European Union and beyond. These data have been chosen through both business and academic research methodologies, and the needs of dyslexic people themselves.

Themes and findings investigated through this project, and recorded in this report, will include:

## 1) The scope of the project

### o Which countries were investigated

- Countries investigated included:

- Norway
- Denmark
- Sweden
- Romania
- Croatia
- Germany
- Austria
- Spain
- France
- The UK

### o Which figures were involved?

- Figures involved ranged from a low of 1.3% to a high of 20% (and potentially higher)

## 2) The Mechanics of Dyslexia Detection

### o What people were looking for

- Research indicated this included:

- Working memory
- Attention and concentration
- Perception
- Spatial orientation
- Time management
- Cognitive processing speed
- Logic and sequencing abilities
- Rapid naming
- Mathematics and number abilities
- Motor skills

- o What methodologies were used
  - Topics of interest included whether countries used the following:
    - A discrepancy model
    - Confidence intervals
    - Consistent standard deviations
  
- o What tools are used?
  - It was discovered that a wide range of different tools were used, depending on national context. It was also discovered that in some cases, no tools at all were considered standard.
  
- o Best practice
  - Research showed that best practice was a concept interpreted very differently from nation to nation. Some considerations did however show up as important. These included:
    - Talking to multiple stakeholders
    - Looking into context, environment, and background
    - Observing school behaviours and output
    - Family background
  
- o How, when, and by whom is dyslexia spotted?
  - One of the indicating factors around the consistency of dyslexia measurements turned out to be the professionals who measure dyslexia. These varied from teachers to in-school SEN specialists, educational psychologists, and qualified diagnostic assessors. Occasionally, a medical professional will be equipped to diagnose for dyslexia.

### 3) Sociological considerations, including:

#### o Gender

- There was disagreement over whether, and to what extent, gender is a factor in a dyslexia assessment.

#### o Ethnicity

- While ethnicity was not always seen to be a factor in dyslexia measurement, some countries reported a difference between ethnic groups, but not always directly related to language.

#### o Orthography

- In general, orthography did not appear to make a significant impact on the accuracy, inaccuracy, or variance in a dyslexia assessment.

#### o Cost

- In some countries (such as the UK), cost proved to be a potential barrier to accessing an assessment; however, in most nations this was not an issue.

#### o Wealth

- Wealth was not considered a significant factor in any of the nations involved in the research, even where an assessment could prove costly. Provisions were always said to be in place for those in lower socio-economic bands.

- o Social attitudes
  - Social attitudes towards dyslexia vary enormously within the countries investigated. There is however a noticeable movement in all nations from negative social attitudes towards something more positive. This movement may well make access to an assessment easier.
  
- o Whether a dyslexia assessment is "official"
  - In some countries, a dyslexia assessment will not be considered "official". In others it will. But an interesting question arose, about what "official" actually means in this context. In the UK at least, it may be taken to mean that the assessment is accepted by government and educators alike.

Overall, the report highlights key areas of interest for those interested in systematising coherent and consistent dyslexia detection and measurement across borders. It provides a structured and evidence-based guide for future investigation and practical work in aligning targeted national interventions.

## Background

This report documents some of the important differences and similarities regarding European nations regarding their methodologies and tools for assessing dyslexia.\* Across the continent, figures vary widely among different national organisations for how many dyslexic people there are. Some of this disparity may be down to the orthographic depth of a language, or the ethnic makeup of a nation (whose citizens may speak several languages, but be educated in only one). The hypothesis however has been that one of the major contributing factors to the differences in national dyslexia figures is a possible variance in how dyslexia is measured, whom dyslexia is measured by, and whether the measurements, such as they are, are consistent and reliable within national boundaries.

Without a consistent methodology for measuring dyslexia, coupled with a consistent understanding of what is being measured, then the concern has to be that targeted support and intervention will be unreliable, with resources that cannot be consistently and universally agreed upon being allocated to areas that cannot be consistently and universally agreed upon.

\* In this report, terms such as “assessment”, “diagnostic assessment”, and “diagnosis” will be used interchangeably; although the word “screening” will be used to carry less official weight.

This is not simply a concern for the education system, as studies indicate a strong connection between dyslexia, academic under-achievement, trauma, substance abuse, homelessness, mental health issues, and suicide. The economic costs of undiagnosed dyslexia have been the subject of numerous studies, and run into billions of Euros per year.

According to statistics, world estimates of the prevalence of dyslexia range from 0.05% (in Turkey) to 33.33% (in Nigeria). Within the European Union, figures can range between the lower estimate in Romania (0.1%) and Norway (1%) to a far higher estimate in the same countries (with Romania at 17% and Norway at 16% - that being 80% of an estimated 20% with significant reading difficulties).\* As we can see, measurements are not as consistent as they could be, and without consistent measurements, the contention is that interventions and strategies may be poorly targeted.

The Dyslexia Compass project seeks to invest consistency in the measurements.

\* According to both the University of Michigan and the Dyslexia Center of Utah, 80% of those with profound reading difficulties will have dyslexia.

## Part 1: The Scope of the Project

The Dyslexia Compass has a potentially global scope, but practical constraints have limited the project to research by organisations in five European countries on dyslexia measurement in Europe. It has not been possible, given time, economics, and geography, to research all European nations, but the belief is that the scope of the research carried out has implications that can validly be applied to those EU and other continental countries who were not specifically included in the study.

Moreover, the scope of the project is not limited to the subject countries alone: the scope is properly seen as dyslexia practitioners (on the one hand), and dyslexic children themselves (on the other). Discovering which stakeholders can be counted as relevant practitioners is one of the aims of the Dyslexia Compass project, and can provide invaluable information on the reliability of assessment, the international consistency of assessment criteria, and the validity of assessment figures; while being able to highlight the numbers of children noted as (potentially) dyslexic across European borders can itself go a long way to focusing research and policy on the true scale of the issues surrounding dyslexia.

- **Which countries were investigated?**

This report was compiled by an international consortium of partners, and focuses mainly though not exclusively on Norway, Denmark, Sweden, Romania, Croatia, Germany, Austria, Spain and the UK. While not every European country is included in this list, there is a broad selection from both EU and non-EU nations, and from the north, the south, the east, the west, and central Europe. We believe that this breadth of perspective can adequately provide an in-depth and enlightening view of the challenges being faced.

- **What figures were involved?**

We shall begin with what may be considered a shocking disparity in national assessments of the prevalence of dyslexia. We only need look at the statistics, gathered through thorough and painstaking research, backed up by international focus groups of stakeholders involving teachers, parents, diagnosticians, and national dyslexia bodies, to see the issues involved.

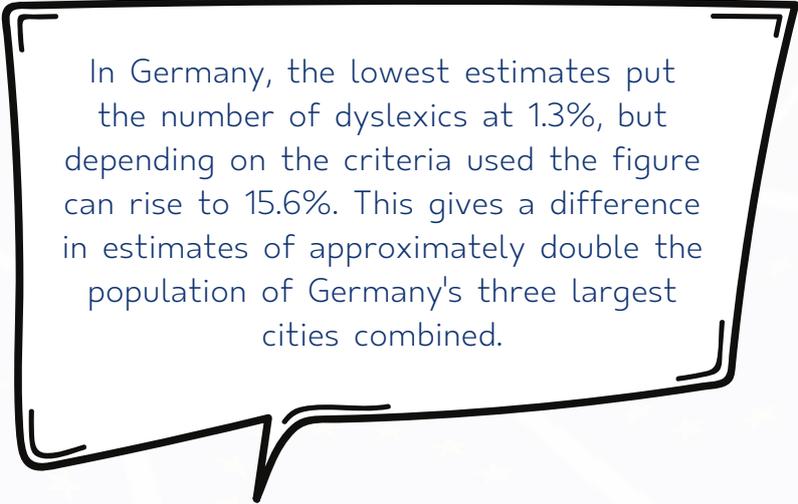
While the European Dyslexia Association estimates that between 5% and 12% of the population of Europe is dyslexic (which would put the number of dyslexics at anywhere between 37.3 million and 89.5 million – a staggering difference of over 52 million),\* The European Commission released a report in 2013 stating that

\* According to UN figures, this difference would be more than the entire population of Kenya!

of the 445 million citizens within the European Union, 15 million of them had Special Educational Needs. This equates to a mere 3.3% of the block's population. This same Commission released a report in 2013 showing the numbers of school pupils identified as having special educational needs (SEN) as a proportion of the total population of selected European countries as ranging from Iceland at nearly 24%, down to Sweden at less than 3%, with thirty one countries represented, the majority of which registering somewhere around the 5% mark.

Statistics in Norway generally place the number of dyslexics at between 5% and 10%. In geographically proximate countries, Denmark gives figures of 6%, 7%, and 9% while Sweden gives figures of both 3% to 10%, and 5% to 8%. In Latvia, close to Scandinavia geographically though not a Scandinavian country, figures range from the lowest at 3% to the highest at 21%. Meanwhile, research on dyslexia in Scandinavia as a whole finds that figures given range from 5% to 17%, to "between 1% and 20% (with severe reading difficulties)". If we are to take these figures seriously, this would mean that anywhere between 216,000 and 4,320,000 people could be dyslexic in Scandinavia, a difference of 4,104,000. This equates more or less to the entire population of Croatia! In Croatia itself, numbers range from estimates of 5% to 7%, to one estimate of 10%.

In Germany meanwhile, the difference in statistics is startling. The lowest estimates (in Saxony) put the number of dyslexics at 1.3% of the population. Other figures give the number of dyslexics in Germany as 2.2%, 1.9% to 2.6%, and 5%. Hamburg places the figure at 7.2%. One report claimed that depending on the criteria used for measuring dyslexia, the figures will range from 7.1% to 15.6%. Overall, this provides researchers with a range of statistics to choose from, beginning at 1.3% and topping out at 15.6% of the population. In a country of over 83,000,000, this gives a difference in estimates ranging from just over one million to about thirteen million, a number approximately double the population of Germany's three largest cities combined.



In Germany, the lowest estimates put the number of dyslexics at 1.3%, but depending on the criteria used the figure can rise to 15.6%. This gives a difference in estimates of approximately double the population of Germany's three largest cities combined.

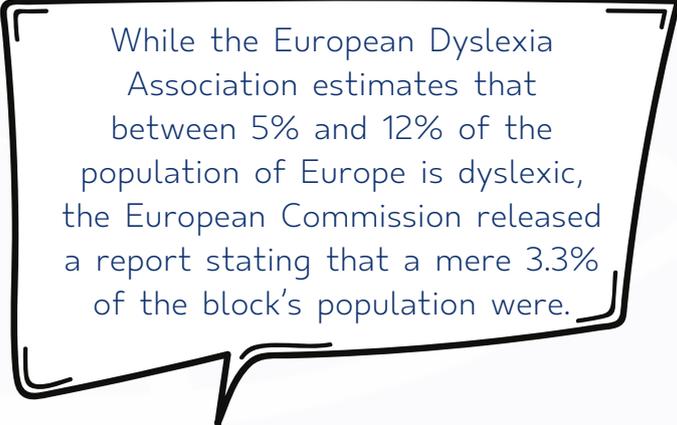
In the United Kingdom, figures vary between 4% of the population estimated as having “severe” dyslexia to a general consensus of 10%, possibly rising to 15%. The difference between 10% and 15% of the UK population (5%) is roughly 3.35 million people. This is more than the combined populations of Birmingham, Leeds, Glasgow, Sheffield, Edinburgh, and York, who may or may not have dyslexia, depending on which figures we accept. In France, a country with a similar population to that of the United Kingdom, figures are hard to come by, but range from 5% to 8% and 10%.

There are similar disparities in Spain, a nation proud of its decentralised system. This decentralisation may contribute to some of the differences in statistical findings, with dyslexia measurements starting at 2.4%, rising through 3.2%, passing through “5% to 10%”, hitting 10%, and eventually peaking at 17.5%. Overall, the gap between these different findings equates to over 15% of the population of Spain (in other words – over seven million people).

Romania, again, shows differences in its estimations of how many people have dyslexia. Sometimes, the figures are hard to ascertain, being extrapolated from other statistics, but one study said that out of 10,000 households in Romania, there will be 25 cases of dyslexia. At a rate of 2.627 people per household (2017 figures), this gives just under 0.1% with dyslexia. Another study claimed that over 11,000 children in Bucharest have dyslexia.

In an overall population of 1.83 million people in Bucharest, with 15.5% of those being children, this would mean that about 3.8% of children are dyslexic. Meanwhile, out of a nationwide population of 3.7 million children, other research has put the number of children with “learning disabilities” as 250,000, or 6.75%. Another study put the number as three out of every twenty primary school children – or 15%. Another put the figure at 7% to 15%, another at 10%, and yet another at 17%. Figures in Romania therefore range from 0.1% to 17%. In a country of nineteen and a half million people, the difference between 0.1% and 17% is of that between roughly 19,500 and 3,315,000. This is 3,295,500 people who may be being misdiagnosed, or not diagnosed at all.

In other countries, Italy found that 4% of its population is dyslexic, Ireland reported 10%, and in the Netherlands, the Dutch Ministry of Education reported that 10% to 19% of schoolchildren had dyslexia, while in pre-vocational schools, 20% of final exam students were said to be dyslexic. This contrasts heavily with the mere 5% of minority ethnic children in the Netherlands who are reported to have dyslexia. The Czech Republic gives figures of 8% to 10%. Hungary puts the number at 7% to 10%.



While the European Dyslexia Association estimates that between 5% and 12% of the population of Europe is dyslexic, the European Commission released a report stating that a mere 3.3% of the block's population were.

We can contextualise these findings against the United States, a non-European country, whose National Institutes of Health has shown that dyslexia affects 5% to 10% of the population, with an upper estimate as high as 17%. The US Department of Health and Human Services puts the figure at 15%, while the International Dyslexia Association states that “about 13–14% of the school population nationwide has a handicapping condition that qualifies them for special education”. Nevertheless, they argue, many more people – “perhaps as many as 15–20% of the population” – have some of the symptoms of dyslexia, including slow or inaccurate reading, poor spelling, poor writing, or mixing up similar words”.

Any argument which says that the differences in dyslexia statistics are reflections on national orthographies fails when confronted with countries such as Germany, Romania, and the Scandic nations, who each show considerable variation in figures within their own borders, among children who speak the same language.

## • Reflection

With an awareness of the differences across Europe in the measurement of dyslexia, some questions immediately come to mind. These are: what are different nations looking for, and how are they looking for it?

We shall initially break this down into the following questions:

1. What are people looking for?
2. What methodologies do people use to look for it?
3. What tools do people use to look for it?
4. At what age is dyslexia typically spotted in different countries? – and by whom?

We shall deal with these questions in the following section.

## Part 2: The International Mechanics of Dyslexia Detection

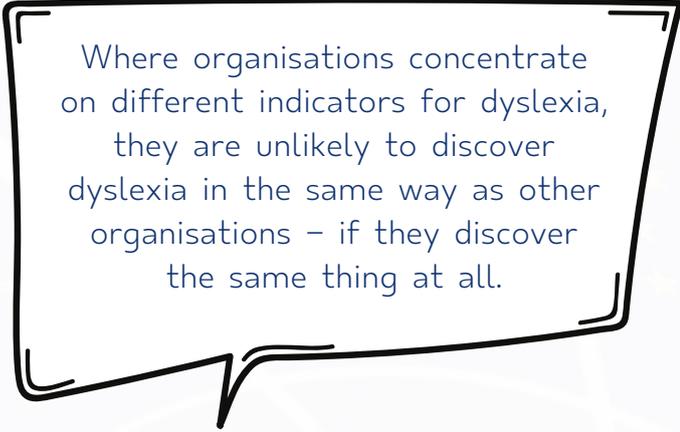
In order to properly understand the differences in dyslexia measurement cross-nationally, it is important to ask whether practitioners in different countries are looking for the same thing, asking the same questions, using comparable tools and methodologies, and indeed similarly qualified to make important judgements.

Questions that are relevant include: what are practitioners looking for? What methodologies do they use to look for it? What tools do they use to implement these methodologies? What is considered to be best practice when determining a dyslexia diagnosis? And who is qualified to spot dyslexia?

In this section, we turn to these very questions, and compare the similarities and differences from country to country.

- **What are people looking for?**

It's important to realise that where organisations concentrate on different indicators for dyslexia, they are unlikely to discover dyslexia in the same way as other organisations – if they discover the same thing at all. It is therefore important to ask the question: what are the indicators that are being looked for in different countries?



Where organisations concentrate on different indicators for dyslexia, they are unlikely to discover dyslexia in the same way as other organisations – if they discover the same thing at all.

Indeed, it turns out that different nations do indeed look for different things, although there is a strong overlap between them regarding where they look for the same things. For instance, in Spain, people first look for letter recognition, then the ability to distinguish pseudowords, then grammatical recognition and competence, then syntactical competence, and finally comprehension. This is factored against a subject's clinical history, their reading, writing, and speaking skills, their maths skills, their time management, their personal organisation, and cognitive skills such as: memory, attention and concentration, perception, their spatial orientation, their psychomotor coordination, and their sequencing abilities.

In Austria, the focus is on behavioural disorders, word comprehension, sentence comprehension, text comprehension, phonological decoding, blending and synthesis, reading speed, spelling and language skills, logical thinking, processing speed, and memory skills.

In Romania, similar to Spain and Austria, those testing for dyslexia generally look for reading speed and comprehension, but also reading accuracy. Other things tested include pronunciation disorders (dyslalia), oral skills, delays in language development, vocabulary acquisition, and phoneme recognition.

In Scandinavia, there is some consistency as well as some variance. In Norway, phonological ability (decoding, blending, identification, manipulation, awareness...) is checked, as is reading and writing fluency and comprehension, letter recognition, pseudoword recognition, recognising orthographic patterns, short-term and verbal memory skills, and background issues such as the home environment, mental health issues, and overall language skills. In Sweden, phonological abilities (decoding, blending, identification, manipulation, awareness...) are looked for, along with reading, writing, and spelling fluency, listening comprehension skills, the ability to read rapidly-presented words, the ability to read and distinguish pseudowords and non-words, recognising orthographic patterns, working memory skills, and background factors such as the home environment, general confidence levels, and mental health issues. Further to these similarities with Norway, the ability to distinguish between homophones is checked, as well as logic and perception skills, auditive, visual and attention skills, and spatial awareness.

In the United Kingdom, a range of abilities are looked at. These include, though are not exclusive to: phonological awareness, phonological memory, working memory, reading speed and reading fluency, finding words in letter chains, spelling abilities, vocabulary range and receptive vocabulary, writing, handwriting, and letter formation, motor control, sense of number and mathematical ability, logic and reasoning, cognitive processing speed, and rapid naming ability / deficit.

In Croatia, phonological memory, awareness, processing, and decoding, reading and writing fluency, text comprehension, working memory, letter naming, repetition of sentences and pseudowords, visual perception, and rapid naming are checked for.

Among these countries, there is a general consensus that practitioners and stakeholders should be looking out for phonological skills, including awareness, decoding, comprehension, manipulation, blending, synthesising, and memory. Associated with phonological awareness are abilities concerning word, pseudoword and non-word recognition, distinguishing homophones, recognising orthographic patterns, reading speed and fluency, reading comprehension, vocabulary retention and acquisition, and letter naming.

Working memory seems to be fairly constant among different countries' checklists, as does attention and concentration, perception, spatial orientation, time management, cognitive processing speed, and logic and sequencing abilities.

Only in the UK and Croatia was rapid naming identified as important, although in UK focus groups it was stressed that this was absolutely crucial for a rounded identification of dyslexia.

Among those things that came up but were not universally mentioned, were mathematics and number abilities, and motor skills (including those motor skills typically associated with distalia, as well as with handwriting).

Personal background (including general intelligence, confidence, mental health problems, and general language skills) was only occasionally mentioned, but it seems reasonable that this would be taken into account in most instances.

- **What methodologies are used?**

Once we can establish what it is that people are looking for in different countries, we need to establish the methodologies and tools used to look for it. These vary but also show some consistency across national boundaries, and it's these differences and similarities that we must identify.

In Spain, they look for reading abilities and visual scanning, writing and spelling tests, exercises testing motor consistency, copying, rapid naming, sequencing abilities, maths, rhythm, and personal history.

Research indicates that they also test for hearing, though they don't appear to name auditory processing or hearing issues as among the signs of dyslexia they are looking for. This could be because hearing tests can give good indications of word recognition in non-reading contexts. Questionnaires are used, as well as oral questioning, measuring the pupil's ability to follow instructions and to copy, and official testing on "three phonological components independent of reading".

In Austria, spelling is looked at, reading speed is checked, comprehension and reading accuracy tests are performed, and intelligence testing is used. In Austria it's common to check for a "discrepancy model", looking for mismatches between intellectual ability and school success. In France this is not the case, looking simply at the difficulties manifest in a dyslexic child. In Germany, it has been noted that in a large sample of German children, prevalence (of dyslexia) was between 1.9% and 2.6% when the criteria used included a reading score of 1.5 to 1 standard deviation below the norm and average performance in at least one other cognitive measure. However, the rate jumps to a range of between 7.1% and 15.6% if only the reading score of 1.5 to 1 standard deviations below the norm is used, with no "discrepancy model". There are no national guidelines on how to test, what standard deviations to use, and whether to use discrepancy models, in Germany.

Romania takes a discursive approach, arranging meetings with parents and therapists, teachers and pupils. Psychological testing is emphasised, and unspecified linguistic exercises are used in the identification process. Skills disorders must last for at least six months to be considered as dyslexia, even when specialist intervention is being provided in the meantime.

Norwegian specialists (of whom more later, in Section 4 of this report part of the report) likewise use interviews with teachers, pupils and parents. In line with what the Norwegian specialists are looking for, a range of phonological, literacy, and memory assessments are used, and these focus not only on weaknesses but potential strengths among children being tested. In Sweden, national standardised tests are employed, along with pedagogy examinations and examinations by a school health team, interviews with parents, pupils and teachers, and a comparison of reading and writing abilities with other academic abilities. In Denmark, reading tests, word recognition (involving pictures), spelling and non-word spelling are used, as well as a range of phonological tests. There is a colour-coded system of "dyslexia severity", ranging from "green" (mild dyslexia) through "yellow" (moderate dyslexia) to "red" (severe dyslexia).

The UK uses a mixture of psychometric testing and intelligence tests, testing different forms of intelligence.

There are also motor control tests, memory tests, reading and writing tests, sequencing tests (finding, sorting, matching, etc). Often but not always, measurements need to be taken that highlight the differences between “dyslexic deficits” and other non-deficit cognitive skills (a discrepancy model).

Croatia assesses for phonological skills, literacy ability, dictation skills, focused writing, working memory, and visual perception.

In all, there are certain differences that need to be highlighted among participating countries. Chief among these (and highlighted by the figures shown in Germany) is the question of whether a discrepancy model should be used in determining dyslexia. Countries such as the UK, Austria, Sweden, and to some extent Norway use forms of discrepancy testing (during focus group interviews in the UK, it was noted how important these could be in determining an SpLD rather than simply a global cognitive impairment or other learning disability), and there is sometimes discrepancy testing in Germany. Other countries, such as Spain, Denmark, Romania and Croatia did not report specific discrepancy testing, although their broad pupil background investigations will no doubt go some way towards showing where there are indeed cognitive discrepancies.

As for the important question of whether confidence intervals are used when testing for dyslexia, of the

countries who could provide the information, only the UK routinely and specifically uses confidence intervals, while Norway only uses them in mapping the background of a pupil being tested, and only in interviews based on a teacher's or psychologist's / SENCO's interpretation. Romania, Spain, and Croatia reported no confidence interval use; while other nations provided no information on this (which indicates that they use no confidence intervals). In the UK, the general consensus is that a confidence interval of 95% (or sometimes 90%) is integral to the proper testing for dyslexia.

There is however more general agreement on what standard deviations are to be used when measuring reading fluency. In Denmark, a SD of 1 from the average is normal; in Germany and the UK, a SD of 1 to (more typically) 1.5 is standard; in both Croatia and Austria, 1.5 SD is standard.

- **What tools are used?**

A broad range of tools is used when testing for dyslexia. It's important to note that mention has been made by diagnosticians that the broader the range of tools, the better; and that the use of a wide range of tools in an assessment can lead to a deeper understanding of a person's levels of dyslexia (or lack of dyslexia).

However, research has found that while a broad range of tools is used, there is little if any agreement across borders on which tools are best. Spain and the UK

reported the broadest range of tools, while Austria reported none at all! Without a standard set of tools for measuring dyslexia, a standardised agreement on how many dyslexics there are is always going to be a challenge to reach.

A quick note to begin: when, in the case of dyslexia measurement, the word “tools” is used, it is taken to mean a test, or a testing program, that is designed (or used) to determine whether a child is dyslexic or not.

Many countries have tools which are specific to those countries (or languages). So for instance, Spain uses a tool called PRODISLEX (“Protocolo de detección y actuación en dislexia”); Croatia uses PredČiP (a reading and writing skills assessment); the UK uses GL's British Ability Scales; and Norway uses a national test called LOGOS. However, there are some tests which are favoured by more than one country, and these tests can, at least, provide some international consistency in the types of results given.

Most obvious among these tests is the Wechsler test (or forms thereof). This is used by the UK, by Romania, and by Spain. Romania, Spain, and the UK also each use Kaufman. The same three countries also share the Raven test. Croatia and Spain both use Peabody. Apart from these examples, little consistency was detected, and this indicates that work has to be done to align testing procedures.

The UK and Spain each reported the largest number of tests (while not exhaustive, the most tests were reported in the UK, with well over fifty; while Spain reported well over twenty). Next came Romania, Croatia, and Germany, with around half a dozen different tests reported from each country. Norway, for the most part, uses one standardised national test (although it is not recognised as an official test by the Norwegian government), and as previously stated, Austria reported no specific tests at all.

In all, the disparity in testing tools indicates a potential problem for a standardised measurement of dyslexia across countries; but at the same time, presents a possible opportunity. Where no alignment yet exists, the case for one becomes stronger. At the same time, where Romania, Spain, and the UK use some of the same testing tools, this provides evidence that tools may well translate perfectly well from one region to another, and the case for doing this becomes stronger.

- **What is considered best practice?**

Best practice may vary from context to context. However, certain things remain constant in assessing dyslexia in children: talking to multiple stakeholders is common, as is looking into context, environment, and background. Observing school behaviours and the quality (and consistency) of schoolwork seem to be unifying factors, too. Spain, Romania, Norway, Sweden, Denmark, and the UK, all take background into account and will consult with numerous interested parties.

In terms of national standards, there are no national guides in Norway, although continuous testing over a range of criteria while looking for strengths as well as weaknesses is recommended; while in nearby Sweden, the guidelines are chiefly that in cases where second language speakers are being tested, teachers of both languages work in conjunction with SLTs to determine the correct diagnosis. The Danish Ministry of Education introduced a national web-based dyslexia test for children of 8 years and older.

Prodislex national protocols are generally followed in Spain; Romania has guidelines developed through the Romanian Association for Dyslexic Children (ARCD) in conjunction with the Federation of Free Trade Unions in Education. Bucharest City Hall also contributed to the organisation of a conference aimed at good practice and policies in identifying dyslexia (and the general consensus is that phonetic-analytical-synthetic methodology is a national example of good practice). There is also national Good Practice approved by Timlogo, an online speech therapy platform.

Finally, in the United Kingdom, it is considered best practice to conduct face-to-face diagnostic assessments, as these give the optimal chances for assessors to determine stress levels among those children being tested. From a diagnostician's perspective, confidence intervals are considered indispensable.

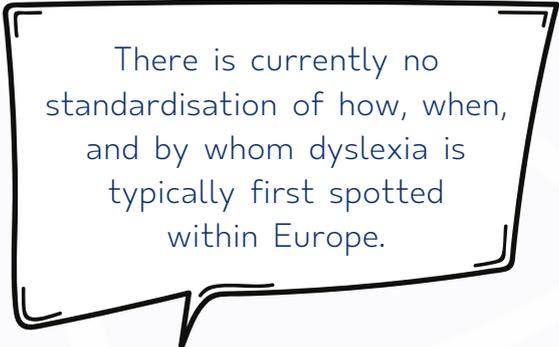
Ultimately, the UK's national umbrella organisation NASEN (the National Association of Special Educational Needs) provides constantly updated guidelines for practitioners on inclusivity, good practice, and the latest research; while PATOSS, the professional association of teachers of students with specific learning difficulties, has its own code of practice and ethics which it expects practitioners to adhere to. SASC, the national SpLD Assessment Standards Committee, also provides clear guidelines for UK practitioners and diagnosticians. NASEN, PATOSS, and SASC guidelines and standards are consistent and provide comprehensive guidance on good practice.

- **How, when, and by whom is dyslexia spotted?**

One of the contributing factors to the variance in dyslexia measurements is the question of how, when, and by whom dyslexia is typically first spotted. There is no standardisation of this in Europe, with ages ranging from the very young (pre-school age children) to the surprisingly mature (thirteen years old), and a variety of people who contribute to the findings.

In Spain, for instance, dyslexia is noted from as early as early as 3 years old (age 4 in Madrid) to as late as 12. It is mainly noticed by educators, but in Andalucía must be recognised by a trained counsellor.

Some areas in Spain use Speech Language Therapists (SLTs), but it is not uncommon for optometrists, ophthalmologists, audiologists, otolaryngologists (ENT – ear, nose, and throat specialists), or even general practitioners to be involved. In Croatia, it is recorded by SLTs. In Austria, it is recorded by Special Education Teachers. Romania relies on a combination of teachers, education therapists, parents, SLTs, school counsellors, psychologists, and psycho pedagogues. In Norway, similarly, a combination of teachers, Special Education Teachers, SLTs, and psycho-pedagogues do this work (at an average age of 10 years old for a child). Sweden spots dyslexia surprisingly late, at an average age of 13, and uses teachers, SLTs, the school health service, and in some cases people who are referred to as “specialists”. In Denmark, the job is given to specially educated personnel in schools, as well as teachers and SLTs, and also the Danish Science-Centre for Word Blindness. Finally, dyslexia is spotted as early as 3 years old in England and Wales, but more often early school age (about 5 years old), by parents and educators, specialists and screeners, as well as more official diagnostic assessments. The picture is slightly different in Scotland, where those who detect dyslexia are the teachers.



There is currently no standardisation of how, when, and by whom dyslexia is typically first spotted within Europe.

The range of people relied upon to detect dyslexia in children is therefore very wide indeed, including parents and teachers, Special Education Teachers, screeners, psycho-pedagogues, psychologists, SLTs, counsellors, and in one case at least a nationally recognised dyslexia association. In some countries of the EU (such as France, which was not included in this survey), dyslexia, being counted as a medical condition, must be accompanied by a doctor's note to be counted.

The age range for recognition spreads from 3 years old in the UK and Spain, to 10 years old in Norway, right up to 13 years old in Sweden.

## • Reflection

Most practitioners in all respondent countries test for similar things, namely phonological awareness and competence, literacy skills, working memory, and abilities centring on attention, concentration, and perception. Organisational skills, sequencing skills, time management, spatial awareness, number literacy, logic, and cognitive processing speed are also fairly consistent as a focus for dyslexia detection. With this in mind, some important consistency has been found among practitioners across borders. Rapid naming was not universally identified as a key to dyslexia detection, although this may have been a consequence of the way the questions were put, as those who did report this as a criterion for assessment were firm in their views of its importance.

In terms of methodological considerations, three main points stood out as of interest: whether a discrepancy model should be used; whether confidence intervals should be used; and what sort of standard deviation from the reading norm should be used.

As most countries used a discrepancy model of some description, we can assume that this is an important and enlightening facet of assessment. Most countries who reported using standard deviations in their reading fluency tests had these deviations at 1 or 1.5 from the norm, depending on circumstance and context.

Of the three main methodological points, only the question of confidence intervals showed itself to be problematic: many countries do not appear to use them; those that do (chiefly the UK) stress their importance; and there is a question mark hanging over the appropriacy of confidence intervals where testing is carried out online.

The tools used for testing dyslexia provided fascinating insights into the reasons for measurement variation across national borders. What is clear is that where tools are not internationally validated, they need to be able to be internationally validated, through cross-referencing and open discussion among national bodies. In cases where dyslexia is detected using tools that are nationally (or internationally) accepted, the coherence of such tools is paramount. That is, they should be able to build a broad, coherent picture of a child's cognitive development, not simply provide isolated snapshots. The best tools also need to be useable in different national contexts, meaning they need to be able to account for orthographic depth and educational / social background. Moreover, in regions where no standardised tools are used, discussions need to be held about why this is so (it could be because people do not wish to use such tools, or there is no qualifying body to enable them to use such tools, or there is not enough money available to train and use these tools). Where practitioners in one context use, for example, Wechsler testing, the reliability of these

results need to be commensurate with the reliability of measurements in countries where no such tools are used, and it is difficult to see how this mutual reliability criterion can be achieved.

Those charged with carrying out dyslexia testing do not all belong to the same professions, Europe-wide. This in itself is neither a problem nor an advantage, but where recognised testing tools are used the suggestion must be that only those properly qualified to use those tools should be able to give a valid assessment. Where non-specialists are given the responsibility of “spotting” dyslexia in children, such as in Scotland, the conclusion is that there needs to be sufficient dissemination of information about dyslexia from national organisations to these non-specialists, in order for them to make an informed judgement. Pathways from national organisations, or supra-national organisations such as the European Dyslexia Association, must be made navigable. It should also be noted that while in some cases, the average age for detecting dyslexia in children may be in the early (or late pre-) teens, dyslexia organisations need to be clearer in their communications that the earlier a detection is made, the better for all parties.

Finally, there appears to be a good argument that best practice guidelines could – and perhaps should – be standardised across borders.

As methodological considerations do not appear incompatible with standardised best practice, and best practice itself does not seem to be relative to methodology and the tools used, an international standard for best practice could be agreed upon that would go some way towards bridging the gaps between vastly different national results.

## Part 3: Sociological Considerations

Crucial to understanding the variety of interests, methodologies, and tools used from country to country, is understanding the context that they are used within. What's sauce for the goose in one context may not be sauce for the gander in another.

Relevant considerations in this instance include (but are by no means restricted to) what influence gender is seen to have on the prevalence of dyslexia, what influence ethnicity might have on the likelihood of a dyslexia diagnosis, what influence second language orthography might have on measuring dyslexia, what the cost of a dyslexia test is in different regions, whether wealth is a factor in the demographic breakdown of dyslexia diagnoses, what social attitudes exist towards dyslexia, and whether the measurements given are in some way (and to what extent) "official".

Each of these considerations will provide a different backdrop for each of the countries studied: some nations will have a more diverse ethnic make-up than others, some countries will be wealthier than others, some countries will have different attitudes towards gender differences, some countries will have very different orthographies as their official (and unofficial but widely used) languages. No understanding of the differences in dyslexia measurements across borders can ignore these issues, and the possible implications drawn from the findings.

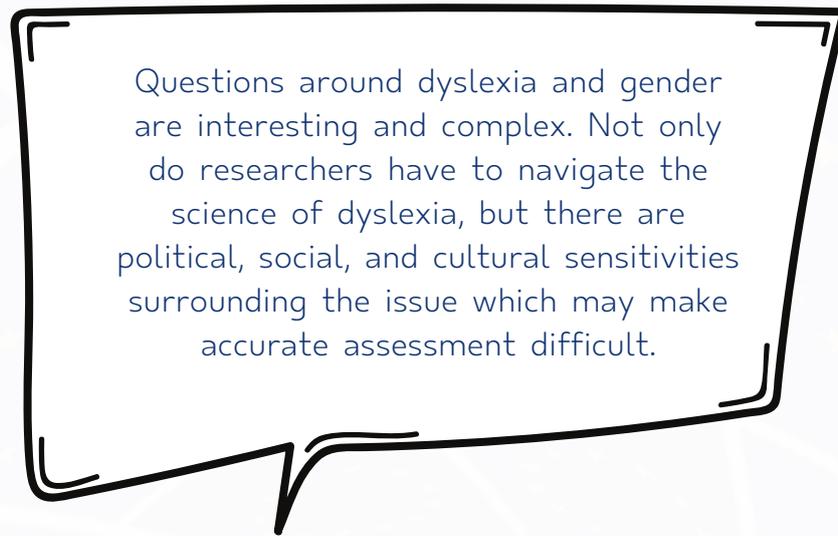
- **Gender**

Questions around dyslexia and gender are interesting and complex. Not only do researchers have to navigate the science of dyslexia, but there are political, social, and cultural sensitivities surrounding the issue which may make accurate assessment difficult. In terms of literacy achievement alone, the European Commission reported that in 2009, 13.3% of low achievers at school were girls while 26.6% were boys. This gender gap is smallest in the Netherlands, in Denmark, and in Belgium, and highest in Malta, Bulgaria, and Lithuania. Sociologically, a case might be made that Northern Europe has made greater strides towards “gender equality” (however this is identified and measured), and so while some differences remain, they may be put down to factors other than dyslexia. However, in a world where attaining greater gender equality generally means reducing the advantages that men and boys have over women and girls, it isn't yet obvious what gender relations obtain in the countries cited, or even whether recording literacy attainment alone might detract from a proper understanding of dyslexia differences between the genders.

Nevertheless, the results from the Dyslexia Compass desk research and focus groups was fascinating. In Romania, while no official figures are kept breaking down dyslexia by gender, they noted studies dealing with the number of dyslexic boys set against the number of dyslexic girls, reporting that there are four to five times more dyslexic boys than girls.

They also cited three factors that might contribute to these findings: first, that where dyslexic mothers are roughly 50% likely to give birth to dyslexic children, studies indicate that dyslexic mothers are more likely to give birth to boys than girls, increasing the population of dyslexic boys. Some indication was noted that boys are more genetically likely to be dyslexic. And finally, it was noted that boys mature more slowly than girls, and this may contribute to an apparent prevalence of reading and learning difficulties among them. To counter-balance this, research (originating from Shaywitz) was mentioned suggesting that boys simply “play up” more than girls when struggling, and are therefore more likely to be recognised as dyslexic.

Norwegian and Danish reports agreed with this latter interpretation, that the gender disparity is a “myth” and “no longer regarded as fact”. This is a live debate in the United Kingdom, with (on the one hand) statistics and some scientific research indicating that more boys are dyslexic than girls, while on the other hand, the sociological argument (which appears to be gaining traction) that this is because of boys’ “behaviour”. Both the scientific and the sociological explanations (giving different answers to the question of gender disparity) are criticised as being “political”. In Spain, it was mentioned that 60% to 80% of dyslexics are male (one response being that there are four times more dyslexic males than females), and that this may have some connection with biology and parentage.



Overall, this is a question which needs to be treated sensitively. Issues of gender, transgenderism, and sexual inequality (where the provision of educational interventions is involved) are not “dry, scientific” questions, but must account for structural inequalities in education and society as a whole. However, considerations such as these do need to be balanced against statistical and biological studies, and the gender disparity hypothesis must not be discounted simply because of sociological counter-arguments (and of course, vice-versa).

- **Ethnicity**

We must ask: does ethnicity play a part in dyslexia statistics?

This is possibly a topic even more sensitive than gender. However, in a continent with many different ethnicities, countries with rich, multi-ethnic populations, and socio-economic disparities among different ethnic groupings,

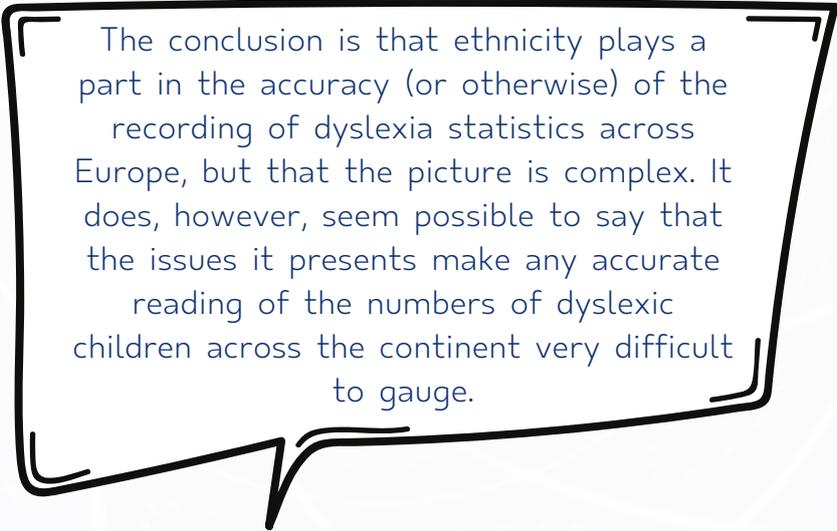
it will be enlightening to ask what is known in different national contexts. For instance, in the United States of America, the question of dyslexia and ethnicity is indeed live: where 12% of white American students are at “advanced” reading level (at 4th Grade) and 23% “below basic”, those white students struggling in the bottom 10% of school are 74% likely to receive SEN provision; whereas only 3% to 5% of Hispanic, black, and first nation Americans are at “advanced” reading level (at 4th Grade), but where these same students are struggling in the bottom 10% of school, they are only 43%, 44%, and 48% likely (respectively) to receive SEN provision. It seems therefore reasonable to assume that in the United States, ethnicity plays a part in the accuracy (or otherwise) of dyslexia figures. It is therefore sensible to ask whether this is reflected in European nations too.

Interestingly, in the Netherlands, while the Dutch Ministry of Education showed that in Primary Schools, between 10% and 19% of the students had a dyslexia statement, and in pre-vocational schools about 20% of the final exam students had dyslexia, one study revealed that only about 5% of minority ethnic children were regarded as dyslexic. This could be down to many factors, for instance cultural factors or language bias, but without any studies to show what those factors are, all figures have to be taken sensitively, and the overall picture of dyslexia in the Netherlands has to be viewed with caution.

In Norway, ethnicity can play a part in the assessment of dyslexia because of cultural dimensions, but also because of linguistic factors from first and second language interference. This latter reason is echoed in Austria, where – because the diagnostic criteria for dyslexia include a lack of proficiency in German – children from minority ethnic groups may sometimes be in danger of being misidentified as having dyslexia, potentially raising the numbers of (possibly falsely) identified dyslexic children from minority ethnic groups.

In the UK, ethnicity may play a role in Wales, where there are as yet no standardised Welsh language tests for dyslexia. However, other factors can come into play in Britain: two major reports into ethnicity and SEN in Britain, in which about 6.5 million children were sampled, have shown that of the schoolchildren in Britain on free school meals (FSM – the lower socio-economic demographics), about one third of them have got Special Educational Needs. From this FSM demographic, 59% of both Bangladeshi and black African children get to university, 32% of black Caribbean children get to university, and only 16% of “white British” children get to university. Pakistani and black Caribbean children, notably, tend to be (in the research parlance) “significantly over-represented” in SEN statementing, when compared to their white schoolfriends. This may go some way to explaining the differences in university entrance. On the other side of these statistics are findings that Indian and Chinese children in the UK are “significantly under-represented” in SEN statementing.

The conclusion from all of this is that ethnicity does indeed play a part in the accuracy (or otherwise) of the recording of dyslexia statistics across Europe, but that the picture is complex. It doesn't seem possible, on the face of it, to draw a simple conclusion such as: "minority ethnic children are under-represented in dyslexia assessments" or "minority ethnic children are over-represented in dyslexia assessments". It does, however, seem possible to say that issues of ethnicity play some kind of role in the way that dyslexia is detected and recorded, and that the issues it presents make any accurate reading of the numbers of dyslexic children across the continent very difficult to gauge.



The conclusion is that ethnicity plays a part in the accuracy (or otherwise) of the recording of dyslexia statistics across Europe, but that the picture is complex. It does, however, seem possible to say that the issues it presents make any accurate reading of the numbers of dyslexic children across the continent very difficult to gauge.

- **Second language orthography**

If ethnicity makes the accurate measurement of dyslexia across Europe difficult, then what does language and orthography do to the reliability of statistics?

It turns out that language and orthography do not appear to be as relevant as ethnicity in the dyslexia equation. There may be some linguistic inequalities factored into some of the testing (for instance, the UK studies and focus groups could identify no standard, official, Welsh language dyslexia test; Danish was excluded as a language in most Scandinavian tests; some proficiency in German was required to fully participate in dyslexia tests in Austria), but in terms of overall figures being recorded, these did not appear to influence the numbers much. The European Dyslexia Association has stated that the multiplicity of languages across the EU may pose difficulties for dyslexic children, but it did not say specifically whether it also posed difficulties for national measurement criteria. The British Dyslexia Association however state on their website that to be assessed, a child will need to have lived in an English-speaking country and to have been regularly speaking English for a minimum of seven years. This is because the tests used are heavily influenced by an English-speaking culture. In addition, the child will need to be able to read, write and spell in English. If an assessment is carried out before then, the assessor can't make a definitive diagnosis, and this would mean a re-test may be needed at a later date. In Norway, a sufficient level of speech and writing is necessary for a person to be accepted as dyslexic, and this is in Norwegian.

- **Cost of assessment**

The cost of a dyslexia assessment varies from country to country, and within each country. In Romania, for example, costs are minimal if there are any costs at all. Speech Language Therapy might impose costs of twenty to thirty euros on participants, which is considered negligible. In Norway, where assessments are carried out in schools, it isn't always clear how much the assessments cost, but what is known is that it is the schools that pay, not the pupils, and so cost considerations for attending an assessment are not carried by families at all.

In Spain, the situation is slightly more complex, but not much. Testing in schools is paid for by the school administration, however parents may choose to take a private test themselves, the costs of which are born by the private individuals. Theoretically at least, all dyslexia assessments in Spain can be paid for by the State. In France, where there are costs, these costs are then reimbursed.

In the United Kingdom, there are often significant costs involved in dyslexia assessment. Schools and local education authorities may be required to bear the cost of assessments, but for various reasons this does not always happen. The actual cost of a diagnostic assessment will vary, but is typically somewhere between £450 (excluding taxes, which can raise this to £540) and approaching £800.

- **Wealth**

As most European countries do not charge the person being assessed for an assessment, then it is reasonable to conclude that most European citizens don't have to worry about the cost of an assessment, meaning that wealth is unlikely to be a major factor in whether a child is assessed. The situation may be different in England and Wales however (in Scotland, identifying dyslexia is down to teachers) – if the cost of an assessment is upward of £540, then one may reasonably assume that dyslexia assessments are provided chiefly to those who can afford them most easily.

Assessors themselves disagree with this conclusion. They point out that schools and local authorities will often pay for assessments, that grants and loans are available, and that they have all seen and assessed children from lower economic backgrounds. This anecdotal evidence is encouraging and must be taken into account; yet it doesn't show evidence that wealth is not a factor in opting for an assessment ("I have seen many poorer children" is not the same as "no poorer children are put off coming for an assessment"). Basically, there is an absence of hard evidence for whether wealth makes a significant difference to the measurement of dyslexia within certain demographics, but in the absence of this evidence, no conclusions can be drawn either way.

- **Social attitudes**

Social attitudes towards dyslexia vary, as one would expect. This variation may have an effect on whether people are happy to be labelled “dyslexic”, and so happy to ask for an assessment. Very few nations in Europe have a specifically and universally negative view of dyslexia, but it is to be noted that “negative” is a concept that in some ways is relative to culture. What may seem positive in one national context might sound terribly negative in another.

For instance, in France and some parts of Germany, as well as a small number of other European countries, dyslexia is seen as a medical condition. In Romania, the social attitudes towards dyslexia promote the notion that it is not a disease, and that a holistic understanding of a child is essential in understanding the dyslexia that may manifest itself. Yet it is looked upon as a disorder (similarly to Denmark, where it is seen as an impairment). In the UK however, while there is still a long way to go in the general social acceptance of dyslexia, social acceptance and understanding is relatively high, and terms such as “disorder” are slowly giving way to terms such as “difference”. The language of inclusivity, diversity, and pluralism is seen as being important in the UK. Similarly, in Hungary, the old “medical model” is a thing of the past, and dyslexics are simply looked upon as people who think and process information differently.

This is not always the case elsewhere. In Germany for instance, dyslexia is often referred to in terms of weakness. In one report by Humboldt University, it was shown that dyslexia is looked upon in Bavaria as an “incurable illness”, and that German teachers “do not feel responsible for the failure of the pupils”.

Meanwhile in the Netherlands, top governmental ministers, without any special diagnostic training themselves, concluded that the potentially 20% rate of dyslexia among Dutch schoolchildren was “too high”.

In Croatia, teachers don't have the necessary knowledge about ways to help dyslexic children, and often tell them they are lazy and don't study enough; while in Norway, an interesting social shift is happening, where there is a movement away from hiding dyslexia because of embarrassment, to an acknowledgement of it as a “problem”, and an increasing pressure on parents to get a diagnosis because it might give their child an advantage in school.

It's clear that social attitudes vary enormously, then. There is however a noticeable movement from negative social attitudes towards something more positive, but this change can take unusual turns, and what seems acceptable in one culture may not seem acceptable at all in another.

- **But is it official?**

The final question is of whether a diagnosis, assessment, or screening, is “official”. This is an interesting question, and could partially explain some of the discrepancies in figures from one country to another.

In Romania, tools used are inspired by, or developed from, those used in other countries, and without a central regulatory authority, everything used as a tool to test dyslexia by SLTs or other professionals is considered official, at least nationally.

In Norway, the testing tool Logos is widely used and the pedagogical principles of the software is often incorporated as part of the guidelines for practitioners, in the absence of governmental guidelines. Therefore, diagnostic assessments using this tool are considered completely official.

In Spain, the initial testing in class is not considered to be official. Tests carried out by orientation departments however are considered to be official. These tests conform to general, rather than specific, guidelines. In Croatia meanwhile there is some debate as to whether diagnostic testing, and the numbers of dyslexics given by the dyslexia association, are official.

In the UK, a diagnostic assessment is “official” inasmuch as people cannot argue their case (with governments after misunderstanding an official demand for payment, for example) without one.

Similarly, if you want a free laptop, or learning accommodation, in school or university, and the institution doesn't have the inclination to "trust" the person asking for it, a diagnostic assessment is required. In most cases where you have to go to court and fight a legal battle, you'll need a diagnostic assessment under the SASC banner. But it is only the diagnostic assessments carried out by a SASC or NASEN associated professional which can be considered official, as online screeners or privately-developed testing tools are not taken to be admissible. Yet, the very concept of the word "official" is a strange one where national dyslexia statistics are concerned, as there are no central databases where figures are stored. Any statement of the number of dyslexics in Britain – especially considering the fact that a teacher's dyslexia statement in Scotland would not be an acceptable way of diagnosing in England and Wales – is merely an extrapolation from data such as how many people ask for accommodation in any given (academic or business) context.

## • Reflection

Of the sociological considerations taken into account, it's notable that some sensitive topics were reflected upon. Of the most sensitive, it's also notable that there was no continent-wide consensus on whether there was an impact, or indeed what kind of impact the considerations had. For instance, no agreement could be found concerning the role gender plays in dyslexia figures, other than that there were more boys diagnosed than girls. Where ethnicity was concerned, the conclusion has to be that ethnicity certainly plays a part in making any national figures questionable from the perspective of universal reliability, but what part it plays is not at all clear: only that ethnicity concerns must be taken seriously, and that the difference that is sometimes uncovered in dyslexia assessments among different ethnic groups should make any researcher treat official statistics with some caution. What is obvious is that where there is over- or under-representation of different ethnic groups in dyslexia statementing, and these differences are not seen to be solely traceable to (for instance) genetic factors or orthographic factors; and where socio-economic factors influencing academic achievement and the likelihood of dyslexia accommodation being given to different ethnic groups in similar situations is complex and does not paint the same picture from one region to another, then disparities in dyslexia assessments between different ethnic groups must at some point be addressed.

Orthography may well play some part in the accuracy of measuring dyslexia, and should be addressed in improved, “orthographically pluralist” diagnostic procedures. However, the numbers involved in effecting dyslexia measurements linguistically appear fairly low, and it may be that orthographic and linguistic considerations are not extremely significant when looking at the reliability of dyslexia measurements across borders.

Cost and wealth, again, don't seem to be major considerations apart from in England and Wales; and where UK figures appear higher than (or at least as high as) most other European nations figures, perhaps this doesn't play a defining role in the bigger picture, especially as social attitudes towards dyslexia appear generally more positive in the UK than in most other nations, where – it has to be said – attitudes appear to be changing for the better, almost universally.

Finally, it appears that we can assume that the figures gathered vary in how “official” they are, but this variation itself is not overly significant. The level of legitimacy (legal, national, or otherwise) that figures have does not appear to have much of a clear, mappable effect on the numbers being dealt with. In other words, figures may be similar between one country with “official” statistics and another without such “official” statistics. The level of formal authorisation is not obviously relevant to the numbers presented.

And indeed, for our purposes, we may indeed say that legitimacy is granted not by central governmental seals of approval in any one nation state, but by the levels of similarity – or disparity – between these nations. Where there is, as there seems to be, statistically significant difference between national records, legitimacy is lost, *prima facie*.

## Conclusion

The Dyslexia Compass is researching into one area of dyslexia awareness that is certainly under-researched at present, and which has important real-world consequences. Children from one context may be being misdiagnosed, or missing out on a proper diagnosis, because of a lack of common understanding about what dyslexia is, how to test for it, and what tools to use in the testing procedure. Children moving from one country to another may even find their diagnosis – and by association, possibly their self-understanding – taken from them because of non-standardised and poorly informed assessment processes.

Nevertheless, there is light at the end of the tunnel. The significant overlaps that have been identified between partner countries (and even, through broadened research, non-partner countries) hint at potential alignments that may otherwise have been hard to discover. We can conclude that the research has been of great value, and that the future impact of the research can be of great benefit, not only to national dyslexia organisations across Europe, but to governments, to education bodies, and to the people they serve.

# Dyslexia Compass

## National Dyslexia Measurements Across Europe: Report

### Data Visualisations

The Dyslexia Compass report deals with data from around the European Union and beyond. Some of the data can be complex.

Below are some visualisations to help contextualise the findings.

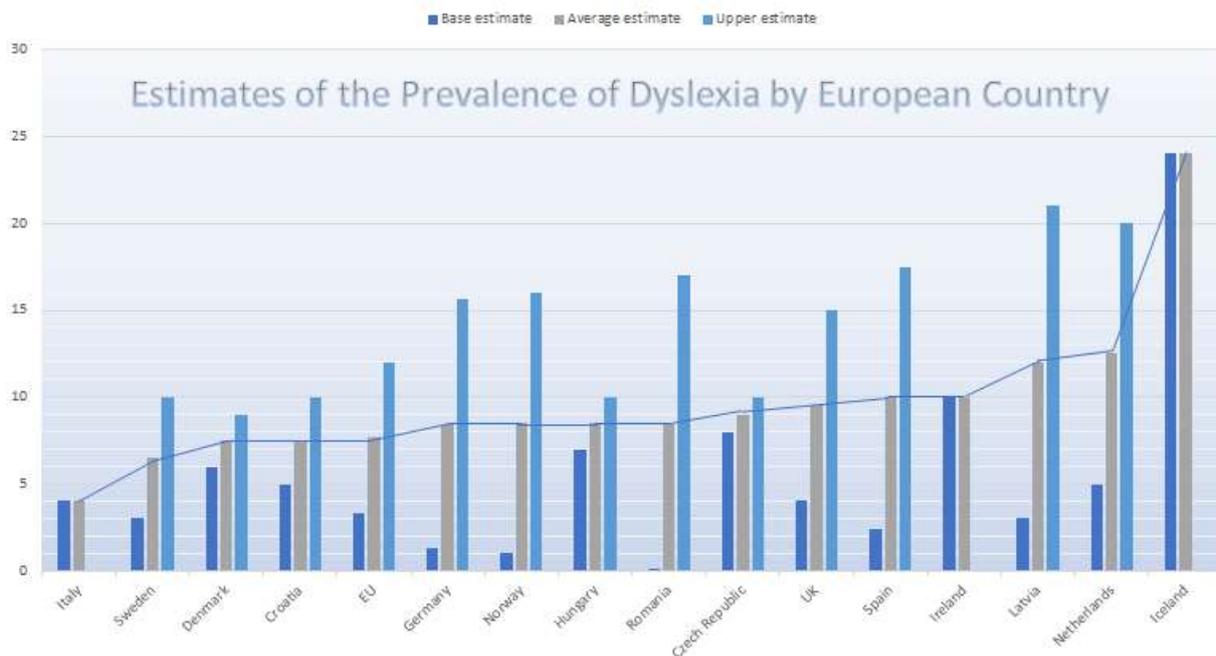


- **What figures were involved?**

The chart below maps the reported prevalence of dyslexia by country within the scope of the Dyslexia Compass research report.

In most cases, there was more than one number reported. In these cases, the chart records the lowest figure and the highest figure only. A mean average figure is then provided.

Countries are ranked from the lowest mean average figure (4%) to the highest (24%).

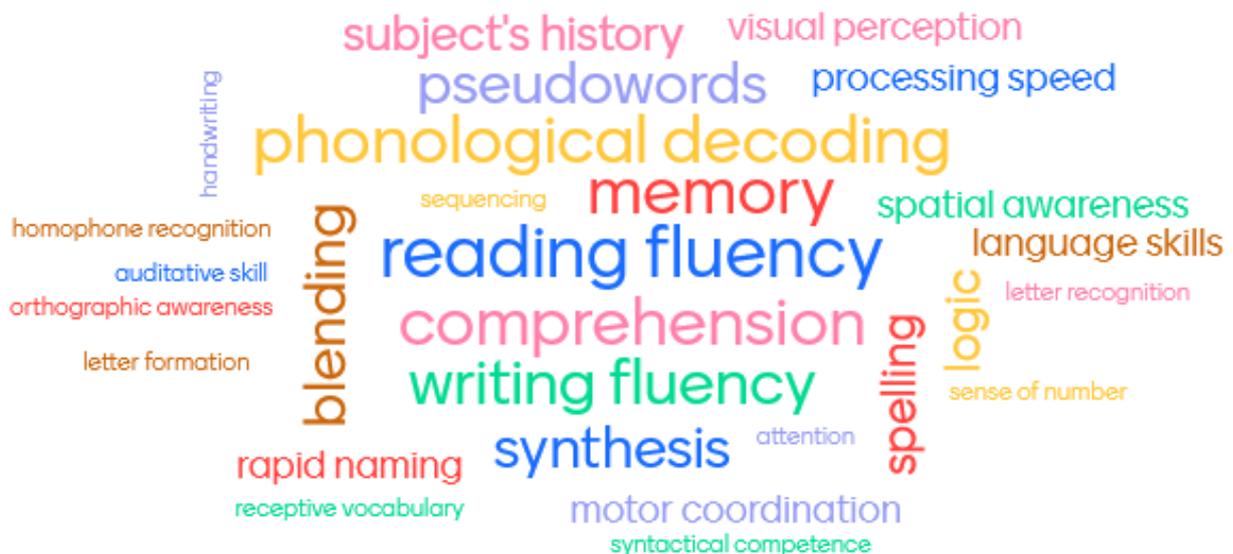


- What are people looking for?

The word cloud below represents the reported relative prevalence of what specialists in different countries are looking for when testing for dyslexia.

In many cases, there is overlap; while in some cases the things that are focused on were not reported in other countries.

The report showed that reading fluency, memory, phonological decoding and comprehension were commonly looked for; whereas homophone recognition, letter formation, and sense of number were not so commonly investigated.



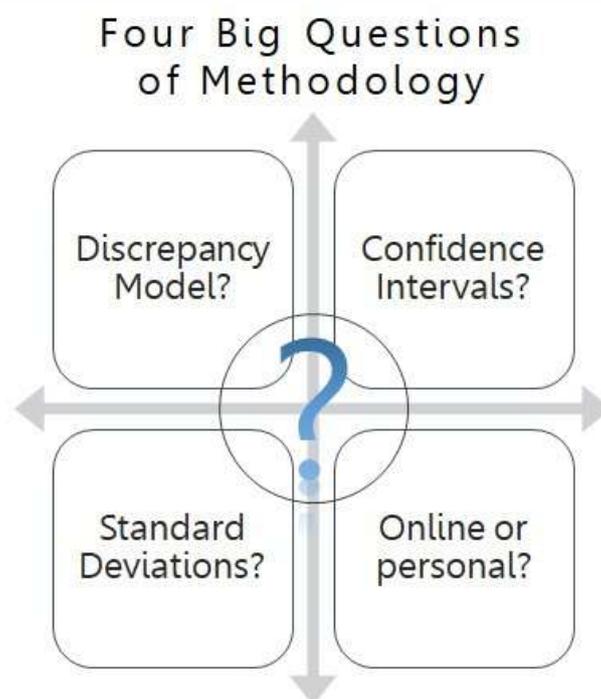
- **What methodologies are used?**

The visualisation below shows the four major questions surrounding methodology when testing for dyslexia by country within the scope of the Dyslexia Compass research report.

There was often agreement on whether each of the four considerations was important; however this does not mean that where countries were at variance, the consensus was correct: only that it was a consensus.

The four questions were:

- Should a discrepancy model be used?
- Should confidence intervals be used?
- What standard deviations should be used?
- Should a dyslexia assessment be online or in person?



- **Sociological considerations**

The graph below shows the seven major sociological questions when testing for dyslexia within the scope of the Dyslexia Compass research report.

To the left of the graph, the report discovered no widespread belief that the sociological dimension impacted greatly on the likelihood of an accurate or accessible dyslexia assessment; to the right of the graph, the report found there to be some agreement that the sociological dimension was important. In the middle – where gender was discussed – there was no consensus among partner countries.

## Perceived Importance

