

“80% of Learning Problems are due to a cognitive weakness”

The “80%” figure comes from a review of scientifically-based studies and papers from the past 15 years and from data and experience concerning over 20,000 students.

Below are some key factors that need to be considered when dealing with the prevalent rates and causes of learning problems.

- 1) Definition of learning problems, learning struggles, learning disabilities, and similar terms. These terms will mean different things to different people and fields of study.
 - a. We all, at times, experience some type of learning struggle or difficulty. Therefore, it would be possible to include 100% of the population in a set called “people with learning problems”. This would result in a much lower prevalence percentage due to the fact that there are so many reasons why a person might occasionally have trouble learning.
 - b. Learning disability and its sub-groups have been defined by government authorities (see below) but those numbers are based on only those who have selectively been identified – not the total population. Thus, the prevalence percentage on a cognitive basis might be higher.
 - c. The percentage of the prevalence of a significant cognitive weakness as the basis for a learning problem will vary greatly depending upon how it is defined. For example, from a low of around 40% (if you include anyone that has any difficulty reading at any time) to close to 100% (if you include only the poorest 5% of readers).
 - d. Our figure of 80% is based upon the assumption that those students in the lowest 25th percentile of school performance have problems learning.
- 2) A reason for different prevalence percentages can be due to whether one or multiple cognitive skills are being considered as causes of learning problems. For example, if three different cognitive skills are critical for carrying out a learning task but only one is tested for, your prevalent rate will be inaccurate. It would be as if, wanting to know the percentage of people watching TV at any one moment you counted only those watching in their living room but ignored those watching elsewhere. Your findings will be much lower than reality.

With the above two factors in mind, let’s start by looking at things other researchers are saying that support the 80% figure we use.

They break down learning disabilities into five to seven groups with reading related disabilities comprising between 70 to 90% of all learning disabilities.

- About 85% of those LD students have a primary learning disability in reading and language processing (LD Online)
- Of all students with specific learning disabilities, 70%-80% have deficits in reading. (ICD-10 and DSM-IV codes: F81.0/315.00 - http://en.wikipedia.org/wiki/Learning_disabilities)

Of those with reading disabilities, 88% have a significant cognitive skill weakness (phonemic awareness).

- **88% of people with dyslexia share a common phonologic weakness**

Subtypes of reading disability: Variability around a phonological core.

By Morris, Robin D.; Stuebing, Karla K.; Fletcher, Jack M.; Shaywitz, Sally E.; Lyon, G. Reid; Shankweiler, Donald P.; Katz, Leonard; Francis, David J.; Shaywitz, Bennett A.
Journal of Educational Psychology. Vol 90(3), Sep 1998, 347-373.

Abstract: Results support the view that children with reading disability usually display impairments on phonological awareness measures, with discriminative variability on other measures involving phonological processing, language, and cognitive skills. (PsycINFO Database Record (c) 2008 APA, all rights reserved).

M. Wolf and P.G. Browsers, The Double-Deficit Hypothesis for the Developmental Dyslexias, Journal of Educational Psychology 91 (1999) 415-38: (the 88% number includes only the phonological awareness factor and does not include other cognitive skills weaknesses that were identified as significant contributing factors [like] rapid serial naming and verbal short-term memory.

- A 2004 LearningRx Study (<http://LearningRx.com>) of 1,495 third to fifth grade students with reading difficulties showed 77% had significantly weak, and another 20% showed below average, phonological awareness skills.
- NIH research has repeatedly demonstrated that lack of phonemic awareness is the root cause of reading failure. Below are quotes from prominent NIH researchers regarding the importance of the cognitive skill [phonemic awareness] in reading:

"The lack of phonemic awareness is the most powerful determinant of the likelihood of failure to learn to read."

"Phonemic awareness is more highly related to learning to read . . . than tests of general intelligence, reading readiness, and listening comprehension."

"Phonemic awareness is the most important core and causal factor separating normal and disabled readers."

Most of the most common non-reading learning disabilities also have weakness in cognitive abilities at the core of the disability:

1. **Auditory and Visual Processing Disorders** involve sensory processing disabilities (caused by weak cognitive skills) within the brain, resulting in difficulties understanding language.
2. **Dyscalculia** involves an inability to understand and perform mathematical processes (caused by weak cognitive skills), especially simple calculations.
3. **Visual-spatial motor and memory disorders** involve a wide variety of non-verbal learning and memory dysfunctions including the inability to process, evaluate and/or organize perceived data (caused by weak cognitive skills).
4. **Dysgraphia** involves difficulty in writing words or writing within a defined space (caused by weak motor skills).

The following quotes are taken from part of a report headed by Reid Lyon following 130 studies over a ten year period.

The Future of Children SPECIAL EDUCATION FOR STUDENTS WITH DISABILITIES Vol. 6 • No. 1 – Spring 1996 http://www.futureofchildren.org/futureofchildren/publications/docs/06_01_FullJournal.pdf

Comments in [...] were added.

How many students really have learning disabilities?

- "Approximately one-half of all children receiving special education services nationally, or about 5% of the total public school population, are identified as having a learning disability (LD)." Page 55
 - o [about 25% of students are performing at a level that is about 2 years behind where they are expected to be even by as young as fourth grade. If only 5% are identified as LD – what are the other 20%?]
- "An important part of the definition of LD is its exclusions:"
 - o [These exclusions include significantly low intelligence (with lots of weak cognitive skills). In other words, to be LD you must show close to average or better cognitive abilities. If you don't, you are what – not counted, forgotten? This could make up as much as 25% of our children – who because they have more problems than we feel comfortable taking on – are ignored by the usual LD programs because the system doesn't believe they can be helped and therefore won't qualify them for assistance.]
- "Virtually all children scoring below the 25th percentile on standardized reading tests can meet the criteria for having a reading disorder." Page 57

Reading problems as a percentage of learning problems

- "Approximately 80% of children identified as having learning disabilities have their primary difficulties in learning to read." Page 62

Cognitive skills at the core of 85% of reading disabilities

- "The ability to decode single words accurately and fluently is dependent upon the ability to segment words and syllables into phonemes. Deficits in phonological awareness reflect the core deficit in dyslexia." Page 64
- "In a large study of 199 seven- to nine year-old children who had significant difficulties in decoding and word recognition, more than 85% of the youngsters manifested deficits on measures of phonological awareness." Page 65
- "Recent research indicates, however, that disability in basic reading skills is primarily caused by deficits in phonological awareness." Page 52

No gender difference

- “Epidemiological studies indicate that as many females as males manifest processes dyslexia; however, schools identify three to four times more boys than girls.” Page 64

Will not grow out of learning disabilities

- “Reading disabilities reflect a persistent deficit rather than a developmental lag. Longitudinal studies show that, of those children who are reading disabled in the third grade, approximately 74% continue to read significantly below grade level in the ninth grade.” Page 64

Problems with definition

- “Thus, the concept of learning disabilities embedded in federal law focuses on the notion of a discrepancy between a child’s academic achievement and his or her apparent capacity and opportunity to learn.” Page 56
- “The ‘real’ prevalence of learning disabilities is subject to much dispute because of the lack of an agreed-upon definition of LD and objective diagnostic criteria.” Page 57
- “*Broader Definitions*: Prevalence is directly linked to definition. LD in reading has been defined in recent research as significant difficulties in reading single words accurately and fluently, in combination with deficits in phonological awareness. Using this definition and stronger longitudinal research methods outlined above, the prevalence for reading disability alone has increased from estimates of less than 5% in 1976 to approximately 17% in 1994.” Page 61
- “The prevalence of learning disabilities is completely dependent upon the definition used. In most areas, the identification of LD is based largely upon the discrepancy standard and, thus, provides a count of the number of older elementary students (third grade and above) who are achieving significantly below expectations based on IQ. This is, at best, an incomplete definition of LD and one that, for the majority of students with learning disabilities, is based upon an invalid criterion, namely, the discrepancy standard.” Page 62
- “Disabled readers with and without an IQ-achievement discrepancy processes show similar information processing, genetic, and neurophysiological profiles. This indicates that the existence of a discrepancy is not a valid indicator of disability in basic reading skills.” Page 64
 - o [This definition is being changed – and it’s a good thing. If we continue to hold to the idea that intelligence is fixed, we will always assume that those with low cognitive skills can’t be helped.]

You can’t put kids into boxes

- “There is currently no universally accepted test, test battery, or standard for identifying children with LD.” Page 58
 - o [The system attempts to treat labels rather than the causative factors. It sets some criteria, gives it a label, and does this and that to the children who carry that label... instead of seeking the causative factors that are responsible for the lower performance and treating those causes. If the pain in your foot is due to a splinter, instead of giving it a label and prescribing an aspirin and bandage – why not remove the splinter? Because of the hundreds of different combinations of causative factors (and therefore the need to customize treatment) labels have little meaning and mass treatment programs will help only the lucky few.]
- “Children with reading disability differ from one another *and* from other processes readers along a continuous distribution. They *do not* aggregate together to form a distinct “hump” separate from the normal distribution.” Page 64

ADHD and dyslexia are distinct

- Approximately 15% of students with reading disability also have a disorder of attention. Approximately 35% of students with disorders of attention also have reading disability. However, the two disorders are distinct and separable.” Page 64
- “When children with disabilities in reading also manifest attention deficit disorder, their reading deficits are typically exacerbated, more severe, and more resistant to intervention.”

The effect one poor cognitive skill can have

- “It is clear that deficits in phonological awareness lead to difficulties in decoding and word recognition which, in turn, lead to deficits in reading comprehension (16,37,38). Likewise, children with disabilities in reading frequently experience persistent difficulties in solving word problems in math for the obvious reason that the printed word is difficult for them to comprehend.” Page 65
- “It is unclear whether children in the most severe range can achieve age- and grade-approximate reading skills.” Page 52
 - o [It was unclear only because, in 1996 when this was written, improvements in those with severe learning struggles hadn’t yet been achieved with consistency.]