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SUPPORTING THE DYSLEXIC CHILD IN THE MONTESSORI ENVIRONMENT

by Alison Awes

Language, one of the greatest gifts of humanity, is central to the culture and collective intelligence of human beings. Collaboration and communication created the language humans currently use, a language which continues to evolve each day. In the words of Maria Montessori, 'Language is the expression of agreement among a group of men, and can be understood only by those who have agreed that special sounds shall represent special ideas.'[1]

Rather than a particular language, children inherit the potential for language. Because the sensitivity to language is unconscious, acquisition is virtually guaranteed (barring a developmental or auditory problem). Through exposure to speech while the vocal mechanisms develop, through communication with others, and through some knowledge of the symbols and sounds of language, all typical children, regardless of culture, will at a given moment come to speak their native language. Also, children generally take in the structure, sentence patterns, and word order of spoken language. Through observations of human development, Montessori found that the absorbent mind, sensitive periods, and human tendencies assist in this acquisition.

In contrast, written language does not come naturally to human beings. Children will not develop writing and reading without some degree of direct experience, preparation, and instruction. The amount and type of experience required varies among individual learners. Eventually, the child must realise that the letters she reads represent the sounds she hears in spoken language. When a child realises that a word can be broken apart into smaller pieces (sounds), she develops phonemic awareness. This is the ability to notice, identify, and put to use the individual sounds of spoken words.

National Reading Panel

In 1997, the United States Congress directed the National Institute of Child Health and Human Development to gather a panel of experts to comprehensively review existing research on the teaching of reading. The task of this National Reading Panel (NRP) was to determine the evidence for specific and effective reading instructional

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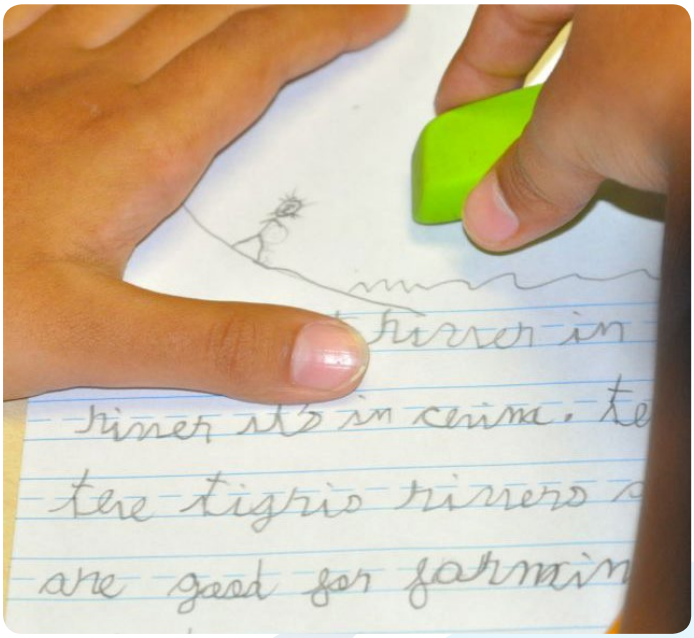

methods and approaches. The panel presented findings in a report to Congress in 2000,[2] providing a guide for parents and teachers to the most successful and scientifically proven approaches for the teaching of reading. The report addressed five key components of reading important for early literacy: (1) phonemic awareness (sounds of spoken language which work together to make words); (2) phonics (the predictable relationship between phonemes and graphemes, which are the letters and the sounds of written language; sometimes called the *alphabetic principle*); (3) reading accuracy and fluency (the ability to read with expression and efficiency); (4) vocabulary; and (5) reading comprehension.

Among other things, the NRP found overall that specific instruction in reading is both important and effective. Programmes which teach phonics in a systematic, organised, explicit manner are the most successful. These programmes progressively introduce the child to different sounds, beginning with the simplest, most consistent, and most frequent combinations. Later researchers found teaching children to manipulate sounds and words to be highly effective under a variety of teaching conditions with varied learners in a range of ages and grades.[3]

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The most important phonemic awareness skills appeared to be those of blending and segmenting. Rather than teaching many types of manipulation, instructing children in blending and segmenting phonemes in words generally will have the greatest impact on their learning to read.[4] Significant benefits of this knowledge were also found for children through the sixth grade (age eleven or twelve) who were having difficulty learning to read. Once the reader learns the different patterns of the letters and the sounds they represent, the result is that she applies her existing knowledge (gained through experience) when she analyses new words.

An important point made by the NRP was that while phonemic awareness is necessary, it is not enough for learning to read. In addition, fluency is an important next step towards the goal of reading comprehension. Guided, repeated oral reading had a positive impact on fluency and comprehension across a range of ages. In contrast, the research on independent silent reading was inconclusive in regard to fluency.[5] Finally, the NRP reported that vocabulary instruction plays a central role in increasing comprehension. If children do not develop vocabulary, they do not learn new grammatical constructions.

The findings of the NRP were not without controversy.[6] Questions about whether the results of various studies constituted scientific evidence, apprehension about the views of individuals on the panel, and concerns about how the initial question was framed have been raised. Some scholars have trepidation that research based on standardised tests provided biased or inaccurate results. Most problematic is that much of what was recommended assumes a whole-class teaching technique in which all of the children learn the same thing, at the same time, in the same manner.

The initial query, to find the most effective method to teach reading, assumes that there is one best way to teach all children. Yet this view dismisses a variety of learning styles, strengths, and weaknesses. Instead, perhaps, the initial question could have been framed around how children learn to read, focusing on the child's development rather than on a teaching method.

One promising result of the NRP research was the implementation of the three-tiered Response to Intervention (RTI) model, used in some public (state) schools for the identification and support of struggling children.[7]

The first tier involves careful progress monitoring for all children based on their changing needs. This includes classroom instruction which covers at least three of the five key areas noted by the NRP. Children who are not successful at this first tier move to the second tier, which includes small-group work with more intensive intervention. Children move to tier three, the special education tier, when more intensive instruction specifically tailored to the individual is needed. With the RTI model, ideally children are supported before they fail and are not required to score poorly in order to receive the additional services they need.

Definition of Dyslexia

Children who consistently struggle with reading tasks despite being provided reading instruction need further support.

Dyslexia is a difficulty with language in which intelligence is not a problem. For learners with this difficulty, an unexpected gap exists between the potential for learning and school achievement. They may have difficulty with reading, spelling, processing auditory language, or expressing themselves clearly through speaking or writing.

Prior to 2002, definitions usually explained dyslexia by articulating what it was not rather than describing its characteristics. However, new scientific discoveries have made possible a more precise definition, such as this one from the International Dyslexia Association:

> *Dyslexia is a specific learning disability that is neurological in origin. It is characterised by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede the growth of vocabulary and background knowledge.*[8]

To explain further, dyslexia has a biological basis and is characterised by a variety of language difficulties. Rather than a temporary struggle in reading development, dyslexia is a chronic condition; the characteristics are unchanging. There is not a single form of dyslexia. The struggles can be with word recognition (such as reading a single word by itself), with spelling, or with decoding or segmenting words (such as sounding words out or breaking a word into syllables). A phonological component exists, meaning the dyslexic person has difficulty with sounds.

Additionally, the dyslexic generally has at least average or above average intelligence, and an unexpected gap occurs between the ability demonstrated and the potential. So the child has to have some cognitive strengths, not only weak language functions. Further, a person cannot be considered dyslexic if he or she has not had adequate classroom instruction.

Other consequences of impaired phonological awareness are revealed in dyslexic children. Reading comprehension, while problematic in some cases, is generally a secondary consequence of weak phonemic ability. The result of this difficulty with comprehension can significantly impede vocabulary acquisition. The average child learns about 2,700 words per year, or about seven new words daily,[9] and reading is a significant influence on this development of vocabulary. At the same time, a large vocabulary is an important element in reading comprehension. Books offer more complicated words than do even the most educated speakers. Good readers spend more time reading every day compared with poor readers, so they end up reading more words in a year. As a result, the consequences of poor reading extend far beyond the reading process.

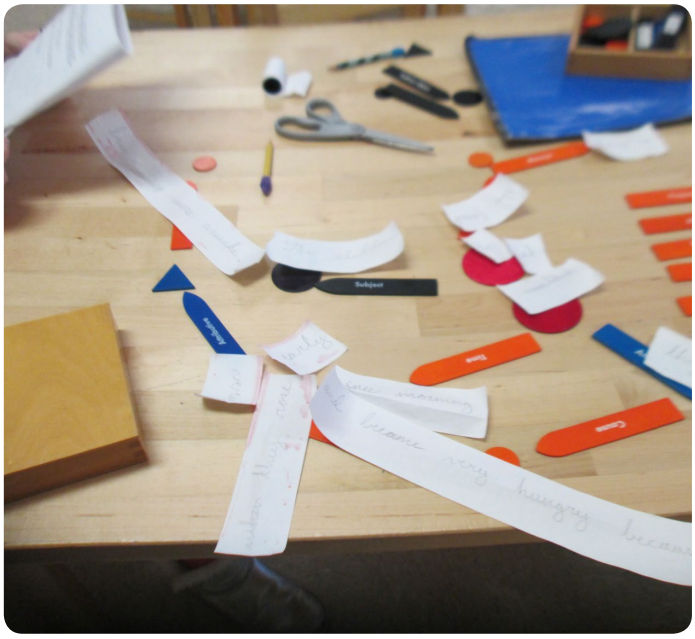
For the dyslexic, the weakness in the language system occurs at the basic level of phonology, with the rest of language building on this weak foundation. Semantics (vocabulary and words), syntax (the structure of grammar), and discourse (how sentences are connected and used) all rely upon the initial understanding and awareness of sounds. In dyslexics, the brain area dedicated to processing particular sound elements of language is compromised. These elements, the phonemes, are the building blocks of all spoken and written words. In different combinations these sounds produce the many words in a particular language. Before words can be identified and stored in memory, they must be isolated into their particular sounds.

Dyslexic children and adults may have a hard time selecting the particular phoneme which corresponds to a written symbol or might order phonemes incorrectly. As a result, sound-based confusions in spoken language occur. For example, a child might say *emeny* when she means *enemy* or *April* instead of *Rachel*.

These learners are challenged when developing awareness that spoken and written words are composed of these specific phonemes. Research on phonological learning demonstrates that many children with reading disabilities do not perceive or manipulate individual syllables and phonemes in the same manner as their peers.[10]

Three pathways help the brain to learn information: visual, auditory, and kinaesthetic (muscle movement). Children with strong visual memory read well and will learn through most conventional forms. However, dyslexic children need systematic multisensory avenues to learn, as they have poor visual memory. All three of these avenues have no correlation to I.Q.

Children with specific reading difficulties demonstrate problems summarising or making inferences from reading a text but do not have the same difficulties when listening to the text. They may misread many words or read words accurately though require much time and effort to do so. These children need additional work on phonological awareness, decoding, and fluency but generally do not need additional support in comprehension beyond regular classroom strategies for vocabulary.



Brain Imaging

Relatively recently through functional imaging, scientists are able to view and record images of the neural systems at work in the human brain while a person reads.[11] These images provide the physical evidence of the difficulties which dyslexic readers encounter and confirm that the core difficulty for dyslexics occurs when translating print to sound. Scientists see evidence of a fault in the brain circuitry only in this isolated part of the reading process.

Recording the brain activity of both normal and dyslexic readers reveals different brain activation patterns. Good readers activate both the back and the front of the brain, while dyslexic readers show an underactivation of particular neural pathways in the back of the brain. At all ages, good readers show consistent brain activation patterns. In contrast, the brain activation in dyslexics changes with age: Older dyslexic children demonstrate an overactivation in Broca's region, a frontal region used for reading. It is thought that struggling readers use additional systems in the front of the brain to try to compensate for the disruption in the back of the brain.

Every time one acquires a new skill, groups of neurons create new connections and pathways among themselves in the brain. Scientists think that after a child has correctly read a word several times, he forms an exact neural model of that word, which reflects its pronunciation, meaning, and spelling and is stored in a particular location of the brain, the occipitotemporal system. For most readers, seeing this familiar word in print activates the word memory automatically, without effort, and calls to mind all the contextual information about the word. For skilled readers, imaging during reading shows this word formation region of the brain activating alone and in combination with other brain areas which help with word analysis.

An estimated fifteen to twenty per cent of the population has symptoms of a reading disability.

The information from imaging is consistent with the reading style of many dyslexics. Because of the deficit in the word formation area, dyslexics rely on accurate yet slower processes in the brain. In particular, these learners often vocalise quietly during "silent" reading. In this manner the dyslexic can hear and feel the words said, a process which utilises Broca's region. This appears to be true for dyslexics of all languages and ages.[12] Brain images also show dyslexic readers sounding out words through secondary pathways in the brain. One alternate route includes systems located on the right side of the brain. This explains how bright adult dyslexic readers improve accuracy even though their reading remains slow.

Because brain images provide concrete evidence of the reality of the reading difficulties, dyslexia is no longer a hidden condition without physical proof. One result is that the specific deficit can be more carefully targeted with evidence-based interventions. In fact, some images have indicated brain repair after intervention for phonemic awareness.

Brain imaging also shows that the brain is organised differently in people who use different writing systems. In the 1930s, a bilingual man proficient in Chinese and English lost the ability to read Chinese due to a stroke, yet he could still read English.[13] This reveals the use of different hemispheres for different tasks in the brain.

Present in many languages, including non-alphabetic ones, dyslexia manifests differently depending on the emphasis in any given language.[14] As a result, different predictors of reading failure occur in German, a language which emphasises fluency, or Chinese, a language in which spatial memory is central, as compared with English. Spanish readers with dyslexia suffer from fewer comprehension problems when compared with English speakers who have dyslexia. In this case, it seems perhaps that the shorter time required to decode in Spanish allows additional time for comprehension.

While less frequent now that brain imaging has more clearly documented proof of dyslexia, some scholars maintain that there is no such thing as a reading, language, or learning disability (short of mental retardation). They argue that if there were something wrong in the brains of these children, remedial instruction would not be successful. Some of these scholars conclude instead that children are not correctly taught to read in school. In this view, the school systems are at issue, not the brains of the children.[15] Additionally, referring to the learner's experience as a *disability,* rather than a *difference* in language processing or learning style, is at issue among some scholars. According to Montessorian, paediatrician, and speech language pathologist Sylvia Richardson, 'Public education views it as a disability by failing to provide appropriate instruction. Society as a whole views it as a disability through lack of understanding.'[16]

The Prevalence of Reading Difficulties

An estimated fifteen to twenty per cent of the population has symptoms of a reading disability. Dyslexia is the most common cause of reading, writing, and spelling difficulties[17] and affects about one of every five children, about ten million in the United States alone.[18] In 2001, 8.9 per cent of US students aged six through twenty-one were receiving special education services.[19] Even if, as Sally Shaywitz of Yale University estimates, eighty per cent of these students had a reading disability,[20] it would seem that children with reading disability in general, and dyslexia in particular, are vastly underserved.

Additionally, because dyslexia exists on a continuum from mild disturbance to severe limitation, reading difficulties are often determined at an artificial cut-off point by educators and government officials. So a child who needs help may not qualify for it within the school system. Even more disturbing is that children who read poorly in the third grade (age eight or nine)

continue to have reading problems in high school and beyond. In one study, seventy-four per cent of children who were poor readers in the third grade remained poor readers in the ninth grade (age fourteen or fifteen).[21] In other words, they often still cannot read well when they become adults.[22] This may indicate that the neural systems responsible for transforming symbols into language might become less responsive to intervention as children get older.[23]

Dyslexia affects females, males, and people from different ethnic and socioeconomic backgrounds equally. In addition, some reading problems are genetically influenced. Between twenty-five and fifty per cent of children born to a dyslexic parent will also be dyslexic. And in one-third to one-half of the cases when a child is identified as dyslexic and his parents are then evaluated, one or both parents turn out to be dyslexic as well.[24] For these reasons, a child with a dyslexic sibling or parent should be monitored more closely early on for indications of oral language difficulties. Still, although dyslexia runs in families and is carried as a genetic trait, it is not entirely genetic.

Although there is no cure for dyslexia, children and adults can learn highly successful strategies for compensation. Research shows that compensating dyslexics have a distinct advantage over nondyslexics in their ability to reason and conceptualise and that the phonological deficit masks what are often excellent comprehension skills.[25]

Despite clear and consistent research, myths still exist about dyslexia. Dyslexia is not a disease and cannot be outgrown or cured, although individuals with dyslexia can learn how to learn more effectively. As previously stated, dyslexia indicates a language problem. Visual impairments, lack of intelligence, laziness, or not caring on the part of the child all have no bearing. Further, scientific evidence is lacking to support claims for improving the academic abilities of dyslexics with treatment based on visual training or neurological organisational training (such as balance board use).[26]

Attention problems might accompany dyslexia, but they might not. The neurobiology and effective treatments differ for specific symptoms. Dyslexia is difficulty accessing the basic sounds of language; attention deficit hyperactivity disorder (ADHD) is difficulty with attending to an activity. Sometimes the disorders can clearly go hand in hand. Other times, it might look like a dyslexic person is not paying attention to reading because it is so difficult for her to decode the words. Reading requires a significant amount of attention for the dyslexic, more than for the average reader.

Indications and Evaluations

As a result of recent research, healthcare providers are able to identify with a high degree of accuracy the children who are most at risk for dyslexia, even before they develop reading difficulties. They can also diagnose dyslexia accurately in children, young adults, and adults, and the disorder can be managed with extremely effective and proven treatment programmes.

Early diagnosis, joined with effective treatment, can help define the strengths rather than the challenges of the child. Particular attention should be paid to protecting the child's self-concept, as dyslexic children are especially vulnerable to weak self-esteem. When a child is accused of a lack of motivation, not working to her full ability, being lazy, or not being smart, she begins to doubt herself. These accusations are more common than we might hope because often the potential in the child is clearer than her ability. The child needs the knowledge that she can count on her parents and teachers for unwavering support.

Also notable is that bright children with dyslexia can escape notice because they possess so many other strengths. They often learn to compensate for or cover up their difficulties. These learners are often quite talented in predominantly right-brained skills like the visual arts, music, mechanical aptitude, and mathematical reasoning.[27] Scientists are still trying to explain the significant amount of creativity present in many people with dyslexia. One speculation is that perhaps the brain was forced to use the right hemisphere because of problems with the left hemisphere, so the right side's connections were strengthened in unique ways. Or possibly the right hemisphere's creative connections began as dominant, leaving less room for other activities, such as reading.[28] Further anecdotal evidence suggests that dyslexics appear to represent the most creative, unique thinkers of society, and one might hypothesise this is because the dyslexic cannot simply memorise but must understand the concept at a fundamental level in order to remember.

Teachers and parents may provide important observations for healthcare professionals, but teachers are usually not trained

to make a diagnosis. Keeping that in mind, and recalling that dyslexia will present differently in different children, early red flags include a delay in speaking; difficulty in pronunciation; a decreased sensitivity for rhyme, alliteration, and assonance; or trouble learning nursery rhymes. Later, a child might have difficulty recalling or accessing a particular phoneme. And as children get older, they might have difficulty understanding that words come apart, as in a compound word, and that words can be isolated further by their sounds and syllables. These children also have difficulty associating letters with sounds. Or they may make errors when reading that are not related to sound, such as substituting a familiar word for a difficult one that appears in the text. Additionally, the child may complain about how difficult the task of reading is and might avoid reading.

In one study, preschoolers' phonological aptitude predicted reading progress three years later. Children who received training based on sounds – identifying the beginning, middle, and end sound—showed the most improvement in reading and spelling, as compared with children receiving general language training which emphasised the meaning of words. The study also showed that the kinds of language experiences the child has before he goes to school influence his ability to read years later.[29] Additionally, a variety of studies demonstrate that phonological difficulties are the most significant and consistent markers of dyslexia in childhood. [30]

In conventional kindergarten (nursery school), where letter names are taught prior to sounds, the child's ability to successfully name the letters of the alphabet is the most significant reading predictor. In the first grade (about age six), the child's knowledge of letter sounds, taught after letter names, becomes the most important indicator of successful future reading.[31] Controversy exists over the benefit of the knowledge of the letter name for learning to read. In fact, teaching letter names can be confusing and detract from the child's ability to successfully learn the sounds of each letter or letter combination.[32] I.Q. tests are not strong indicators or predictors of later reading difficulties in young children.[33]

The dyslexic elementary-aged child might use nonspecific language, like the words *stuff* or *things*, or describe around a word rather than using the word itself. Further, she may confuse words which sound alike, like *lotion* for *ocean*. This child might have difficulty remembering isolated pieces of information which use rote memory, like dates or random lists.

Additionally, this older child may have an extremely slow progression while learning to read, with a particularly difficult time reading new or unfamiliar words which must be sounded out. The child may omit parts of words when reading, substitute or mispronounce, and read in a difficult or laboured fashion. The child may often rely on the context or pictures to understand the meaning of the passage and have a very difficult time understanding isolated single words. The child might substitute words with the same meaning for a word in the text he cannot pronounce, like *rain* for *thunderstorm*. The child becomes tired from the effort of reading and often suffers from low self-esteem in this area.

Yet the child will likely exhibit strengths in the thinking process, such as a deep imagination, curiosity, and excellent auditory comprehension with a sophisticated listening vocabulary. When a story is read aloud, she shows good understanding of new concepts and takes joy in new ideas. She often excels at reasoning and abstraction and can learn best through contextual meaning rather than memorisation. Higher level components of thinking remain successful since phonological awareness is not related to I.Q. Strengths in critical thinking, reasoning, problem solving, vocabulary, and comprehension may all surround a weakness in phonological ability, a weakness in the ability to decode.

When observing a child with reading challenges, one should not wait too long to seek expert assistance if there are concerns.

To help children with learning delays, it is essential to observe and track their strengths as well as their weaknesses, because these characteristics can often be used to help bypass the challenges. The strengths ensure the child's success in learning even if the learning takes place over a longer period of time.

After ruling out hearing or vision problems, an adult observing a child for some of these challenges should be sure to note the frequency of the difficulties. Most children will exhibit all of these behaviours at one time or another as they learn to read. But the concern arises when the symptoms repeat in a regular pattern over time.

When observing a child with reading challenges, one should not wait too long to seek expert assistance if there are concerns. Rather than time or the maturity of the child, it is specific reading instruction which leads to better reading. Teachers need to communicate with the child's parents and with school administrators about any concerns and ask for home observations as well. Additionally, the school should maintain a file of resources within the community for the parents and teachers and provide support in seeking further evaluation for the child.

Once a struggle is suspected or observed, a psychologist or other healthcare professional makes evaluations for dyslexia. Additionally, this professional will rely on the careful observations of teachers and parents. The professional will administer a variety of language tests, including oral, written, auditory, and memory assessments. One particular test score does not signify the child is dyslexic. Rather, the healthcare provider looks for a phonological weakness affecting other components of the language system, combined with an established reading problem, according to the education and age of the child. The diagnosis would be supported by evidence of a high learning capability with some glitch in the learning process preventing the child from performing better.[34]

Unfortunately, dyslexic children are generally in the third grade or older when they are initially identified as dyslexic by their schools. Reading difficulties diagnosed after third grade (age eight or nine) are much more difficult to remediate.[35] One of the reasons for this is that the initial disadvantage is compounded over time. If a diagnosis is made, an adult should explain to the child her reading problem in a way that she can understand. If a child has some understanding, that can give her comfort as she is not so different from other children. Without this conversation, a child may be quick to label herself as perhaps *stupid* or *dumb*, rather than understanding that her brain functions differently from, yet just as legitimately as, her peers'.

The child with dyslexia needs an adult who can support and champion her. This adult will believe in her strengths and efforts, understand the nature of her reading difficulties, and actively work to be sure that she gets the learning and emotional support she needs. This advocacy might include (but not be limited to) helping her school understand her needs and perhaps directing them to her rights protected by law, such as (in the United States) the Americans with Disabilities Act (ADA). With proper documentation, she may be entitled to academic accommodations including extra time for specific activities, individual support, or being able to demonstrate knowledge in a variety of ways (e.g., orally instead of through writing).

Successful Intervention for the Dyslexic Child

Dyslexic people do not process language in the same manner as other learners do. Specifically, the ideal curriculum for children with dyslexia is multisensory, structured, cumulative, and sequential.[36] This method of direct, uncluttered instruction benefits most non-dyslexic learners as well.

According to the NRP, the essentials of an effective early reading intervention programme include systematic, sequential, explicit instruction in phonemic awareness. In particular, the child needs the ability to notice and manipulate the sounds of spoken language. She needs explicit instruction in phonics (how the letters and groups of letters represent the sounds of spoken language), decoding, sight words (non-phonetic words), spelling, vocabulary, and reading comprehension strategies. Additionally, the child needs regular practice in the application of these skills in reading (as well as writing) towards fluency. Further language experiences should include telling, listening to, and discussing stories.[37]

Systematic phonics instruction helps children increase their ability to comprehend what they read. Once the child reads words automatically and accurately, he is able to focus on the meaning of the text. Phonics instruction contributes to comprehension skills, rather than inhibiting them.[38]

Unfortunately, traditional teacher training at the college or university level often falls short of providing future teachers with the skills they need either to effectively recognise dyslexia or to teach language skills in a structured, sequential, multisensory fashion.[39] In fact, Dr Richardson points out that 'university-based teacher preparation programs were found to be inadequate' to prepare teachers to address reading difficulties, dyslexia, and other learning disabilities.[40]

The Montessori Method

Maria Montessori relied upon her training as a medical doctor and scientist for her investigations into the development of the child. She considered observation to be the integral supportive foundation of her method. Montessori's principles are based on what the children revealed to her, and through observation she found the key to the educational dilemma of her time.

An essential component of the Association Montessori Internationale teacher training at every level is that of careful observation of children. Teachers study observation theory and practise specific observation techniques so that once leading their own classroom, they are prepared to consider different learners' approaches in context and devise strategies based on their knowledge of the different ways in which learning can work. Teachers learn about the nature of the child, including her sensitive periods, psychological characteristics, and human tendencies. In this manner, Montessori teachers already have preparation for noticing, and then meeting, the specific needs of any individual learner in their charge.

Maria Montessori began her teachings with the great success mentally challenged children experienced by using the sensorial materials. So from the beginning, Dr Montessori observed that children with learning disabilities could be quite successful in her classroom. She also found that by isolating the difficulties of each task and by breaking the whole task down into its concrete, smaller parts, all children could work purposefully towards their own self-construction. However, the Montessori method is not exclusively aimed at learning disabled children; rather, it is particularly suited for a variety of learners.

Children with dyslexia benefit from the primary (ages three to six) Montessori environment, which meets their specific, individual needs. Dyslexic children need sequential, multisensory, and explicit experience with the sounds and symbols of their language to read fluently. The introductory phonetic approach, combined

with the emphasis on context, functions of words, and analysis of sentences, particularly suits struggling readers. Among other things, this environment includes regular experience with language, activities which encourage the awareness of sounds, and vocabulary enrichment. Further, unlike a conventional kindergarten or preschool, Montessori gives the child three to four years of regular language activities in school, rather than one or two years. This further repetition can make a significant difference in the foundation for a struggling reader.

The recommendations from the NRP are quite congruent with the observations made by Dr Montessori. These components benefit all children, including dyslexics. Already sequential and multisensory, the total reading path of Montessori not only includes all of the NRP-identified components but can easily be adjusted with increased repetition (as needed) to meet the needs of the individual dyslexic child. In this way, so-called remediation takes place for at-risk readers in the regular Montessori classroom side by side with the rest of the class.

Reading must begin with explicit attention to the principal characteristics of oral language. So, from the beginning, sound games are important preparation for reading and developing phonological awareness. The teacher holds an object, stating, 'This object in my hand begins with the sound /f/. What am I holding?' Additional, regular repetition is necessary for the child to gain practice with initial sounds, final sounds, middle sounds, discriminating different sounds, sounding out words, and eventually selecting the symbol to go with the spoken sound. In this way the child builds the foundation to develop an awareness of and ability to manipulate the sounds in words.

Letter sounds are introduced with the sandpaper letters: The adult says the sound and traces the symbol, and the child repeats. This multisensory exercise combines visual, auditory, and tactile learning to help the child commit to memory the sound-symbol association. This instruction in how the letters (and later, groups of letters, the phonograms) represent sounds of spoken language is essential to the success of the child's reading. The three-period lesson, in which the child gets varied, directed repetition, helps her to solidify the concept.

The dyslexic child will generally need additional and more direct work with the sound games and the sandpaper letters before she can apply their concepts to word building. Further, an increased second period of repetition will be beneficial. Additionally, it may be necessary to precisely order each new presentation and repetition of the sounds, from simple to complex, based on the order of the Orton-Gillingham method[41] or similar programme.

As the child needs more experience, separating words into syllables and clapping each syllable (like clapping three times while saying *A-li-son*) helps her to further hear and manipulate sounds. In addition, a child can place a concrete object (such as a bean) on the table for each sound heard in a word (placing two beans for *eat*: /ee/ + /t/).

Especially for dyslexics, occasionally working in a small group of children on phonemic awareness may be more effective than individual or whole-group instruction because these children often benefit from listening to their classmates in addition to receiving individualised feedback from the teacher.[42]

One of Maria Montessori's greatest discoveries was that generally reading comes later than writing. She wrote, 'experience has taught me to make a clear distinction between reading and writing, and it has shown me that the two acts need not be absolutely contemporaneous.'[43] She found that reading typically begins six months after writing with the movable alphabet, and fairly independently.

However, this will only happen because the child has been indirectly prepared in both the hand and the mind with the keys to language: the sandpaper letters and the speech sounds. Montessori education prepares the mind through spoken language (vocabulary enrichment, storytelling, poems, etc.) and prepares the hand through exercises of practical life, tracing metal insets, the art of handwriting, the movable alphabet, and other activities. The dyslexic child also requires this important, repeated indirect preparation.

The Montessori method prepares the children for total reading through the activities of spoken language in a linguistic environment.

Rather than simply technical skill, Montessori called *total reading* the goal for the child, noting, 'a child does not read until he receives ideas from the written word.'[44] The child must read for understanding, grasping the emotion, nuance, and intent of the author.

The Montessori method prepares the children for total reading through the activities of spoken language in a linguistic environment. Often the greater the child's exposure to culture (such as art, music, geography, poetry, etc.), the higher her reading level. Additionally, reading stories and poems aloud to children helps to stimulate awareness of aspects of language such as rhyme. Practice with grace and courtesy also deepens a child's vocabulary.

In addition, teachers in Montessori environments prepare the child for total reading with the mechanical skills and reading practice acquired through the phonetic object box, phonogram work, puzzle words, reading classification, and reading analysis. Here the synthesis and decoding take place. For more interpretive reading, Montessori offers function of words, word study, books, and also reading analysis. 'The child of this age learns many new words', wrote Montessori. 'He has a special sensitiveness for words; they attract his interest, and he spontaneously accumulates a very great number.' [45] The child also repeats much of this work with interest and variety.

Similarly, the NRP noted that listening to, telling, and discussing stories (vocabulary enrichment), in addition to reading comprehension, are essential for reading fluency. Further, direct instruction with sight words (also called non-phonetic or, in Montessori, puzzle words) and other vocabulary are important components for successful readers. Regular practice with all of these skills was also noted as essential.

Dyslexic readers in Montessori follow this same logical progression as their typical peers, the simple-to-complex, parts-to-whole approach to total reading. These learners need increased repetition and time with these activities. Coupled with regular observation, reading aloud makes important feedback from the adult possible. It is during this type of reading that further instruction in decoding can support the individual child. These times should be positive and constructive for the child. When a mistake is made, the child can alter the pronunciation verbally and store the correct neural model of the word. Repetition will reflect the exact pronunciation and spelling of the word until it becomes automatic.[46] A child must be able accurately to perform a two-step process—reading to take the word in and coding it for storage and retrieval— before that word can be read fluently.

Small decodable books can give confidence to the emerging reader, as he will be able to read on his own. Often children like to read these simple books because they can. If the child cannot read about ninety-five per cent of the words on the page correctly, the book is probably too difficult for him to read on his own. Resources are available to help accurately gauge a book's level of reading difficulty.[47]

Other, more general, Montessori principles are just as applicable to the dyslexic child as to the typical learner and support her individual development. The environment and lessons are sequential, the classroom is organised and logical, and multisensory didactic materials are used. The Montessori materials are designed with control of error and can be a perfect diagnostic tool. The adult gains many indications of the child's learning abilities through observation. The materials are beautiful, giving only the necessary keys for the child's exploration, repetition, and synthesis. In some cases the materials also allow the child to self-correct her work, thus building independence, confidence, and respect.

Montessori saw the need for the children to have freedom—to choose, to repeat, and to move—coupled with necessary responsibility in the environment. Often the child knows her own needs and, with freedom, will choose repetition of a skill when she needs it. Repetition is provided for in the design of the materials and activities. Further, brain imaging technology demonstrates the positive effect of practice, as the brain creates a neural circuit when expertise or skill is developed.[48]

Elementary Reading Support

Just as with the Montessori primary environment, Cosmic Education (the plan for the elementary-aged child, ages six to twelve) can be an excellent fit for the dyslexic child. The fundamental Montessori principles continue to operate and the teacher is well prepared to observe and meet the needs of the individual, including the struggling reader.

Most children who have attended the Casa dei Bambini for three years come to the elementary environment already reading. If a child does not read, the teacher should provide daily support, combined with regular observation of the specific difficulties (e.g., 'misses end blend sounds regularly'), to correct this deficit. This does not necessarily mean that the child is dyslexic, but a plan of action which includes multisensory, repetitive, small doses of sound awareness and reading practice should be provided. There is no time to lose for this six-year-old; if children who are dyslexic get effective phonological training in kindergarten and first grade (ages five to seven), they will have significantly fewer problems learning to read at grade level than do children who were not identified or helped until third grade (age eight or nine).[49] This is also the time to emphatically protect the child's self-esteem, as likely she would love to read, cannot, and is surrounded by those who do.

Ideally, remedial lessons should be given daily to provide consistency.[50] Further, the schedule of instruction should not hinder the other regular school activities. In this way, the teacher meets the unique pace of the child's learning and the child can further develop automaticity. The Montessori environment perfectly meets the need of this child, as small-group or individual lessons are regularly given, based on the children's needs, every day in the Montessori classroom. Remediation is possible in a mixed age environment without the potential stigma or work-cycle disruption of keeping regular appointments with a specialist.

As the child enters the elementary classroom, the teacher should assess the various components of her reading skills. Even the most careful, unbiased observer should keep in mind that cognitive phenomena cannot be directly observed. One simply cannot see into the minds of children. Facial expressions and body language can give some clues to the struggles of a child, as can listening to her reading aloud. When a child has difficulties segmenting (pulling apart a word into its sounds, usually observed while spelling) or blending (pushing sounds together to form a word while reading), and has been phonologically well prepared, further analysis should be done.

Oral conversations with the child may reveal an awareness (or lack thereof) of sound comparison, segmentation, and blending. To check comparison, the teacher might have the child pronounce the individual sounds heard in a word or count them. To segment, the child breaks the word apart by sounds or syllables; to blend, she joins sounds. A child who has trouble hearing syllables can place her hand under her chin; each time she feels her jaw drop, a syllable is being spoken. For dyslexic children with blending difficulties, presenting many words with the same sound together (as a "family") can be more effective repetition.[51] (For example, the child reads a list containing words beginning with /sl/ such as *slip, slam, sled*, etc., or words with the root *port*, such as *report, portable, transport*, etc.)

The teacher can also periodically point out a particular word and check to see if things make sense to the child. In this way, the

child decodes an unknown word and the teacher verifies that the pronunciation is correct by repeating that word. Also, this fosters the child's independence as a reader by building her confidence. For example, when she is able to articulate */d/ /o/ /g/* and can blend these sounds to form *dog*, the teacher may ask, 'Does *dog* sound right to you? Does this make sense in the story?'

Fluency will change for the child depending on what she is reading and whether she has familiarity or practice with the text. Children need practice with fluency, which is closely linked with reading comprehension. When children read passages orally multiple times and receive feedback, they become better readers. Children who read and reread text repeatedly or rely on the use of audiotapes or peer guidance for oral reading also increase their fluency.[52] Parents can also reinforce fluency by supporting their child with reading aloud at home. Repeatedly reading the word correctly develops an increase in accurate neural representations.

Ideally, remedial lessons should be given daily to provide consistency.

The Montessori adult should consult the public school curriculum for an understanding of reading requirements. For example, in some Minnesota districts it is not until fourth grade (age nine or ten) that children are expected to read multisyllabic words easily, yet children are expected to develop into fluent readers by the end of second grade (age eight). Fluency connects the decoding skills and brings the child to comprehension.

General Support Through Cosmic Education

Based on extensive observation of natural human development, Montessori created prepared environments to suit the characteristics of children. Cosmic Education appeals to the psychological characteristics of the child from six to twelve. During this time, the child moves further from the concrete towards abstraction, experiencing great intellectual growth and demonstrating the capacity for great work. She concerns herself with justice, fairness, and morality and forms small societies with her peers, seeking heroes to emulate. As a result of these characteristics, the Montessori elementary classroom offers the universe to the child and she readily accepts, using her reasoning mind and imagination to explore the how and why of everything. These regular components of the Montessori elementary programme support the learning of the dyslexic child.

Cosmic Education is an aid to life, offered for the entire human development of the child. An important aspect of the child's success is the use of language in a constructive and productive way for the betterment of society. Language, wrote Montessori, 'must not be considered merely as a subject in schools.... It is, rather, a *characteristic of civilised man*.'[53] The child discovers that language is a human creation that helps people satisfy their needs. Language transmits human culture and continues to shape and change the human world each day.

Dr Montessori referred to the integrated spoken and written language work of the elementary child as *psychogrammar,* created to support the characteristics of the child. Rather than teaching, the adult links the children to a variety of avenues of exploration, offering opportunities to recognise patterns. With enthusiasm, the Montessori adult brings language to life with enticing questions and exciting examples, leading the children towards discoveries made through reason. Renowned Montessori teacher trainer Margaret Stephenson said elementary teachers 'make language work a detective story adventure of the imagination.'[54]

The richly prepared elementary environment provides a plethora of language experiences for the child. Teachers convey the workings of the universe through spoken language in the Great Stories and further stories, beginning with the whole and moving to the parts. With concrete materials, the child isolates new ideas. Multisensory experiences, including regular movement, provide repetition through variety. Further, the child explores through reading, writing, and speaking in many ways. For a child who struggles with reading, the nature of Cosmic Education and its transmission through keys, impressions, and stories provides a meaningful and thorough experience. In sum, the nonreader has much purposeful work to do in the Montessori elementary environment.

The elementary child acquires broader social experiences through going out. 'He requires to go out into the world to make wider contacts with both nature and human society', Montessori pointed out.[55] In this way, the child has practice in society and he can see firsthand the workings of his culture. Further, the children have a great desire to view pertinent examples of their studies in nature and the community.

The dyslexic child learns through activity even more than his peers, which provides a framework for memory. In this way, going out fits the needs of this individual. He must fully understand the topic, as rote memory will not work well for him. Concepts, real life examples, and experiences provide opportunities for practice, and thus the child can make connections within and between categories. Hands-on experiences are vital to the dyslexic.[56] These experiences are found with the manipulative materials in the classroom and the wider society outside of the classroom.

In the prepared environment of the classroom and through the going out programme, the children develop social skills. They practise how to form a group with a leader. They collaborate, delegating tasks to each individual while jointly making a contribution to the whole. They work under the direction of each other and each has an opportunity to lead. They experience how to discuss and disagree. The children set their own guidelines for the classroom, their own small society.

The Montessori environment provides the child the freedom to spend as much time as she needs, in an extended, uninterrupted work cycle, to complete a task. There is no pressure to move on to another topic at a prescribed time (e.g., thirty minutes

for writing, thirty minutes for history), no emphasis on rote memorisation, no test taking, nor are there regular teacher-imposed assignments. With the state school curriculum as a guide, the child is free to follow her own interests.

Because the environment consists of a group of children of mixed ages, the struggling reader generally has a peer group at her level at any given time. Lessons and materials are specifically planned by the teacher to fit what each child needs, and because the children tend towards their peers, group lessons are frequent. In this way, both children benefit when a budding dyslexic reader mentors another child who needs more guidance, regardless of their ages.

Cosmic Education introduces the child to the important accomplishment of human beings through the fourth Great Story, Communication in Signs. Like many stories elementary Montessori teachers tell, this one inspires gratitude in the child to the anonymous human beings who contributed to our lives today—in this case, gratitude for the precious gift of the alphabet and other symbol systems, and the creation of written language. Because of those amazing early humans, not only do contemporary people have the possibility to think clearly, they also have the possibility to write and speak clearly.

As the child works towards the mastery of sound-symbol associations in English, other specific materials can reinforce those patterns and give further practice. A fluent reader can also work with a nonreader, helping or reading during that portion of the work.

Building on the work of the Casa dei Bambini, the child explores single words and word meanings in the elementary. The child learns progressively how words are built, learning about suffixes, prefixes, and word families. In one case, the child uses small movable alphabets to investigate words by breaking them into parts. Different affixes added to the same root change the meaning of the word and sometimes even the part of speech. The isolation of the parts through the different alphabet colours helps the child to understand compound words and word families, which gives reading practice, strengthens vocabulary, and aids in spelling. Deliberate word study is essential as phonological training transfers to the reading of both new and familiar words. If teachers encourage children to fully analyse written words, they can apply their knowledge to the new words encountered.[57] Only twenty prefixes account for ninety-seven per cent of all the words with prefixes found in English-language schoolbooks, and nine of these prefixes account for seventy-five per cent of all prefixes.[58]

Because the second-plane child likes reasons, Montessori teachers give etymology in many stories and lessons. Besides just giving the meaning, the etymology often has the characteristic embedded within the word. For example, a flower with parts below the ovary is called *hypogynous*. The word comes from two Greek words, *hypo*, meaning 'under' or 'below', and *gynous*, meaning 'female'. Also, the child might study the origin or classification of other words, such as English surnames, for example, which can be descriptive, occupational, patronymic, or geographical. Knowing the etymology or historical origin of a word is an important support to reading and fluent comprehension, as it gives information about the word's pronunciation, spelling, and meaning. Also, by knowing the historical background for language, children come to better understand how many of our basic Anglo-Saxon words have evolved from their original meanings.

Additionally, older elementary children explore the history of many Latin, Greek, and French prefixes and suffixes, discovering that often affixes are not of English origin. When children move on to middle school (ages twelve to fifteen), the reading material changes from predominantly Anglo-Saxon words to a mix of words of every origin, so a strong foundation in word study helps to reinforce reading skill. In particular, towards middle and into high school, texts contain large numbers of words from Latin, French, and Greek.[59]

English is surprisingly organised and sensibly ingenious, which appeals to the second-plane child's psychology, as children enjoy the imaginative exploration and discovery of a variety of language constructions. As they develop morality, not only do they enjoy rules and putting them to use, they relish the discovery of the exceptions. Moreover, often the reasons for the structure of the language appeal to the child and can support reading comprehension by giving contextual clues.

Even words which cannot be completely decoded based on sound and letter correspondence are often predictable, based on phonics. So teachers should not tell early readers that 'English is irregular', because that sends a message of negativity and is not really correct.[60] In fact, the brain is quite skilled at determining patterns and regularities. Much of the predictability occurs in two-letter spelling units, and children should learn all of the most frequent spelling-phoneme correspondences.

Increased vocabulary supports reading, from decoding to comprehension. The interpretive reading cards, sequenced by complexity, can help the child to decode just a small amount of text and explore the meanings of words. Work with the command cards and grammar boxes, in which the child acts out the words on the cards, gives increased practice. Also, a variety of material exists in the classroom which requires the reading of only a single word or two, such as the animal story material, geography command cards, math word problems, and nomenclature cards.

Many opportunities also exist for the building of vocabulary through literature. A collection of carefully chosen, limited books in the classroom of different genres (fiction, nonfiction, poetry, reference, etc.), authors, and time periods supports this development. Reading aloud daily by the adult also exposes the children to great varieties of literature. The adult can pause to explain or discuss particular words, or ask a volunteer for a definition as needed.

The Montessori Adult's Role in Supporting the Dyslexic Child

Because it is essential to identify the child's reading problem before he fails, a variety of assessment tools for phonological

skills can help identify children who are at risk for reading difficulties.[61] For the struggling reader, word and sound assessment should be systematic and regular. The error patterns in an older child's writing provide concrete guidance for the adult about sounds the child may not hear and therefore does not record.[62] These children may have become sight readers, relying exclusively on memorisation to read words. The teacher or learning specialist is best equipped to administer this type of review when needed.

Usually challenges are not initially revealed through conventional achievement tests or diagnostic tools.[63] Rather, a regular classroom teacher who has some experience observing her children's work and habits notices these children. Based on her observations, at that point the teacher can help an individual in the learning process. A majority of dysfunctions can be managed successfully in the regular classroom without direct special education services, while the psychologists and special education teachers can serve as consultants to the classroom teacher.

If a healthcare professional diagnoses the child as dyslexic, explaining the nature of the difficulty to the child can be an important step for both her understanding and her success.[64] Her parent or teacher can let her know that '*Dys-* means "problems" and *-lexia* means "words", so *dyslexia* means problems with the words you speak, the words you hear, and the words you see.' When telling history stories, the adult can point out to the child that before people learnt to read or write, dyslexics were regarded as powerful and were often the leaders of their tribes because of their strengths of observation and creativity. The groups with the dyslexic members had an increased chance of survival.[65] Additionally, an understanding of the condition can be liberating for children, who finally know there is an actual, understood problem with learning. Children who cannot read already may know in their hearts that there is a problem prior to a diagnosis. Yet these children need to know that they are capable and bright people who learn differently from others.

With the implementation of the Americans with Disabilities Act (ADA) in the United States, conventional education allows for 'specific accommodations' to support dyslexic children. These accommodations— including a space to work which is individual or quiet, extra time to complete a task or test, and/or an alternative method to demonstrate knowledge—are already provided every day in a Montessori classroom. Other accommodations could include regular small-group or individual lessons, increased repetition, support on the organisation of tasks, and removal of distractions. Again, the trained Montessori teacher regularly provides this support for any of her children with these needs, including the dyslexic ones.

Some teachers are concerned that extra time on tests gives an unfair advantage. However, college students with and without disabilities have been studied on timed and non-timed standardised tests with consistent results. Only diagnosed learning-disabled students showed a significant improvement in test scores with additional time. An advantage is not given to the dyslexic student with extra time; rather it is an attempt to level the playing field.[66]

In some cases, a dyslexic child may benefit from tutoring after school. These types of services outside the classroom require careful communication between the classroom teacher, the tutor, and the parents. Ideally, additional practice or tutoring should reinforce the skills the child has learnt in school, rather than introduce new ones or take the place of the child's classroom teacher.

In middle school and beyond (about ages twelve and up), the use of a computer for note taking may be of benefit to the child. Also, as the child progresses to conventional school systems which use textbooks, organisations such as Learning Ally in Princeton, New Jersey, USA, can provide audio book support.[67] In this way the child can participate in courses at his level of understanding rather than be held back by slow reading. This can allow the child to read more actively by underlining or taking notes while listening, thereby reinforcing the content, which may not have been possible previously when he was totally focused on deciphering the words on the page.

Conclusion

Dyslexia is a language disorder with a biological basis which is characterised by difficulty with reading and other language processing. Typically, the challenges result from poor phonological awareness and are unexpected as compared with the other abilities of the child. Dyslexic children require specific intervention and support and can be highly successful throughout school and in a multitude of careers. These are, in Jane Healy's words, 'youngsters who might be academic stars in a culture with a different set of intellectual priorities.'[68]

For most children, reading difficulties can be addressed very successfully, thus eradicating reading failure as a public health problem. Both identifying children before they fall behind and providing the help that they need are important components necessary for the strength of our youth. The cycle of failure can be avoided because educators now know how to identify children at risk for reading failure before they begin to experience that type of difficulty.

The Montessori classroom, in both the Casa dei Bambini and the elementary (ages six to twelve) environment, is designed to meet the needs of every individual child, including the dyslexic learner. The trained Montessori adult observes the child and provides her with what she needs for success not only in language but for the blossoming of all of her human potentials. As a literate member of society, the child feels empowered to contribute to others, pursue her cosmic task, and support the building of a peaceful world. The 'human teachers can only help the great work that is being done as servants help the master. Doing so, they will be witnesses to the unfolding of the human soul and to the rising of a New Man who will not be the victim of events, but will have the clarity of vision to direct and shape the future of human society.'[69]

Notes

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4 Bonnie B. Armbruster, Fran Lehr, and Jean Osborn, *Put Reading First: Kindergarten through Grade 3* (Jessup, MD: The National Institute for Literacy, 2000), p. 7. Communications 2012/1-2, p.73.

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17 International Dyslexia Association, "Dyslexia Basics", 2008 <http://www.interdys.org/ ewebeditpro5/upload/BasicsFactSheet.pdf> [accessed 16 October 2012]

18 Shaywitz, *Overcoming Dyslexia*, p. 6.

19 US Department of Education. *Twenty-Fifth Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, 2003* <http://www.ed.gov/about/reports/annual/osep/2003/index.html> [accessed 16 October 2012].

20 Shaywitz, *Overcoming Dyslexia*, p. 29.

21 Shaywitz, *Overcoming Dyslexia*, p. 121.

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23 Shaywitz, *Overcoming Dyslexia*, p. 256.

24 Shaywitz, *Overcoming Dyslexia*, p. 99.

25 Sally Shaywitz, "Dyslexia", *Scientific American*, 275.5 (November 1996), pp. 98–104 (p. 104).

26 Priscilla L. Vail, *Smart Kids with School Problems* (New York: Dutton, 1987), p. 53.

27 Vail, pp. 7 and 117.

28 Wolf, p. 201.

29 L. Bradley and P.E. Bryant, "Categorizing Sounds and Learning to Read: A Causal Connection", *Nature*, 301 (1983), pp. 419–21 (pp. 420–21).

30 Shaywitz, *Overcoming Dyslexia*, p. 55.

31 Shaywitz, *Overcoming Dyslexia*, p. 147. The research that Dr Shaywitz cites studies only children in conventional reading programmes in the kindergarten and first grade. We might consider that when children learn the sounds that the letters make prior to learning the letter name, as they do in a Montessori environment, a lack of knowledge of the names of the letters would not be an indicator of future reading difficulties, as the names of the letters are not necessary to read. Rather, a knowledge of the sounds is necessary for reading.

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33 Shaywitz, *Overcoming Dyslexia*, p. 136.

34 Shaywitz, *Overcoming Dyslexia*, p. 133.

35 Shaywitz, *Overcoming Dyslexia*, p. 30.

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40 Richardson, "Research Validates", p. 47.

41 The Orton–Gillingham method, collaborated upon by a medical doctor and a teacher more than one hundred years ago, systematically introduces the phonemes in a multisensory, repetitive manner beginning with the most common sounds that follow the most common rules.

42 Armbruster, p. 8.

43 Maria Montessori, *The Discovery of the Child* (1948; New York: Random House, 1967), p. 229.

44 Montessori, *Discovery of the Child*, p. 229.

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46 Shaywitz, *Overcoming Dyslexia*, p. 232.

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52 Armbruster, p. 21.

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58 Thomas White, Joanne Sowell, and Alice Yanagihara, "Teaching Elementary Students to Use Word Part Clues", *The Reading Teacher*, 42.4 (January 1989), pp. 302–308. This article includes a list of these most common prefixes, p. 303.

59 Berninger and Richards, p. 233.

60 Berninger and Richards, p. 227.

61 One possible approach, DIBELS (Dynamic Indicators of Basic Early Literacy Skills), provides a brief, individually administered set of tasks lasting just a few minutes and may be administered frequently to monitor progress and enable the teacher to make the necessary instructional refinements for a struggling child. This approach assesses the five aspects identified by the NRP. <https://dibels.uoregon. edu/>.

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66 Shaywitz, *Overcoming Dyslexia*, p. 337. Communications 2012/1-2, p. 75.

67 This organisation, formerly known as Recording for the Blind and Dyslexic, may be found at <http://www.Learningally.org>.

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