



Introduction

Researchers into Learning Disabilities in America have produced a clear analysis of the problem and much practical advice to parents, teachers and others on how to help the children with such disabilities. We are indebted to Pamela Bellermand, Constance Veaco Dilts and the National Neurofibromatosis Foundation Inc. for special permission to republish this edition of “Achieving in spite of ...”.

We believe that almost all the information in this booklet is entirely relevant to the UK environment. Parents trying to get help for their child may find it useful to show this booklet to Head Teachers and other professionals involved and also draw their attention to the information below.

Neurofibromatosis and special needs

Many children with Neurofibromatosis Type 1 (NF1) have specific learning difficulties caused by the disorder. Most of them will appear to be normal, healthy, bright children **and will have an IQ in the normal range** but they will experience specific problems in class. Understandably, some teachers see them as merely difficult to teach and unruly or disruptive. This introduction is to give you some information which may help you to pinpoint the underlying problems and meet the special needs of the child with NF-related learning difficulties, enabling them to reach their full potential.

You may well be sceptical — Neurofibromatosis (NF) has been characterised **“the most common least known disorder”** and the common type (NF1) affects 1 in 2,500 of the population worldwide.

What is Neurofibromatosis?

NF is a genetic disorder of the nerve tissue caused by a fault in a specific gene. The type which may lead to learning difficulties (NF1) is caused by a faulty gene on Chromosome 17. This disorder can be inherited but half the reported cases occur in families with no previous history of NF. These cases occur due to spontaneous gene mutation and this can happen in **any** family.

Why is Neurofibromatosis so obscure?

Probably because its effects are so varied, even in members of the same family. NF causes tumours (usually non-malignant “lumps and bumps”) on nerve tissue anywhere in the body. It is only in the last ten years or so that there has been a focus on the disease. Even some medical professionals are not fully aware of its symptoms and effects. Some Educational Psychologists are also unaware of its effects on the intellect.

What are the effects of Neurofibromatosis?

NF affects the nervous system and can also affect the bones and sometimes internal organs. In a child, unless there are already serious complications, the most usual sign is six or more café-au-lait coloured patches on the skin. There can also be a few lumps and bumps just under the skin. Up to a third of those with NF have complications of varying kinds and severity. The Neurofibromatosis Association has Fact Sheets you can ask for if you would like to know more.

Learning difficulties and Neurofibromatosis

At least 33% of children with NF1 (and some reputable authorities put the number affected as high as 60%) experience **specific learning difficulties** which are directly attributable to the disorder and not to cultural and environmental factors. Although outwardly much like the rest of the children in the class, they can be rather clumsy — falling over or knocking books over and making a joke of it to hide embarrassment — they can lack fine motor skills leading to poor writing and immature drawing. They might not have normal spatial awareness — can't catch a ball or are liable to knock into people. They can also fail to comprehend the non-verbal cues which other children instinctively understand — they stand too close to others and try too hard to make friends. They can have great difficulty reading because words and letters are jumbled or dance about and they can be confused by the layout of maths problems, making gross errors in seemingly simple sums. Difficulties are sometimes further compounded by poor short term memory. The difficulty for teachers, parents and the children themselves is that these problems vary and are easy to mistake for idleness, wilfulness and downright naughtiness — an impression heightened by sometimes impulsive and unpredictable behaviour.

Yet such children can be capable of high achievement in some areas while other subjects present seemingly insurmountable problems. "NF children" are not "stupid" but they might have difficulties of **perception** which do not affect other children.

Overcoming learning difficulties

The task of recognising and dealing with such a range of difficulties might appear daunting to professionals but the situation is often truly frightening for the children, who are experiencing enormous frustration and for parents who see their children failing to fulfil their potential. Children whose difficulties go unrecognised and neglected can lose self-esteem and a downward spiral of under-achievement and failure ensues.

As with any complex learning difficulty, a multidisciplinary approach which harnesses a range of professional expertise to examine the particular needs of an individual child is likely to produce the best results. Parents often have a very accurate picture of the way in which NF affects their child and should be closely involved in programmes designed to overcome such problems. **Needs will vary but it should normally be possible to help children with NF-related special needs within a normal school environment. Moving a child to a special school can be a retrograde step.**

The Neurofibromatosis Association has available a wide range of literature on the variety of ways in which NF can affect an individual; this includes detailed information on the educational problems that children with NF experience and a discussion of the techniques that have been developed to help children and families to cope with them.

The Association has NF Specialist Advisors, well able to provide a range of advice, practical support and advocacy to families affected by NF. (Please contact Head Office for details.) This includes liaison with schools and other agencies on behalf of affected families when appropriate and with their knowledge and permission. The Specialist Advisors would welcome contact with other professionals working with families affected by NF.

Specific learning difficulties

The term learning difficulty or disability is used in the book, but when reading it, bear in mind the following note:

“Learning Disabilities” or “Learning Difficulties” has become a catch all phrase to describe students who experience a slower pace of learning. Approximately 20% of the TOTAL pupil population will experience such learning difficulties/disabilities during their educational careers.

Some 18% of this group will have mild learning difficulties, some 1.5% will have moderate learning difficulties and some 0.5% will have severe learning difficulties.

Many pupils with NF1 will have greater educational needs and will be described as having moderate learning difficulties and should be protected by a Statement of Special Educational Need.

NF1 pupils with mild learning difficulties will have an IQ within the normal range and will respond to educational intervention. Their specific learning difficulties need identifying and then taking on as “challenges”. These pupils’ problem is thus more one of perception and performance ... rather than one of intelligence. The world of learning, through THEIR eyes, is different. This booklet describes aspects of this and ways in which the specific “challenges” can be recognised and a strategy devised for working around them. NF1 children with moderate learning difficulties will also benefit from this approach.

**“Achieving in spite of ...”
A booklet on learning difficulties**

**Learning disabilities in children and adolescents with
Neurofibromatosis Type1 (NF1)**

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**Learning Disabilities:
What they are — What they aren't — What to do about them**

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Introduction

Progress in medical and genetic research in NF1 has been impressive. In contrast, we're still in the stage of describing the learning and development problems of people with NF1. More recent questions have included what type of LD is found in NF1. This section will explain what we currently understand about LD in children and adolescents with NF1 and give some suggestions to foster healthy development.

Variation in development

It might be helpful to talk about LD in general. These ideas are taken from Dr Melvin Levine, a paediatrician who studies learning and development. Some brain functions required for learning include attention, language and memory. These brain functions normally vary or are different from person to person. Each of us has patterns of individual strengths and weaknesses. This developmental variation becomes significant when it limits skill development. When brain functions are delayed and skill development is weak, there is developmental dysfunction. When one or more dysfunctions, such as dysfunction in development of motor skills, result in a child's poor performance on a particular type of task, a disability (for example, writing) is described for those particular tasks. A child with disabilities is handicapped when those tasks are critical and the child has no strategies to compensate for the disability.

Special education

In the school system LD are indicated when a child's academic achievement is significantly below what is expected for his or her intellectual or cognitive ability. Other factors, such as many absences from school or need for glasses, must be ruled out as the reason for low achievement. LD is a classification for special education services. Although your child might have dysfunction in developmental skills that affect learning, he or she might not meet the criteria for "statementing". However, if special education is needed, your child should receive specially designed services through the "best endeavours" of the school called for under the 1993 Education Act.

Characteristics of children and adolescents with NF1

The following is a description of a profile of characteristics we identified in children and adolescents with NF1. Our findings will need to be confirmed by future research.

- **General cognitive (IQ)** — Average skills are most common. Above average skills do occur.
- **Language** — Language dysfunction is common but might not be identified.
- **Memory** — Memory for stories is stronger than memory for pictures, shapes and other visual forms.
- **Attention** — Further research on attention skills in NF1 is needed.
- **Visual-perception** — Average skills for simple visual discrimination and visual perception of figure-ground relationships.
- **Visual-spatial** — Dysfunction occurs in complex problem solving for visual-spatial information.
- **Motor** — Dysfunction is common and can affect development of motor based skills (such as daily living, work or recreational skills) expected of one's age.
- **Visual-motor integration** — Dysfunction is common and can affect fluency and efficiency of writing, copying and drawing skills.
- **Reading** — Average skills are common.

- **Maths** — LD is likely to occur.
- **Written expression** — LD is common but might not be identified.
- **Learning disabilities** — LD or low academic achievement are more likely to be found in those students with more than one area of dysfunction in development.
- **Problem behaviour** — Behaviours associated with being anxious or depressed are common in children and adolescents with NF1.
- **Adaptive behaviour** — Average social skills are common.
- **Psychosocial** — Within a family, the child with NF1 is likely to be less competent in many skills than a brother or sister who does not have NF1. Social problems are common. Children and adolescents with NF1 often have difficulty being accepted by other children at school and in the community.

Learning disabilities

Development dysfunction and LD occur more frequently in children and adolescents with NF1 than in the general population. Developmental dysfunction and LD also occur more frequently in children and adolescents with NF1 than in their sisters or brothers who do not have NF1. Our research suggested that more than 50% of children and adolescents with NF1 need special education services.

Early research described non-verbal LD as the typical LD of NF1. Current studies suggest the NF1 gene produces broader effects on the development. Disabilities are not limited to non-verbal skills. In NF1 dysfunction also occurs in the development of language. Language dysfunction can affect many different skills and lead to language-related learning problems. Here are some of the problems a child with language dysfunction might experience.

Dysfunction/description

- **Weak attention to verbal information** — Poor listening skills and distractibility in situations such as school or in groups where much talking occurs. Difficulty listening for a long period of time.
- **Weak verbal memory** — Poor memory of rules of language or sequences of words.
- **Weak understanding of word meanings** — Limited vocabulary, poor reading comprehension, trouble with word problems in maths.
- **Weak interpretation of language** — Difficulty with multiple meanings of words such as in ambiguity, irony and metaphor.
- **Weak verbal reasoning** — Poor verbal problem-solving skills.
- **Poor understanding of language in social situations** — Trouble with interpreting a person's meaning or intentions in social situations. Trouble using language appropriate to social situations (verbal social skills).
- **Difficulty distinguishing sounds** — Problems with sound-symbol association in reading and phonics.
- **Weak word finding** — Limited vocabulary. Slow word retrieval.
- **Disorganised in communication** — Problems starting and organising spoken or written language for describing events or telling stories. Limited speaking or making statements that don't make sense.

What about non-verbal LD?

Developmental dysfunction in NF1 can contribute to language based LD, a cluster of non-verbal problems that are part of non-verbal LD, or both.

What is non-verbal LD?

Although there is no common definition of non-verbal LD, these involve brain functions such as motor, attention and perception that are not language based. Non-verbal skills include what is known as simultaneous processing; the perception of an entire array of visual-spatial information together, at the same time, rather than in a step by step manner.

Dysfunction/description

Weak visual-spatial skills — Difficulty with skills of interpreting position or direction and orienting oneself to the surroundings.

Weak simultaneous processing of visual-spatial information — Difficulty interpreting, organising or working precisely with spatial information such as maps, diagrams, graphs and complex charts, music and mathematics. Poor spatial planning and visual organisation for writing and drawing and organising material spatially on a page.

Weak visual-motor integration — Slow, uncoordinated and imprecise copying, writing numbers and words or drawing. Poor mechanical and construction skills for arts and crafts or for building or fixing things. Poor athletic skills for catching, hitting or kicking a ball.

What about Attention-Deficit Hyperactivity Disorder (ADHD)?

To date, firm conclusions about ADHD in NF1 cannot be made. No study has emphasised the comprehensive evaluation of ADHD in children and adolescents with NF1. Future studies will need to consider attention problems as possibly secondary: problems due to other developmental causes. Although our study suggested that symptoms of ADHD are found more often in children and adolescents with Nf1 than in the general population, future research specific to ADHD is needed.

Interventions

The same recommendations that are made for children and adolescents with the types of developmental dysfunction and LD described previously should also be made for children and adolescents with NF1.

What is different about children or adolescents with NF1 is that they may have **BOTH** learning and developmental problems **PLUS** the many physical signs and medical complications of NF1. It is these multiple problems that contribute to the "burden" of NF1 and can lead to anxiety or depression.

Because of multiple problems, the child and adolescent with NF1 can be more vulnerable to feeling discouraged. Perhaps the most basic intervention we can offer is the suggestion that parents, teachers and others develop a hopeful attitude of acceptance and respect for the developing child. Our goal is to promote the child's successes, to foster his or her talents and to prevent an ongoing sense of inadequacy. Specifically, as child advocates, we want to avoid feeling disappointed by the child's struggles. Most of all, we want to prevent children with NF1 from feeling that they are disappointing their families, teachers or themselves. Here are some specific recommendations for children and adolescents with NF1.

1. Assessment of skills

The first step in solving problems is to accurately describe the problem. What are your child's problems and weaknesses? What are your child's talents and strengths? A formal assessment of skills can give you this description. Talk to your child's teacher or the school psychologist about psycho-educational assessment in the schools or talk to your child's doctor about a developmental evaluation and other available options for this in your community. For children with NF1, we recommend a neurodevelopment evaluation in the first year of life to allow for early intervention.

2. "Demystification"

This is a helpful process of describing your child's strengths and weaknesses clearly and honestly with as little mystery or fantasy as possible. Students with LD frequently do not understand what is wrong with them. A child should know that he or she has a problem that is specific and can be described. A child needs to know that he or she has potential to succeed. Based on an assessment of your child's skills, your observations and knowledge of your child, learn to talk openly to your child about strengths and weaknesses.

Find the right words to provide clear explanations of your child's strengths and weaknesses, without labels or technical jargon, for teachers, family members or other important people in your child's life. Discussions should begin and end positively with frequent references to your child's strengths.

3. "Bypass strategies"

Teach your child ways to bypass or get around learning problems. Develop methods in the home and school to bypass areas of difficulty for the child. Specific strategies can be included in an intervention plan or an individualised educational plan (IEP) and can involve modifications of expectations, curriculum or procedures. For example: to bypass language dysfunction, the child can sit close to the teacher in the classroom and directions can be repeated multiple times throughout the day. Visual aids can be provided. In group discussions, the child with language dysfunction can be prompted in advance to allow time for preparation before being called upon; questions can also be asked that only require a yes or no answer.

4. Actively teach problem solving skills

Children or adolescents with NF1 need skills to solve problems. The following set of questions can be used to teach your child a practical approach to solving simple problems of daily living as well as complex life challenges. The best way to teach a new skill is by your own example:

STOP-THINK

Step 1. What is the problem?

Step 2. What are ALL the things I could do?

Step 3. What might happen if I do this? What might happen if I do that?

Step 4. Choose the best thing to do and try it.

5. Promote individual success

Children need to experience personal accomplishment in at least one area of their own speciality: some special skill that the child practises over time and in which the child develops proficiency. To learn to strive for excellence, success must be experienced first hand. Children with LD or developmental dysfunction might need special attention to ensure that they experience success.

Support your child in finding interests for personal accomplishment that he or she will stay with over time. It is through such practised accomplishments that respect can be gained from peers, siblings and adults. The child, through direct experience of personal mastery, can develop confidence to meet other life goals.

Conclusion

Our research at the University of Utah supports Dr. Vincent Riccardi's description of NF1 as affecting the "whole child": NF1 affects physical, socio-emotional and cognitive development, including verbal and non-verbal functions. With this knowledge both home and school intervention planning should be made with the whole child in mind. For the child or adolescent with NF1, any plan should begin with **active prevention** of the possible complications of developmental dysfunction as the very first step.

Learning disabilities

What They Are
What They Aren't
What to Do About Them

Introduction

Imagine now confusing it would be if everything you read looked like this:

**IMAGINEHOWCONFUSINGITWOULDBEIFEVERYTHINGYOUAREAD
LOOKEDLIKETHIS!**

Or if the words begin and end in places that don't make sense to you:

**ORI FTH EWOR DSBE GINA NDEN DI NPLAC ESTH ATD ON'TM AKES ENSET
OY OU?**

What if the letters were reversed or out of order?

TAHW FI EHT STRETTEL EREW DESREVER, or OTU FO ODRER?

Now imagine being called upon to read aloud and the words
o r s e t
d s m

d n e a l e h c
a l o r t l e
c v e p a

What, if on top of that, people called you lazy, dumb or retarded and you know you're not?

These are just a few of the difficulties children with learning disabilities experience every day at school. These problems make learning difficult but **not impossible!** It is important to remember that children with learning disabilities are more **like** their peers than unlike them. What is different is **how** they learn. Too often children with learning disabilities are accused of not trying hard enough or not paying attention when in reality they are doing the very best they can and working many times longer and harder than their classmates.

Most people are surprised to learn that children with learning disabilities have average or above average intelligence and many are gifted as well. That is difficult to understand. Too often we equate reading and writing ability with intelligence. A child with learning disabilities can have deficits in one or more areas, but might excel in others. No assumptions can be made about a child with learning disabilities. They are fascinating to work with because they will always surprise you! It is important to focus on their strengths and not their disability. They will amaze you with their ability to compensate for their weaknesses.

The first step in helping the child with LD is to understand what a learning disability is and how it relates to the learning process. Four steps are required for learning to take place:

- 1. Input**
(information is entered into the brain via the senses — visual input, auditory input, tactile)
- 2. Integration**
(the information that is received is processed and interpreted)
- 3. Memory**
(the information must be used or stored and later retrieved)
- 4. Output**
(the information must be sent out through language or motor activities)

A learning disability is a “short-circuit” or dysfunction in one or several of the channels to the brain. A dysfunction in any step can interfere with subsequent steps in the learning process and can result in a discrepancy between the child’s potential ability and his or her academic performance. Any learning task involves more than one process and any learning disability can involve more than one area of dysfunction. For example: a child’s visual-perceptual disabilities are likely to result in fine/motor and writing difficulties, as well as difficulties with social perceptions.

Disabilities at the input stage

During the **INPUT** stage, a learning disability results when information from the environment is “misperceived”. These misperceptions do not pertain to visual or auditory acuity. Thus, a child with perfect vision or hearing can still have a “visual or auditory perceptual disability”. **It’s not “what” you see or hear but “how” you perceive it.**

Perceptual disabilities often leave the child feeling confused, anxious and/or frustrated. Self doubts set in when one cannot trust what one is seeing or hearing. The child whose perceptions are inaccurate, inconsistent and misleading lives in an unstable and unpredictable world. A tremendous amount of conscious effort is required to override distorted visual and auditory information. And it takes a great deal of persistence and intelligence to overcome them.

Visual perceptual disabilities

A child with a **Visual Perceptual Disability** has difficulty organising the position and shape of what is seen.

The child might:

- **reverse or rotate** letters, numbers, words and even sentences when he/she is reading, copying or writing (“E is seen as “3”; “w” as “m”; “dog” as “god”; “+” sign as a times sign).
- have difficulty with **figure-ground** (*focusing on a significant figure instead of the rest of the background*) causing him/her to be unable to track left to right, line to line or to skip words, read the same line twice, see two words as one, one word as two, or skip lines. When doing a maths sheet, the child might put the answer under the wrong problem or add part of another problem to the one he/she is doing — or add in the number of the problem itself.
- the child with visual perceptual disabilities might also **misjudge distance, depth or position in place**, bumping into things, falling off their chairs or knocking things over when reaching for them. These children are often labelled “clumsy” or uncoordinated when the real problem is one of visual perception.

Ways to help the child with visual perceptual disabilities

- Encourage the child to use a bookstand to hold books and papers upright to reduce glare on the page when reading and copying.
- Give the child extra time to complete visual-perceptual activities. They need time to figure out and understand what they are seeing.
- Seat the child in the front row near the centre of the blackboard.
- When writing on the blackboard, help the child keep place by writing each line in a different colour chalk.
- Avoid tasks involving copying from the chalkboard or from books.
- When the class is taking notes from the board or during class, have a classmate who has neat handwriting put a piece of carbon paper under his/her sheet to make a copy for the child with LD or give a copy of your notes to him/her.
- If homework assignments are written on the blackboard for the class to copy, check to make sure that the child with the LD has copied them accurately. Read aloud what you have written.
- Reduce home/class work requirements by allowing the child to do only the even or odd problems rather than the whole page, and allow the child to tape record class lectures.
- Photocopy pages of non-consumable books so the child doesn't have to copy writing or maths problems.
- Use large print books and workbooks or enlarge on a copier. Teach the child to highlight important information in books.
- Allow the child to use a note card, ruler, or finger under lines of print when reading or copying. Use a note card to block out the rest of the page.
- On worksheets, put a heavy line around the pertinent items to help the child attend to one item at a time.
- Allow the child to point to or touch the first letter of every word. This will eliminate reversal tendencies.
- For new words, use colour cues like green letters at the beginning and red ones at the end.
- Present reading materials that are clear, legible and on uncrowded pages. Blurred copies are very hard for the child to read.
- Provide kinaesthetic exercises such as writing on the chalkboard, walking exercises, finger-painting and body in space.
- Provide tactile experiences such as sandpaper letters, letters from playdough or pipecleaners or outline letters/words with glue, let dry, and then 'feel' the letter.
- Mark the paper to show the child where to start and stop. Mark the child's desk with "left" and "right" markers.
- These children will remember more of what they HEAR than what they see. Present new material and give directions orally.
- Mouthing the words or quietly whispering will make a visual task an auditory one as well.
- When the student is writing something new, encourage him/her to verbalise what is being written.
- Use tape recorders, language master and record player activities for the child with poor reading skills.

Auditory Perceptual Disabilities

Auditory perceptual disabilities are those where a child has:

1. **Difficulty distinguishing the subtle differences in sounds**, confusing words that sound alike. The child might answer your question about how he or she is by giving you his/her age.
2. These children can have **trouble picking out sounds from the rest of the background** (*auditory figure background*). Understanding and following directions, particularly those with several steps, is a strenuous task for children with auditory perceptual difficulties. It is often thought that they are not paying attention or listening — actually, they are paying attention to **too** much!
3. Children who ask you to repeat questions or directions over and over again **might not be able to process the information as fast** as most people can (*auditory lag*). They “stall” for more time to think about and respond to what they are being asked or they might be only hearing part of what is said.

Ways to help the child with auditory perceptual disabilities

- Give the child extra time to think about a problem or answer a question before requiring a verbal response from him/her.
- SHOW the child how to do something rather than just telling him/her.
- If visual skills are strong, use sight word, “looksay” and similar techniques to teach reading. Approaches that rely entirely on phonics are confusing.
- Do not give directions while the child is in the midst of performing a task. Wait until you have his/her full attention.
- Have the child repeat directions given orally AND have him demonstrate that he knows what to do. He might not have understood or might have misinterpreted.
- Provide lots of visual reinforcements (pictures, maps, charts, graphs). They help keep the child’s attention.
- When teaching a new concept, illustrate it when giving a verbal explanation.
- When a child seems confused, have him/her verbalise what he/she misheard or misunderstood.
- Provide written outlines for older children to follow during oral presentations.
- Directions need to be visual — written on a blackboard or on paper.
- When giving homework assignments orally, check to make sure the child has written them correctly. It is helpful to write them on the blackboard for the child to copy as well as hear.

Social/perceptual disabilities

Children with a perceptual disability can also misperceive social cues and body language. They might misinterpret gestures, facial expressions and tone of voice or they might not notice them at all. These are the children who go too far and don’t know when to stop at home and in the classroom because they do not pick up that someone is annoyed or frustrated with them.

Children with social perceptual disabilities are often shunned by their classmates because of their inappropriate behaviour. They have trouble making and keeping friends, although they desperately want and need others to like and accept them. Without friends, a child feels isolated and many times withdraws from social situations, including school. Social perceptual disabilities are the most devastating type of learning disability a child can have. Many children with LD say that "it is bad enough having to have a learning disability but the worst thing in the world is not having any friends".

Ways to help the child with social perceptual disabilities

- Rather than assume a child will just "pick up" appropriate social behaviours, teach them to the child.
- Demonstrate rather than just talk about appropriate ways to act.
- Role-play different social situations in which a child might find him/herself and discuss possible consequences.
- Teach children to recognise facial expressions, body language and moods.
- Teach children "teacher pleasing behaviour".
- Analyse the source of social problems by observing the child in various situations to see where he/she is having difficulty and why.
- Teach children how to play games so that when they are with their peers they'll know how to play with them
- Find an activity that promotes social confidence, such as drama, reading to younger children or having the child teach a skill he/she excels in.

Disabilities at the integration stage

The next step in the learning process is to put together or process the information that has come in through the senses, i.e. **integration**. The information that has been taken in has to be understood before it can be remembered and be useful to the child. There are at least three parts in this step:

sequencing — organising information into an order that makes sense.

abstraction — inferring meaning from the words or symbols.

organisation — information must be integrated with new incoming information, and it must also be related to previously learned information.

A child with a **sequencing disability** might have trouble retelling a story in order or spell words with all the correct letters but in the wrong order. He or she may be able to memorise the days of the week or numbers in correct order but is unable to tell you what comes after Tuesday or 19, without starting from the beginning. These children also have a poor concept of time.

When a child is unable to understand jokes and humour based on a play of words, he/she is exhibiting an **abstraction disability**. In some ways the child is thought to be somewhat narrow-minded with his/her understanding of words, particularly those with more than one meaning, as well as concepts.

Many (I'm tempted to say most) children with learning disabilities have **organisational disabilities**. These children are able to take in information, such as a series of facts, but are unable to pull all the newly learned information together to make a whole concept. The signs of an organisational disability are clearly evident when one observes the child. His/her desk, notebook, reports, bedroom etc. are in disarray. These children leave their homework at home or work needed at home at school. Time management is a major issue with these children.

Ways to help the child with integration disabilities

- Help the child organise his desk, belongings and materials by providing "a place for everything".
- Provide the child with an assignment book and calendar to keep track of homework and special projects. A teacher's plan book, available at office supply or stationery stores, is good to use because it has large spaces for both the child and teacher in which to write.
- Have a classmate help the child see that all homework assignments are recorded.
- At the end of the school day, help the child check that he/she has everything needed for homework. The same can be done at home when getting ready for school. Checklists of materials needed are great for the child to use.
- Make sure the child understands what he/she is to do on homework or schoolwork assignments. Have the child demonstrate what to do.
- Teach the child to be responsible for keeping his/her notebook organised, assignments recorded and homework turned in by graphing, charting or rewarding when he/she is successful.
- A binder with dividers and pockets for each class will help keep the child organised. Keep loose sheets in the pockets.
- Provide the child with a paper punch that fits his/her notebook. Teach the child to punch holes in loose sheets immediately and put them in the proper place in his/her notebook.
- Help the child get started doing tasks by talking through the first step with him/her.
- When assigning long-term independent tasks such as book reports or term papers, provide a sequential list of tasks for the child to follow. Help the child outline the steps needed to complete the task. This will also help the child learn to plan and manage time.
- Check periodically on the status of long-term reports and other assignments to see that the child is following his/her plan.
- Keep an extra folder of handouts, so a child can easily replace lost ones.
- Daily schedules for the child to follow at home and at school are extremely useful.
- Use concrete and manipulative materials to demonstrate concepts. Allow the child to use fingers and other aids that are useful.
- Keep him/her focused on tasks by actively involving the child.
- Check periodically on the status of long-term reports and other assignments to see that the child is following his/her plan.
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- Use concrete and manipulative materials to demonstrate concepts. Allow the child to use fingers and other aids that are useful.
- Keep him/her focused on tasks by actively involving the child.
- Explain words and phrases that have multiple or subtle meanings, such as idioms.
- Be sure that presentations are organised in sequential order.
- Give instructions in small segments and reward the child for completing each step. Gradually increase the length and complexity.
- Hands-on activities will benefit this child.
- Speak clearly, distinctly and try to keep the vocabulary simple.
- Speak more slowly and in shorter sentences to give the child time to process the information and formulate ideas.
- Try to keep eye contact with the student.
- If the children have trouble understanding information, show them how to draw pictures or diagrams to help them visualise it. This also gives the information order.
- Teach the child strategies to organise information according to relationships
- In problem solving situations, teach the child to talk through steps. It will help him/her to think clearly.

Memory disabilities

The next step in the learning process is to take the information that has been received and integrated and store it for later use — in other words: we must remember what we have learned. There are two types of memory: **short-term** memory and **long-term** memory.

Short-term memory has been defined as anywhere from a few minutes to 24 hours and involves retaining information for a short time while attending to and concentrating on it. Long-term memory can be anywhere from a few minutes to over 24 hours. Children with learning disabilities usually don't have much difficulty with long-term memory. If they have learned something well, they most likely retain it, particularly if the information is interesting and meaningful. Children with learning disabilities have excellent memories when it comes to remembering past failures!

Most likely a memory disability is a short-term one. Children with a short-term memory disability might need 10-15 repetitions to retain what the average child retains after a few repetitions.

Short-term memory disabilities can occur with information received both visually and/or orally. A child might understand his/her homework until it's time to do it at home, then he/she can't remember how to do it. These children practise and practise for a spelling test at home and get them all right, only to flunk the test the next day at school.

Timed tests, particularly those involving maths facts such as multiplication tables, are sheer torture for children with memory problems. It is unreasonable and unfair to put these children under pressure of having to retrieve information and respond under time constraints. Children with memory problems are often frustrated and tempted to give up. We would be too! Trying to retrieve information you know can be energy and time consuming.

Ways to help the child with memory disabilities

- You might need to repeat directions step by step and then have the child repeat them AND demonstrate he/she knows what to do.
- Do not give directions while the child is doing something else. Wait until you have the child's full attention.
- Review material previously learned as often as possible until responses become automatic. If classes are tape recorded, the child can listen to them several times.
- The child will need to learn and relearn material to remember it. Provide many opportunities for practice.
- Don't assume a child will know tomorrow what he/she knows today — inconsistency is a trait of children with memory problems.
- Teach the child memory strategies, like mnemonics or acronyms to remember information. Teach the child how to use visualisation and imaging techniques to recall information.
- Provide charts showing maths facts or a calculator which the child can use when teaching a new maths process to avoid interfering with new learning.
- Teach the child how to make notes and lists for himself to help him remember information.
- Avoid rote memory instruction in any content area.

Disabilities at the output stage

This final step in the learning process is the proof that we have learned something: **output**. It involves being able to express in some way what has been learned. Information is expressed either through **language** — by means of words — or through writing, drawing, gesturing — **motor** output.

Language disabilities

There are three forms of language output:

Spontaneous — where one initiates whatever is said and has the opportunity to select the subject, organise one's thoughts and choose the correct words before saying them.

Demand — a language situation where the child is asked to respond to a question or is required to communicate. It is necessary to simultaneously organise, find the right words and answer appropriately in a brief amount of time. For children with a language disability, it is like being in a pressure cooker.

Social — social language skills are needed when carrying on a conversation with peers and others, when asking for help or getting his/her needs met.

Language is perhaps the most complex and difficult of all learning tasks. Language disabilities put a child at risk of failure in school, work and social situations. Most children with learning disabilities have problems with "demand language". These are the children who can talk, with a great deal of intelligence and expression, about a wide range of topics and then freeze when asked a question.

The difference is remarkable. Children with a "demand language" disability will often mumble, ask you to repeat questions to gain time or not answer at all. If forced to answer, the response may be so confusing and jumbled that you are not able to understand it. It is hard to believe that this is the same child who was speaking so fluently a moment ago.

Ways to help the child with language disabilities

- Role-play situations which involve social conversation and demand language.
- Give the child extra time to respond to questions, particularly during tests.
- Increase the child's self-confidence by calling on him/her when you know he/she knows an answer. Ask non-threatening questions which require only a short answer or opinion.
- Have the child repeat questions to him/herself before responding.
- Seat the child at the front of the room to reduce embarrassment when he/she speaks.
- Prepare the student by saying his/her name before answering questions.
- If a child stammers or pauses, assist him/her with clues.
- Reduce the child's anxiety by providing opportunities for small group discussion and participation.
- Give the child time to rehearse oral presentations.

Motor disabilities

Motor Disabilities are those involving co-ordination of the large muscles (gross motor) and small muscles (fine motor). The child with **gross motor** difficulties can appear to be clumsy, falls, bumps into things and has trouble with gym activities.

Usually more complex (and more frustrating) are **fine motor** disabilities. These show up when the child begins to write and has to get the muscles in the dominant hand to work together in a co-operative and co-ordinated way. Children with a written language disability have slow and poor handwriting. The writing task also requires a tremendous amount of energy and stamina. These are children with the awkward pencil grip and white knuckles.

Quite often the child with visual perception problems has motor problems as well — referred to as a visual motor disability. If the brain receives information that has been misperceived visually, then incorrectly processes and records it, it may misinform the muscles that require eye-hand co-ordination.

Written language tasks are made even more difficult because they require using correct grammar, punctuation, spelling and vocabulary all at the same time.

Children with learning disabilities who can tell creative, involved and detailed stories are often unable to get their thoughts on to paper. The words are often in the wrong order, usually misspelled, unintelligible or completely omitted. They usually manage to write only a few words or sentences. Writing definitely stifles these creative children. Free them of the burden of writing by allowing them to dictate, tape record or use a word processor to get their thoughts down. They'll be forever grateful!

Ways to help the child with fine motor and writing difficulties

- Avoid assigning long copying or writing assignments. Allow the child to dictate longer reports or writing tasks to someone who can do the writing, or let the child tape record them.
- Use manipulative activities to increase fine motor control.
- Blackboard practice should precede paper and pencil writing.
- Experiment with different writing tools to find the one that makes writing easiest for the child. Let the child choose which he/she likes best.
- Pencil grips are helpful for many children.
- Proper posture is important for good writing. Make sure the height of the child's chair and table is appropriate for him/her.
- A piece of tape can be placed on the desk to help position paper for cursive writing.
- Try cursive writing if the child has trouble printing.
- If printing is preferred, teach the methods that do not require the child to lift his/her pencil off the paper while forming the letters.
- Avoid the use of paper with faint lines. White paper with dark blue or black lines is the best. Paper with raised lines might also be helpful.
- Have the child write on every other line. It's easier for him/her to read and make corrections.
- Be aware that children sometimes write illegibly purposely because they cannot spell words.
- Children who use capital letters in the middle of a word often can't remember what direction the lowercase letters go (i.e.: r, n, p, b, d). It's usually easier to remember how to make capital letters.
- Sometimes it's easier for the child to write on paper with narrower lines rather than wide-lined paper. Experiment.
- Crossword puzzles will develop language and spelling skills as well as provide an opportunity to practice writing in small places.
- Provide children with alphabet and number charts to help them remember how to form the symbols when they are writing.
- Allow the child to trace if he/she has trouble drawing.
- Provide well-spaced and uncluttered worksheets.
- Teach the child to use a word processor or typewriter. The computer is a godsend for children with LD when doing written tasks that require several revisions and a lot of writing.

- Encourage children to proof-read written work by reading it aloud. They often pick up on their own mistakes that way.
- Provide a checklist to use with written assignments reminding the child to use punctuation, capital letters, check spellings etc
- Accept correct answers on tests or worksheets in any written form such as lists or phrases.
- Provide an opportunity for the child to take oral tests or quizzes or provide a reader for the child. Allow the child to dictate answers to a writer. You'll be amazed at how much the child really knows, but was unable to get down on paper!
- For maths work, have the child use graph paper to work problems or turn lined paper to the side.
- Remind the child that maths problems are worked right to left, unlike reading which is left to right.

Behavioural characteristics of children with learning disabilities

Learning is a complex process. A learning disability can occur at any or several of the steps. If what you are seeing or hearing is confusing or distorted and you cannot trust your brain to understand or store the information you need and then be able to express it, then it's little wonder that you might begin to doubt yourself or become frustrated! Many of the behavioural characteristics exhibited by children with learning disabilities that interfere with their ability to learn are the result of the confusion and insecurity they feel because of their difficulties.

Some of these behavioural characteristics include:

- **Impulsivity** — the difficulty of controlling impulses. Children with learning disabilities, when faced with uncertain situations, tend to respond quickly without evaluating alternative solutions.
- **Inattention or short attention span** — the inability to focus on one activity for reasonable lengths of time.
- **Distractibility** — where attention is disturbed by noise, movement, visual stimuli or one's thoughts.
- **Perseveration** — inability to shift easily from one activity to another.
- **Social misperception** — immature or inappropriate responses to social encounters.
- **Hyperactivity** — unusually high rate of purposeless motor activity.

Several of the behaviours — hyperactivity, distractibility and impulsivity — are also characteristic behaviour of children with **Attention Deficit Disorder or ADD**, with or without hyperactivity. Until October 1991, children with ADD/ADHD were classified under the label "learning disabilities". Now ADD/ADHD are recognised as being separate and distinct disorders: related to LD but different. Many children with LD also have Attention Deficit Disorder. An even larger number of youngsters with ADD have learning disabilities.

It is important to note that not all children who exhibit hyperactivity, distractibility and/or impulsivity have ADD. It is important to rule out other conditions that cause these behaviours, such as stress, anxiety, depression and learning disabilities, because the treatment for each is very different.

Ways to help the child with behavioural disabilities

- Perhaps the most important way to eliminate behaviour caused by learning disabilities is to help the child develop confidence. Ensure success by focusing on the child's strengths rather than weaknesses. Praise good behaviour and try to overlook bad.
- Peer approval is extremely important. Provide lots of opportunity for success when the child is performing before his peers.
- Include the child in all activities and projects. Modify when needed.
- Try to provide immediate reinforcement and feedback for small accomplishments.
- Be consistent with directions, rules, discipline and organisation.
- Dispense encouragement and praise freely but fairly. Help the child correct errors and then reward him/her.
- Discover the child's strengths and areas of special interests, such as hobbies and capitalise on them. Children with LD are usually highly inventive. They **have** to be to get around their disabilities!
- Include the child in all discussions about him/her at home and at school.
- Use a timer to help the child structure his/her time.
- Position the child's desk where there is a minimum of distraction.
- Help the child organise his work area so that it is not distracting.
- Keep the child actively involved to keep his attention.
- Perseveration is controlled by setting limits for the child. Tell him/her specifically what you want.
- Computers and other teaching machines help keep the child's attention.
- When giving directions, keep them clear and simple and make sure you have the child's attention and eye contact.
- Often a child doesn't realise he/she is being hyperactive. Talk to him/her about it. He/she may be able to verbalise causes for it.
- Encourage the child to verbalise problems and frustrations he/she is feeling. This may help to settle him/her.
- Use relaxation techniques to help relieve tensions: the child's **and** yours!
- Allow appropriate ways and times for the child to expend extra energy.
- The more a child is able to understand and recognise his/her strengths and weaknesses, the better you'll be able to help him/her. In later years, the child will need to be his/her own advocate. Begin now to help him/her develop the survival skills needed in college, in the workplace and for adulthood.

by Pamela Bellermand and the Advisory Board of Members of the Maniet Bellermand Foundation, Inc.

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