

Cognition

Fact Sheet

Multiple
Sclerosis
Trust



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Cognition

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1. What is cognition?

The term 'cognition' refers to the entire range of mental skills and abilities that each of us possess. This includes memory, concentration, planning, thinking things out, decision-making and understanding.

People with MS can experience difficulties with cognition. Poor memory and concentration are the most common cognitive problems experienced by people with MS, who often describe these symptoms as 'brain fog' or 'fuzziness'. For the majority of people with MS, cognitive difficulties are mild or easy to manage.

For some, cognitive problems will fluctuate in the same way other symptoms do, but for others cognitive problems will develop soon after the onset of MS and remain with them. Research suggests that these cognitive symptoms either stay the same over several years, or only very gradually worsen. This gives people time to develop strategies to compensate for the cognitive difficulties they experience.

Like other symptoms of MS, cognitive problems are the result of inflammation and lesions in the brain interrupting the transmission of electrical messages along nerve fibres. As with any other symptom, the impact of cognitive problems can be made worse by fatigue, poor sleep, depression or anxiety. Some medications may increase fatigue and interrupt sleep, indirectly contributing to the impact such factors have upon cognitive function. Better management of co-existing symptoms and medications may improve cognitive problems.

People with MS may be reluctant to admit to cognitive difficulties because they fear people's perception of them will change. But sharing such experiences and seeking the understanding of others usually makes the problem much more manageable. Without the understanding of those around you, failing to remember to do tasks at home and at work could be mistaken for a lack of cooperation. Adopting simple strategies however, can minimise cognitive problems and are easily explained to other people. Most family and friends will want to understand and help you make the necessary adjustments to your routine.

In some cases, cognitive problems become considerable, and the person with MS may not always be aware of the extent of their difficulty. This situation can be very distressing, particularly for friends and relatives of the person with MS. Professional help may be important in this situation to devise appropriate management techniques.

2. What cognitive problems occur in MS?

As with any MS symptom, cognitive problems are variable, and will affect different people in different ways and at different times.

MS usually affects a small range of cognitive abilities. The following is a list of the most common problems in MS, but very few people will experience all of these:

- short-term memory
- attention and concentration
- verbal fluency
- visuospatial abilities - processing visual information in forming an awareness of space and distance
- problem solving and planning - known as 'executive function'

3. Strategies for managing specific problems

3.1 Memory problems

Memory problems are commonly reported by people with MS. However, most people with MS do not experience severe memory problems and there are many strategies that can help. In particular, prompts and reminders can work very well.

The following strategies may prove helpful:

Being organised

- having a place for everything - using set places for keeping items like keys, wallet, spectacles
- setting up routines - eg always brushing teeth after breakfast

Memory tricks

These vary for individuals, but can include:

- verbal tricks to help you remember things - eg 'spring forward, fall back' for the hour change in spring and autumn.
- visual imagery - eg picturing the way from the library to the post office, rather than just directions
- word association - putting meaningful tags onto words or names, so, for example, Dan is 'Dan the plumber'; Carole is 'Carole who works in the library'

Memory aids

Memory aids are actions or equipment that help to prompt short-term memory. Examples include:

- keeping a notebook and writing things down
- using a Dictaphone and playing it back
- diary software with reminder systems on computer
- mobile phone alerts
- important numbers list by the telephone
- message book by the telephone
- calendar / desk diary / wall planner / memo board for daily reminders as well as forward planning

Doing these things can also provide a record to refer back to.

3.2 Attention and concentration

Some people with MS find it harder to concentrate. People with MS have described scenarios such as being unable to concentrate when there are a lot of people around them or losing the point in a conversation.

There are a number of simple strategies that can help:

- reducing the number of distractions - eg switching off the TV before talking to someone
- avoiding interruptions - eg using an answerphone to pick up telephone calls
- spreading out long and difficult tasks - eg form filling over several days
- organising time to do complicated tasks at the best time of day - eg cooking a new recipe at a good time of day, not when it is time to eat

3.3 Problems with words

Most people - with and without MS - are familiar with this problem. It is the feeling that a word is 'on the tip of the tongue' but is elusive at that precise moment. It can also cause some people to mix up words that sound the same but mean different things, such as 'door' and 'drawer'.

Strategies which may prove helpful include:

- visual and verbal association - putting pictures to words - eg Mr King becomes a picture of a man with a crown
- describing the concept in other words - eg 'the school' becomes 'the building with children and teachers'

3.4 Visuospatial abilities

Visuospatial abilities refer to the way people relate visual information to the space around them. Examples of visuospatial ability include:

- driving - judging distance and speed accurately
- walking through doorways - rather than into door frames - again judging distance and speed accurately
- using a map to get from one place to another, rather than relying on directions

Strategies for managing visuospatial problems are similar to those for information processing and include:

- reducing distractions
- breaking tasks into very small chunks

Driving can be dangerous if judging distance and speed accurately becomes problematic. If this is an issue, proper assessment will be needed, using one of the Independent Mobility Centres.

3.5 Planning and problem-solving

People with MS may find it harder to plan and organise everyday tasks, and to make sound decisions. They may also find it harder to think through how their actions and decisions may affect them beyond the immediate future. All of these abilities are termed 'executive skills'. When executive skills are affected

by MS, it can be hard for the person with these difficulties to manage their day, and importantly, their healthcare.

This type of cognitive problem may be obvious to the person with MS if they know what they want to achieve but are baffled about where to start. An example might be planning a trip to see a family member, but not being sure what to start with. Sometimes another person's help is needed, to:

- break a task into stages and monitor each stage as it is successfully completed
- keep things concrete (eg train or taxi) rather than abstract ideas
- go through a checklist of alternatives
- talk through the implications of each choice

Sometimes this type of cognitive problem is only apparent to friends or relatives of the person with MS, who loses the ability to judge how their decisions might affect other people. With this type of cognitive problem, the person with MS may have little insight. A friend or family member may need to discuss the issue with someone independent and sympathetic to the situation.

This type of cognitive problem may benefit from referral to a neuropsychologist, with possible access to cognitive rehabilitation (see section 5).

4. What causes cognitive problems?

In MS, the processes in the central nervous system that affect an individual's physical functioning are the same as those that support an individual's intellectual functioning. Nerve cells carrying information get damaged in MS meaning that the speed and accuracy of information is reduced. This can result in the cognitive problems encountered by people with MS.

It is sometimes helpful to think of the process in terms of a telephone exchange where the insulation on the wires is damaged and some of the wires have been broken. In such a scenario, there would be a few wrong numbers and a number of calls would not get through. This is similar to the processes that take place in the brain of a person with MS.

Cognitive problems can be made worse by:

- **fatigue** - fatigue slows everything down, including cognitive processes. Managing fatigue through pacing and planning demanding activities at the best time of day, may help these symptoms. More information is available in the MS Trust factsheet on fatigue.
- **physical effort** - if moving about or balance is becoming difficult, some people find that more cognitive input may be needed to cope with the physical effort. One way of dealing with this is to balance physical and cognitive activities by, for example, not trying to hold a conversation while walking around. It's worth noting though, that research has shown no absolute link between level of physical disability and degree of cognitive problems.
- **emotions** - depression, anxiety and stress all drain cognitive abilities. They can also be difficult to distinguish from other MS symptoms. For example, depression can make someone tired and uninterested in life, which can be easy to confuse with fatigue or with cognitive problems. Proper assessment from a psychologist may be most helpful in this situation (see section 5).
- **medications** – some medications, including several that are used to treat symptoms relating to bladder problems and spasticity may exacerbate cognitive problems. Your GP or MS nurse should advise you on the likely effects of all medications.
- **infections** – and other illnesses can also exacerbate cognitive problems.
- **anything that generally worsens symptoms** for example, heat or tense or exciting situations. A strategy for coping with this type of problem is simply to stay aware and plan ahead where possible. For example, trying to stay cool in hot weather or using relaxation techniques when faced with difficult situations may help.

5. Help for cognitive problems

5.1 Health professionals who can help

Generally, people with MS manage any cognitive problems successfully and develop strategies over a long period of time. As with any symptom, it may be helpful to talk over concerns about any cognitive problems, with a sympathetic

listener such as a trusted health professional or friend, as keeping concerns hidden may compound the problem. Very often, discussing the issue may identify and even resolve any problems being experienced.

However, sometimes it helps to seek support from a professional, and health professionals who might be able to help are listed below. A GP, MS specialist nurse or neurologist should be able to make referrals as required. Availability of these services varies between areas:

- **MS specialist nurse** An MS specialist nurse should be the first port of call if cognitive problems are making life difficult. She or he can suggest strategies and make appropriate referrals as necessary.
- **occupational therapist** Occupational therapists are trained to provide strategies and equipment to offer practical management techniques for many cognitive problems, particularly for memory and attention difficulties.
- **neuropsychologist** A neuropsychologist assesses cognitive function using a range of tests, such as quizzes and puzzles. They then suggest management techniques and strategies.
- **speech and language therapists** Speech and language therapists specialise in speech and swallowing problems. They may be able to provide strategies and techniques for difficulties with word retrieval.
- **cognitive rehabilitation professionals** Cognitive rehabilitation is the use of a structured set of activities designed to retrain an individual's ability to use judgement and make decisions. Commonly used in other neurological conditions such as brain injury, its use in MS is rare and availability is normally limited, but it can be of significant benefit to the few people more severely affected by cognitive problems.

5.2 Other options

There are no drugs that are specifically prescribed for the treatment of cognitive problems in MS. Though it is of limited significance, one small exploratory study on the effects of ginkgo biloba supplements in people with MS showed some improvements in measures of concentration and memory. This small study does not provide enough evidence to show that ginkgo biloba has a definite effect in MS, and further research is needed.

Disease modifying drugs are also being investigated for their potential protective effect on cognitive function in MS, but it is too early to draw any firm conclusions about the effects these drugs may have on cognition and further research is needed.

Where cognitive problems are being worsened by other MS symptoms, treating those can lead to improvements in someone's cognitive ability. Some people report benefit from cooling therapies such as fans or air conditioning for fatigue, and that being less fatigued helps cognitive abilities.

Equally, managing symptoms such as stress and anxiety, which may or may not be caused by MS, can help improve MS symptoms such as cognitive problems.

Other techniques you may want to try:

- guided relaxation (eg relaxation tapes)
- aromatherapy
- breathing exercises
- yoga
- meditation

6. Find out more

The MS Trust has developed a web-based resource about cognitive difficulties experienced by people with MS. StayingSmart (www.stayingsmart.org.uk) is designed for people who want to know more about how MS can affect thinking. The website is easy to use and the information is presented in a very accessible format.

StayingSmart was developed to:

- support people learning about cognition
- build confidence in managing cognition in MS
- facilitate sharing of knowledge about, and experiences of, cognition in MS.

Examples of everyday problems offer users an easy way in to the parts of the resource that are relevant to them. Each problem links to specific sub-topics which may be useful to that particular problem. Sub-topics include *memory, attention, wayfinding, finding things, language and executive skills*.

Within each sub-topic, users can access different levels of information ranging from brief explanations to more information, useful tips and tricks and gadgets and gizmos.

Other sections of the website that will guide you towards further information and support include 'MS Trust publications', 'Other resources' and 'Getting professional help'.

Users can also share their own experiences or tips with other users of the resource.

StayingSmart can be found at: www.stayingsmart.org.uk. Contact the MS Trust for further information.

Books

Gingold, JN. **Facing the cognitive challenges of multiple sclerosis.** Demos: New York; 2006. ISBN: 1932603603 A useful practical guide for people with MS, based on the author's personal account of managing his cognitive problems with MS.

Gingold , JN Mental Sharpening stones – manage the cognitive challenges of multiple sclerosis. .Demos: New York 2008. ISBN: 1932603654 Offers techniques for managing cognitive difficulties people living with MS and their health professionals.

LaRocca NR, Kalb R. **Multiple sclerosis: understanding the cognitive challenges.** Demos: New York; 2006. ISBN: 193260331X. This book is aimed at health professionals but gives a very good overview of all the issues involved.

MS Trust. **Cognition chatroom.** Transcript of a live webchat on 28 April 2009. Provides examples of real problems with cognition from people with MS together with advice from a neuropsychologist, a neurology nurse, an MS specialist occupational therapist, and a specialist psychologist.

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