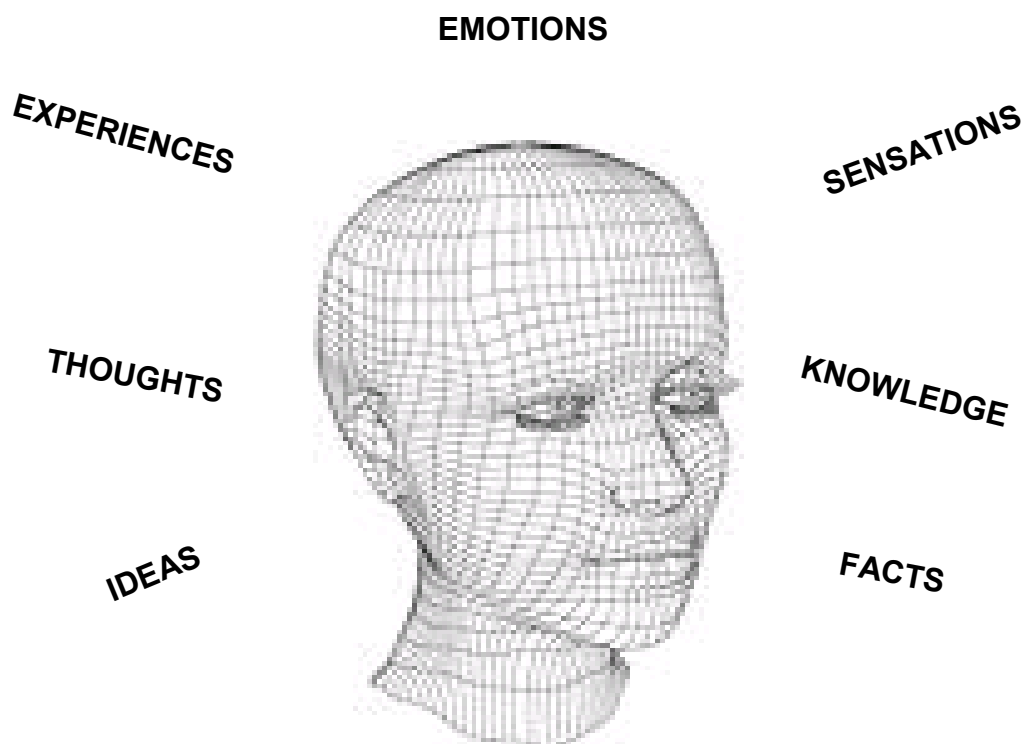


14 Epilepsy and Memory

This leaflet aims to explain factors that can affect memory and suggest ways to boost memory skills

Memory is a collection of



Memory is the storehouse of the knowledge, information and understanding that we gather about ourselves and about the world in which we live in the course of our lifetime.

Having epilepsy may contribute to some people experiencing difficulties with their memory, such as loss of concentration, inability to recall readily, increase in forgetfulness, but it is important to remember that nobody has a perfect memory, and that most memories can be improved if people work on them.

Having a good understanding of your own epilepsy and its treatment, being aware that general health and lifestyle can affect memory, and learning something about the way in which memory works can be positive first steps in the process of improving one's memory.

How does memory work?

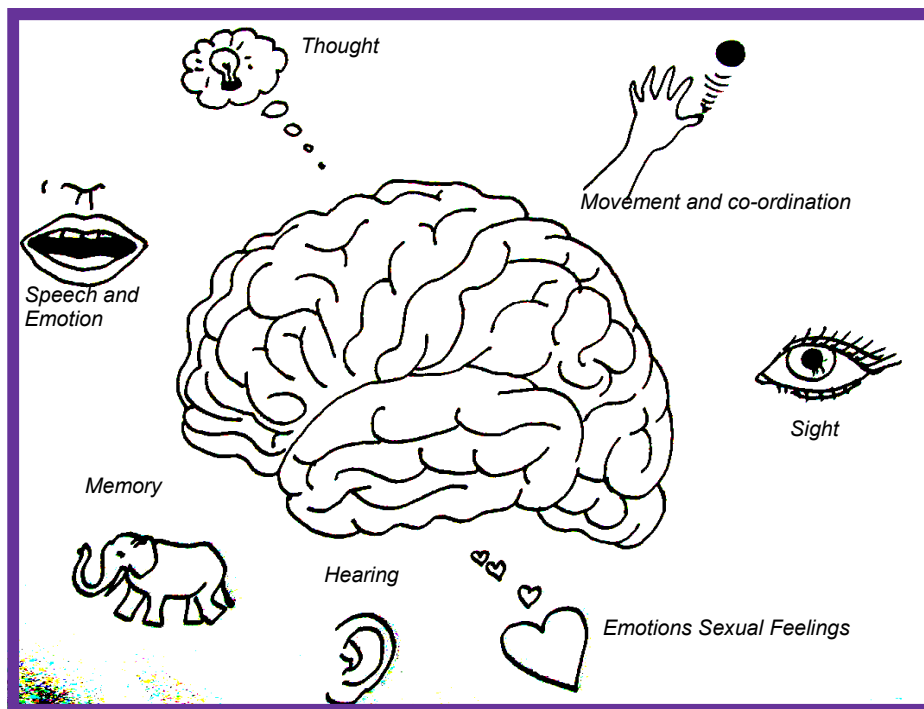
Information is conveyed to the brain through all our five senses and usually enters first into our short-term memory, where it may drop out of the system before it can be processed any further.

SHORT TERM MEMORY (STM)

Sometimes called working memory because it works rather like a notebook on which we can write or draw. Information is held here for a brief time — 20 to 30 seconds.

From here information is sent via special transmitters to the deeper areas of our brain and stored in our long-term memory waiting for the occasion when we may want to retrieve it.

The brain and some of its many functions



LONG TERM MEMORY (LTM)

Information here may be stored for days, months, years and sometimes for a lifetime. Some information can bypass STM and go straight to LTM.

The diagram above gives you an idea of the vast and varied amount of information that our brain receives, processes and stores. However, because so many areas of the brain are involved in the memory process, and because epilepsy can affect the way in which the brain works, tasks such as recalling, remembering and recognising sometimes cause problems for people with epilepsy.

EPILEPSY-RELATED FACTORS THAT CAN AFFECT MEMORY

Underlying cause of epilepsy

Sometimes epilepsy is caused by damage or scarring to the brain, perhaps as a result of brain injury, lesions, infections e.g. meningitis, encephalitis, or by the way the brain developed before birth. Such damage, particularly to parts of the brain such as the temporal lobes and the hippocampus which are involved in storing and retaining information, often leads to memory problems.

Seizure type, frequency and severity

- Frequent and/or severe seizures of any type can interfere with attention and concentration, leading to memory problems.
- Seizures that involve loss of consciousness disrupt the brain's usual functioning, including memory, not just during seizure activity but before and afterwards, sometimes for several days.
- Complex partial seizures, which involve changes in awareness, disrupt the brain's usual functioning. These disruptions can cause significant memory problems, particularly if seizures start in the temporal lobes of the brain.
- Brief absence seizures can appear to affect memory because the person misses what's going on during seizures.
- Subclinical seizures are subtle disruptions to brain activity, undetectable to observers, which can interfere with attention and concentration and cause us to forget.
- Nocturnal seizures (or sleep seizures) can cause tiredness which affects concentration and the ability to retain and recall information.

Antiepileptic drugs (AEDs)

Older AEDs such as phenobarbitone, primidone (Mysoline) and phenytoin (Epanutin) have been shown to interfere with memory functioning. Newer AEDs are less likely to cause memory problems as a direct side-effect, but high doses or combinations of several AEDs (polypharmacy) can affect alertness, concentration and attention.

Surgery for epilepsy

Although not suitable for everyone with epilepsy, brain surgery has an excellent success rate in achieving freedom from seizures. Memory impairment is a possible consequence of surgery. The risk of memory impairment varies according to:

- age when epilepsy started
- age at the time of surgery
- the part of the brain involved

Comprehensive assessment and risk/benefit analysis is carried out by a team of specialists (epilepsy specialist, neurosurgeon, neuropsychologist, neurophysiologist) prior to surgery.

Susceptibility to memory problems may be found in people

- whose epilepsy started in childhood
- who have had epilepsy for many years
- who have a history of uncontrolled seizures
- whose epilepsy started later in life as a result of damage to the brain due to stroke, heart attack, cardiovascular disease or dementia.

OTHER FACTORS THAT CAN ADVERSELY AFFECT MEMORY

- Stress and anxiety reduce concentration, alertness and ability to focus.
- Depression.
- Lack of sleep and disturbed sleep.
- Misuse of alcohol and other recreational and prescription drugs, e.g. tranquillisers.
- Health factors including menopause, thyroid problems, dementia, vitamin deficiencies, poor diet, dehydration, lack of exercise.
- Environment—noise, distractions and interruptions affect attention and interfere with storing and retrieving information.
- Fear of forgetting.
- Fear of getting lost.

Memory enemies – things to avoid

- **Caffeine** - a stimulant which increases stress and causes concentration problems.
- **Marijuana** (weed) - causes attention problems.
- **Sugar** - creates difficulty in concentration.
- **Alcohol** - impairs concentration.
- **Cigarettes** - stimulants which cause mental agitation.
- **Additives** - aspartame found in artificial sweeteners and monosodium glutamate which is found in lots of snack foods over excite the brain's neurons.
- **Fizzy Drinks** - may contain high levels of caffeine.
- **Salt** - can cause increased anxiety levels which in turn lowers your ability to concentrate.

Memory boosters

- Eat “brain food” - oily fish, bananas and red peppers are good sources of omega 3, an essential fatty acid which promotes brain function.
- Drink plenty of water. 2 litres per day is recommended to keep your body in good working order and can aid concentration.
- Eat small amounts regularly, e.g. 5 small meals throughout the day will maintain blood sugar levels ensuring a constant supply of fuel to the brain thereby aiding concentration.
- Take moderate, safe and enjoyable exercise regularly. Increasing activity levels will help the circulation of blood and oxygen to the brain.

WHAT CAN BE DONE TO IMPROVE MY MEMORY?

A diagnosis of epilepsy doesn't necessarily mean you'll have problems with your memory, but if you do, there are sources of support available to you.

- If your epilepsy and its treatment have not been reviewed for some time, ask your GP to refer you to an epilepsy specialist, particularly if your seizures are not well-controlled. It's important to ensure that your diagnosis is accurate and that your treatment is right for you.
- Ask if surgery is an option for you.
- Ask your GP to refer you to a psychologist or neuropsychologist who may be able to suggest ways of managing memory problems, stress and anxiety.
- Have your hearing and vision checked to ensure you're not missing important information.
- See an epilepsy fieldworker or attend memory workshops—contact Epilepsy Connections for information.

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Stress-busters

- Get enough rest and quality sleep as fatigue can affect concentration.
- Minimise distractions to enable you to focus and don't try to do too many things at once.
- Keep your mind active—do crosswords, puzzles, sudoku and quizzes.
- Find ways of coping with and reducing the effects of stress, e.g. by practising stress management techniques and learning how to manage your time better.

Use *memory aids* to see which ones work best for you

- Use a diary, memo pads, post-its, notebooks, notice boards, calendars, labels.
- Try timers, watch alarms, electronic personal organisers, tape recorders.
- See if computers, memory facilities on telephones, electronic navigation maps may help.

Mnemonics (ways of making information more memorable) by-

- Linking unusual, funny mental visual images to what you need to do/say.
- Using rhymes, repetition, numbers, jingles, recitation, music, songs.
- Practising association—people, things, ideas with things you like/ find amusing.
- Substituting numbers for words, using prompts, e.g. knots in handkerchiefs.

Develop coping strategies

- Be organised. Have a place for everything and keep everything in its place.
- Have a routine and stick to it, just like Brian, one of our service users at Epilepsy Connections who shares some tips with you on how he copes with memory problems.

LIFE OF BRIAN

Routine and Habit

Routine and habit are Brian's best friends. Brian sticks to the same routine every day for meals, taking his tablets and so on, and has a weekly routine for shopping and collecting pools money from neighbours. He keeps a diary for meetings, golf, community council meetings, and doctor's appointments.

He never needs a shopping list and never forgets what he needs to buy – he buys the same things each week and remembers every item by following the same route round the supermarket. Would this suit you, or would you find it easier with a shopping list?

Brian is well organised – there's a place for everything and everything is always put back in the same place. For example, Brian is secretary of his local community council. He keeps any relevant mail / paperwork in the same place which he checks before leaving for his meetings.

Being Organised

He keeps his finances well organised with separate accounts for bills, savings, and spending money.

He never makes mistakes with the catalogue shopping he organises for friends and family – he keeps a card for each person and notes down IMMEDIATELY any purchases that take place.

Brian is a football coach. He keeps notes of players' names, the positions they play in and weekly records of activities.

Communication and Support

Brian is very open about how his epilepsy and seizures affect him and his memory. He gets a lot of support from family and friends, e.g. Brian's football coaching partner uses subtle ways of reminding Brian of a player's name if he thinks Brian may need help.

Brian's family visit regularly to ensure he's okay. If Brian is not in, they will know where he is by checking either the blackboard or by looking for a card on the kitchen table. Brian has a set of postcards ("Gone to the Forum", "Football Coaching", "Golf") and he leaves the relevant card on the kitchen table to remind family where he is. If he goes out with a friend or goes out unexpectedly he'll leave a note on the blackboard.

Positive Attitude

Brian's open attitude and approach to risk and safety means that he's ready to try anything. Because of the precautions Brian takes to ensure people know where he is, he and his family feel less anxious about his epilepsy. He walked the West Highland Way to raise funds for Epilepsy Connections.

Brian accepts that because of his epilepsy he has problems with his memory, and rather than denying he has memory problems or trying to cover them up, he gets people "on side" to help.

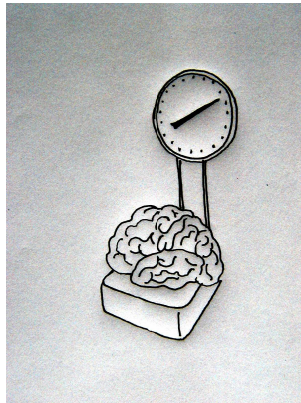
Healthy Lifestyle

Most of the food Brian buys is cooked in the microwave to prevent accidents on the cooker. He is keen to increase his intake of fruit and vegetables.

Brian tackles stress by exercise – walking, football, golf – and took part in Epilepsy Connections' reflexology project.

His routine extends to getting up and going to bed at the same time everyday, to avoid upsets to his sleeping pattern.

Brian has a full and busy life. As well as his voluntary activities, he is interested in sport and builds model planes.



100,000,000,000 neurons

"The remarkable brain"

Our memory is a collection of all that we experience in the course of our lifetime, and though on occasions it may let us down, by keeping it active and maintaining a healthy lifestyle we can help to keep it in good working order.

More detailed information can be found in:

- The Memory Prescription, by Dr Gary Small (Hyperion Books), 2005.
- Managing your Memory, by Narinder Kapur, 1991.
- Never Forget Facts and Figures, by Dominic O'Brien, 2005.
- Memory, Epilepsy Today, Epilepsy Action, (September 2002) by Dr Gus A Baker and Suzanne Clarke, September 2002.

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