

The school years & beyond

Epilepsy often affects cognition, learning and behaviour, causing difficulties at school and into adulthood. Here, Dr Robyn Boyle explains how, why, and what can be done to help.

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It is easy to see the physical effects of epilepsy if someone falls down and has a generalised seizure. But the effects on other aspects of functioning – cognition, learning and behaviour – are often less easy to see and tend to be overlooked or ignored. This article outlines some learning and behavioural problems resulting from deficits in memory and higher level cognitive skills due to epilepsy, focusing on experiences for children and giving an overview of impacts in the adult years.

The school years

Memory

Poor memory functioning is usually associated with temporal lobe epilepsy. This can make it harder for children to learn new information, particularly the factual information taught at school, or to remember instructions. Meanwhile frontal lobe epilepsy can also produce memory problems. This can be due to difficulty organising and structuring information, leading to jumbled information stored in memory, or a short attention span – the child does not pay attention when the information is being presented.

Memory problems are often misinterpreted as disobedience and non-compliance. A typical school scenario is:

1. Teacher gives an instruction.
2. Child fails to follow instruction because they can't remember it.
3. Child gets in trouble.
4. Child constantly feels lost in class, unable to keep track of tasks, confused as to what they are supposed to be doing.
5. Child increasingly experiences feelings of failure, helplessness.
6. Child feels increasing frustration with school, and their self-esteem begins to fall.
7. Behaviour problems emerge as child responds to frustration and low self-esteem by inappropriate behaviour such as acting out. They may also socially withdraw if they feel their classmates think they're stupid, and they may stop trying in class as they anticipate further failure.

The problem behaviours might not just be exhibited at school - in fact many children bottle feelings up and lash out when they get home.

At home, too, instructions may only partially be followed and parents frequently



complain their children only ever remember one out of two instructions. This is very common in children with memory deficits.

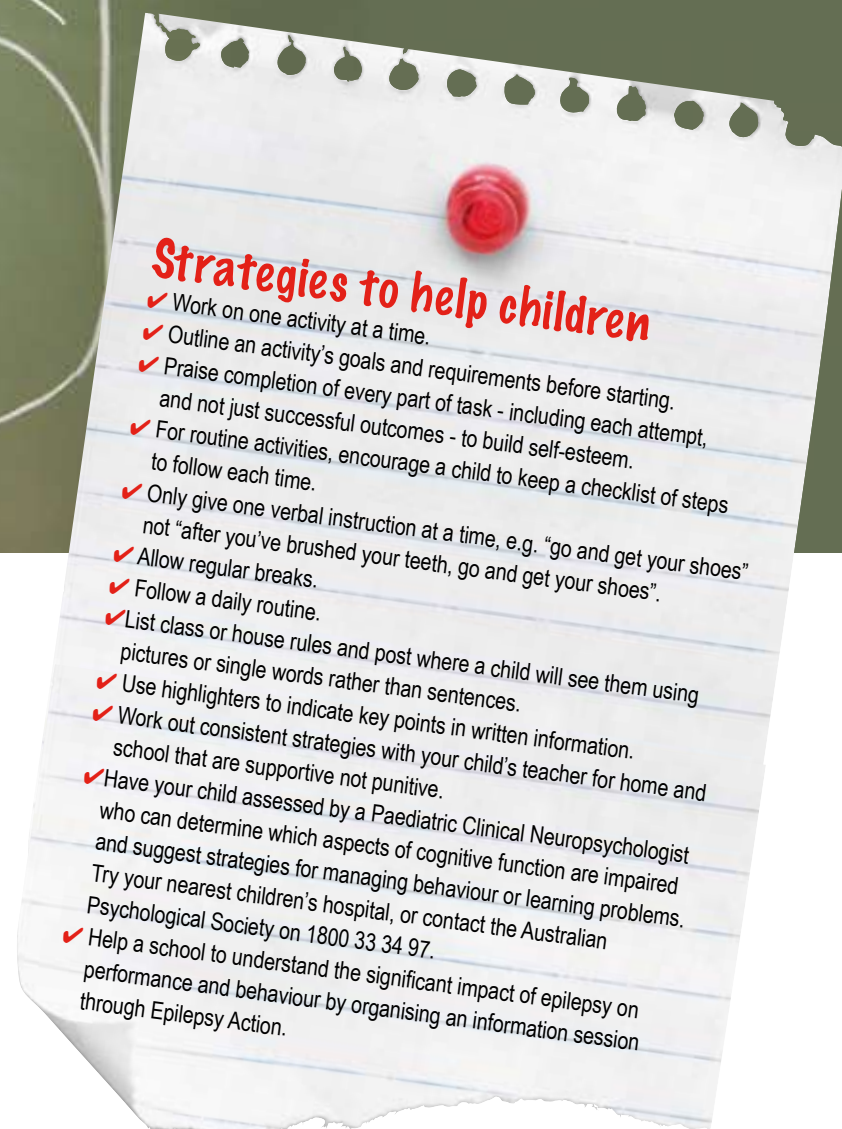
Executive skills

Another area of cognitive functioning that can have a major impact on learning and behaviour is executive skills. These are higher level cognitive processes that manage the other cognitive functions as well as behavioural and emotional regulation. In practical terms, executive skills help people to:

- Plan and organise their approach to various tasks and activities.
- Develop strategies and change them according to situational or task demands.
- Evaluate information to make decisions, adapt to new situations.
- Utilise feedback to modify their behaviour.

Executive skills are governed primarily by the frontal lobes of the brain, and deficits in these skills are typically shown by children with frontal lobe epilepsy, but also those with childhood absence epilepsy or juvenile myoclonic epilepsy.

Problems in any number of executive skills can lead to significant learning and behavioural difficulties.



Poor planning and organisation skills can lead to:

- Inability to start projects and assignments.
- Difficulty obtaining appropriate equipment or materials in advance.
- Difficulty knowing how to complete multiple step problems or tasks.
- Approaching tasks in a haphazard way.
- Focusing on the details rather than the bigger picture.
- Feeling overwhelmed by large amounts of information.
- Poor learning of new information.

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Poor working memory skills (the ability to hold and manipulate more than one piece of information in your mind at a time) can lead to:

- Difficulty carrying out multi-step activities, due to losing track.
- Inability to follow complex instructions, forgetting the first instruction by the time the second one is given.
- Difficulty with mental arithmetic.
- Problems keeping track, particularly if activities have multiple components.
- Difficulty remembering rules, often interpreted as naughtiness.

Problems with mental flexibility (the ability to shift from one situation, activity or aspect of a problem to another) can lead to:

- Rigid, inflexible behaviour.
- Requiring consistent routines, and becoming upset if normal routines are disrupted.
- Over-involvement or obsession with a particular object or activity.
- Inability to drop a topic of interest or get over a specific disappointment.
- Need for objects to be placed in same position each time or kept in a certain order, becoming upset if objects or

belongings are moved.

- Difficulty generating strategies or working out different ways to solve a problem.

Problems with inhibitory control (the ability to suppress acting on an impulse or stop certain behaviour) can lead to:

- Intrusive behaviour like interrupting or calling out in class.
- Lack of awareness of personal safety.
- High levels of physical activity e.g. hyperactivity, restlessness, fidgeting.
- Tendency to interrupt and disrupt.
- Poor frustration tolerance e.g. quick, aggressive responses.

Reduced self-monitoring (the ability to be aware of one's own behaviour and modify it according to situational demands) can lead to:

- 'Rushing through' work.
- Careless mistakes.
- Failure to check work.
- Lack of awareness of impact of behaviour on others e.g. unaware that behaviour is bothering others.
- Lack of awareness of consequences of own behaviour.

Beyond the school years

The following overview won't reflect everyone's situation, but may provide some helpful tips and suggestions about cognition in teens and adults with epilepsy.

Memory

Epilepsy can affect the memory function of teens and adults in the same way it does in children. In adults, left temporal lobe epilepsy tends to affect memory for verbal or language-based information, while right temporal lobe epilepsy affects memory for visual and spatial information. As with children, frontal lobe epilepsy can alter how the memory organises and stores information, attention span (the amount of information that can be taken in at one time), as well as the ability to independently retrieve information from memory.

Adults in tertiary education may experience problems including:

- Difficulty learning new information,

routines and skills.

- Difficulty remembering instructions.
- Difficulty independently completing assignments, study and set tasks.
- Taking longer than their peers to learn new information or skills on which other skills are built.
- Feelings of helplessness, failure, not being good enough.

At work or home, adults may experience problems including:

- Forgetting where they placed belongings.
- Forgetting appointments, planned tasks, conversations, people's names.
- Forgetting to take medication.
- Leaving out steps in tasks.
- Difficulty finding their way e.g. when driving.

Executive skills

The brain's frontal lobes govern executive skills. So frontal lobe epilepsy primarily affects these abilities. Any executive skills deficit can change a person's behaviour

and ability to function independently and effectively at home and work, e.g. for self-care and in social situations. Since the frontal lobes develop throughout adolescence, problems often emerge then.

Executive deficits can cause difficulty with all aspects of the learning process, seriously affecting a young person's ability to pursue a course or career. Any tertiary study, whether academic (e.g. at university) or practical (e.g. an apprenticeship), involves the ability to learn skills and independently obtain, organise and learn information.

Memory and executive difficulties can be reduced using similar strategies and techniques.

When learning new information:

- ORGANISE List information in groups of similar items, number the items in the list then use this number to aid recall. Break long complex information into smaller, meaningful chunks.
- ASSOCIATE Relate information to

Information helped Jesse

Until recently, Jesse Crillesen was often in trouble at his school in Townsville. Even his mother didn't realise that his slow responses and apparent lack of cooperation were part of his complex partial epilepsy. He'd struggle to take directions and to keep up with his class. Playing games, he wouldn't remember rules or whose turn it was.

In March 2006, one of Jesse's teachers contacted Epilepsy Action for help. A registered nurse gave sessions providing accurate information about Jesse's epilepsy to his family, his teachers and the other students at his school.

"I was flooded with guilt when I recognised Jesse's 'misbehaviour' was seizure activity," says his mother Helen. "Jesse doesn't always have the jerking movements." Instead, he can be "like a puppet... He doesn't have full control or focus. You can be sitting down eating dinner for instance, and he's unable to use a knife and fork."

Armed with accurate information, his teachers have been able to make allowances and adopt strategies to help Jesse learn. Meanwhile other students "know what's happening," Helen says. "They'll say, 'Jesse, you've been having seizures, we'll wait a while before we start playing again.' They include him more, make him feel accepted." As a result, she says, "Jesse's confidence has grown in leaps and bounds."



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existing knowledge or experiences.

- VISUALISE Form a mental image of the information e.g. picture different items in different rooms of your house.
- Use ACRONYMS Form a word with the first letter of items you want to remember.

To retain newly learned information in memory:

- Use DISTRIBUTED PRACTICE Practice the material/task over short, frequent periods rather than longer, less frequent occasions to strengthen the

memory trace.

- REVIEW and REVISE information regularly. Revise the same day, then periodically over that week and at least once over subsequent weeks.
- OVERLEARNING Practise new tasks or revise information even after you correctly recall it to help embed it in your memory.

General tips for memory and executive difficulties:

- Note plans in a diary or electronic organiser such as your mobile phone. The less information you load into your memory, the better it will work.
- Use written reminders like whiteboards, checklists, memos, or Post-It notes in prominent positions.
- Use timers or alarms as auditory cues for when to perform a task.
- Hang a calendar or use a digital clock clearly showing the day, the date and month.
- Use maps and diagrams to remember spatial information e.g. a map to orient

yourself to a new location or campus before you visit.

- Store medications in dosset boxes labelled with days of the week to remember doses.
- For both memory and executive difficulties, organise belongings at home and work so everything has a logical place then always put things back in place.
- Follow routines, e.g. WACKO (Wallet and Car Keys On), before leaving any location.
- Attend Epilepsy Action memory training workshops.

Teens and adults with epilepsy encounter many more difficulties, depending on their epilepsy type and which area of the brain it affects. Many other strategies can be used to reduce and compensate for these. Watch for more in-depth coverage of these issues and strategies in future editions.

Sources and a longer version of article available on request