

Autistic savant

Autism is a developmental disability thought to have neurological or genetic causes (or both). However, the cause of autism is not yet fully understood and there is no known cure. A person with autism has difficulties in some areas of their development, but other skills may develop typically.

The skills most likely to be affected include communication, social interaction and difficulty with flexibility of thought and play. People with autism also often display characteristics such as a restricted range of interests, and repetitive or stereotyped behaviours.

'Autistic savant' means a person with autism who has an unusual gift or an outstanding skill or knowledge clearly above their general level of ability and above the population norm. Psychologist Darold Treffert (who has studied savants for over forty years) refers to this remarkable skill as 'an island of genius'. The term 'savant' comes from the 19th century French word for 'knowing' and means 'a learned individual'.

A recent British study (Howlin & others, 2009) found that around 28 per cent of people with autism studied met the criteria for possessing a savant skill.

Savant skills are occasionally found in people with other types of diagnoses (for example, a person with an intellectual disability) and in individuals without a disability. Consequently, most researchers use the term 'savant syndrome' instead of 'autistic savant'.

A range of savant skills

Just like autism spectrum disorders, savant skills come in a spectrum. The range of skills includes:

- **Splinter skills** – the most common type. Like an obsessive hobbyist, the person commits certain things to memory (for example, sports trivia).
- **Talented skills** – the individual has a more highly developed and specialised skill in relation to their intellectual ability. For example, they may be artistic and paint beautiful pictures, or have a memory that allows them to work out difficult mathematical calculations in their head.
- **Prodigious skills** – the rarest type. It is thought that there are only about 100 prodigious savants in the world. These skills could include, for example, the ability to play an entire concerto on the piano after hearing it only once.

Specific ability

In all cases of savant syndrome, the skill is specific, limited and most often reliant on memory. Generally, savant skills include:

- **Music** – the piano is the most popular instrument. For example, the skill may be the ability to play the piano without being taught.
- **Art** – such as the ability to draw, paint or sculpt to high standards. For example, Richard Wawro is an individual with autism who is considered to be a prodigious savant. Richard is also blind, but his crayon drawings command up to \$10,000 each.
- **Mathematics** – for example, the ability to work out complicated sums in their head, or to calendar calculate (for example, work out what day it was on 1 June 1732).
- **Language** – in rare cases, the person may be unusually gifted in languages.
- **Other skills** – such as knowing the time without seeing a clock, untaught mechanical skills, having an unflinching sense of direction or the ability to commit maps to memory.

Skills and behaviours seen in people with savant syndrome are so far unexplained. However, researchers think it might have something to do with the right hemisphere of the brain.

The brain is divided into two hemispheres, left and right, bridged by a thick band of nerve fibres called the corpus callosum. While left hemisphere skills are involved with sequential, logical, linear processing and the interpretation of symbolism (such as understanding words and body language), the skills of the right hemisphere are much more intuitive, concrete and direct (such as memory).

CT and MRI scans of the brains of people with savant syndrome suggest that the right hemisphere is compensating for impairment or a lack of skill in the left hemisphere. It seems that the right hemisphere of an individual with savant syndrome focuses its attention on one of the five senses – for example, if it concentrates on hearing, then the individual concerned may have a special skill in music.

It is thought that habitual memory centres of the brain take over from higher memory centres, which helps to explain why some autistic savants are like obsessive hobbyists who do the same thing over and over. Apart from habitual memory, other factors that may help an autistic savant to hone their special skill could include:

- The ability to focus and concentrate
- The desire to practise endlessly
- Positive reinforcement by family, friends and caregivers.

San Franciscan neurologist Dr Bruce Miller recently discovered new savant skills in some of his patients who were undergoing a certain type of dementia. These patients had a type of dementia that affected the left temporal region of their brains (located over the left ear). When the patients were given brain function tests, their results were similar to those of a young autistic savant.

In a joint project with the University of South Australia and Adelaide University, researchers from Flinders University in Adelaide were able to elicit new savant skills in volunteers by using transcranial magnetic stimulation to temporarily 'disable' the frontal temporal lobe. (Transcranial magnetic stimulation is a type of treatment for depression.)

During the test, five of the 17 volunteers showed new and remarkable skills like calendar calculation. This study suggested that savant skills are not accessible to everyone but that these skills may be 'limited to a small percentage of the "normal" population, just as they appear to be in the disabled population'.

Where to get help

- Your doctor
- Autism Victoria trading as amaze Tel. (03) 9657 1600 or 1300 308 699
- Centre for Developmental Disability Health Victoria (CDDHV) Tel. (03) 9902 4467

Things to remember

- 'Autistic savant' means an individual with autism who has an outstanding skill or knowledge clearly above their general level of ability and above the population norm.
- It is thought that around 28 per cent of people with autism possess skills which could be considered 'savant-like'.
- The term 'savant syndrome' is considered to be a more accurate term than 'autistic savant' as savant skills are occasionally found in people with other types of diagnoses (such as intellectual disability) and in people without a disability.

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