



Speech deficits and speech pathologists

Speech language pathology encompasses the diagnosis, assessment and treatment of communication and swallowing disorders.

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The complexity of language

The ability to communicate effectively is a skill that most people take for granted. It isn't often that we stop to think about the complex nature of speech and language.

For example, have you ever stopped to consider how our brain is able to process over 200 words per minute every hour of the day without tiring? Or why, when you finish reading this sentence, your voice will instinctively rise to mark the use of question? Further, how do you know that the combination *mgla* could not possibly be a word, but the combination *flast* is permissible?

Speech Language Pathologists

These and other questions are investigated by speech language pathologists (SLP). Formerly known as speech therapy, the allied health discipline of speech language pathology encompasses the diagnosis, assessment and treatment of communication and swallowing disorders.

Communication - the means by which we understand and make ourselves understood - can breakdown in the areas of speech, fluency, voice, language use, hearing, reading and writing. As one in seven Australians experience some form of communication disability, the role of the SLP in hospitals, educational settings, nursing homes as well as specialist and private practice, is growing.

Speech language pathologists work as part of a multidisciplinary team, often alongside physiotherapists, occupational therapists, doctors and nurses. As the caseload of the SLP is so varied, their responsibilities may include treatment of swallowing disorders following stroke, working with parents of a new born baby with a cleft palate, reducing voice strain in teachers and providing information and rehabilitation to patients who have suffered an acquired brain injury.

As with all frameworks for speech pathology intervention, it is the aim of the SLP to treat not only the presenting impairments, but to also determine their impact on a patient's activities and participation.

Consequently, it is the role of an SLP to not only diagnose and assess patients, but to consider the patient as a whole, understanding the impact of impairment on a patient's social, emotional and vocational aspects of life.

Speech, Language and Acquired Brain Injury

Human communication comprises three fundamental neurological processes that may become impaired as the result of an acquired brain injury. The overall aim of these processes is to facilitate effective communication, in which we can plan and execute exactly what we want to say. The three steps involved include:

Understanding and organisation of a thought, e.g. knowing that saying 'hello' requires the production of four distinct sounds h-e-l-o.

Programming of the motor components, e.g. knowing that to produce the /h/ you need to release a quiet stream of air from the back of your throat.

Execution of the thought, e.g. actually producing the word 'hello' by using certain speech muscles.

A breakdown can occur at any one or more of these stages, depending on the location and severity of the acquired brain injury.

A breakdown at Stage 1- Aphasia

Aphasia is characterised by an impaired understanding and production of language and is usually the result of damage to the left or 'language competent' half of the brain. People with aphasia may find it difficult to:

- participate in a conversation, particularly in a noisy environment
- comprehend jokes or sarcasm
- write a letter or use the telephone
- use money to understand numbers

In terms of neurology, two major areas can account for the specific deficits seen in patients with aphasia:

- a motor speech-language area, or Broca's area
- a sensory speech-language area, or Wernicke's area.

Essentially, a patient with Broca's aphasia will produce non-fluent, slow and effortful speech, while a patient with Wernicke's aphasia will produce fluent but confused speech.

A language sample from a patient with Broca's aphasia, explaining a scene in a picture:

"Uh...mother and dad...no...mother...dishes...uh...running over...water...and floor" (Brookshire, 2003).

A patient with Wernicke's Aphasia in conversation:

"His wife saw the wonting to wofin to a house with the umbelor. Then he left the wonding then he too the womin and to the umbrella up stairs." (Goodglass & Kaplan, 1983).

Aphasia is not considered by most to be a disorder that can be cured, however the overall aim of speech and language therapy is to increase an individuals potential to function effectively in their own environment, to facilitate meaningful relationships and restore self esteem and independence.



A breakdown at Stage 2- Apraxia

Apraxia of speech (AOS) reflects an impaired capacity to plan the movements necessary to direct speech. AOS can occur on its own as a result of an acquired brain injury, however it is also seen as a secondary disorder to aphasia. AOS can also occur in childhood.

A patient with AOS is unable to produce correct articulation and flow of speech, despite having functioning speech musculature. Essentially, the impairment occurs at the level of planning the speech output. Therefore, although the patient has enough muscle strength and coordination to produce the word 'hello', they have an impaired ability to plan exactly how to move their lips, tongue and other speech organs in order to produce the word. As a consequence, a patient with AOS will often be seen groping for words as they attempt to program their speech musculature.

The goal of the SLP working with patients with AOS is to maximise effectiveness, efficiency and naturalness of speech. Speech programs may need to be relearned, for example the program that tells us instinctively how to produce the /h/ in hello, in order to restore lost function.

A breakdown in Stage 3- Dysarthria

Dysarthria is the term given to a group of disorders that reflect impairment in the actual speech muscles. Unlike AOS, patients with dysarthria can plan their speech output, but due to damaged central or peripheral nerves, no longer have the strength or coordination to execute speech.

As a result of nerve damage, for example cranial nerve damage following a motor vehicle accident, various components of the speech system may become impaired. A patient may experience difficulties in respiration control, articulation, resonance or phonation. These difficulties can then present as lowered strength, coordination, range, steadiness or accuracy of speech movements.