

What are SLPs interested in?	Nervous system (cont)	Anatomy and Function	Anatomy and Function (cont)
where is the damage?	Peripheral nervous system (PNS) - Nerves outside of the brain & spinal cord ▪ Connects CNS to limbs & organs	Brain	> Body orientation
What is the function of the damaged area?	Contra lateral innervation	> Grey matter (nerve cell bodies) > Wrinkly appearance > Bumps – gyri > Grooves – sulci and fissures	OCCIPITAL LOBE – Function
what has caused the brain damage?	one side of the brain essentially controls the opposite side of the body	Divided lengthways into two hemispheres	> Processing of visual information e.g., in reading, recognising faces/objects
What are the language/swallowing symptoms?	BROCA'S AREA & WERNICKE'S AREA BROCA'S AREA Paul Broca patients who lost the ability to speak Most had lesions in posterior part of left frontal lobe in the posterior part of the frontal lobe of left hemisphere region for expressive language WERNICKE'S AREA Karl Wernicke patients with fluent speech but impaired comprehension Most had lesions in the superior part of the left temporal lobe in the superior part of the temporal lobe of left hemisphere region for receptive language	>left & right FRONTAL LOBE – Function > Attention > Language production > Voluntary movement > Behaviour and Personality > Planning of movement > Reasoning and problem solving TEMPORAL LOBE – Function > Hearing e.g., words, laughing, baby crying > Language comprehension > Interpret other people's emotions PARIETAL LOBE – Function > Processing of sensory information e.g., touch, pressure, pain, temperature, taste, position	LANGUAGE AREAS IN THE BRAIN > Left hemisphere > Frontal lobe (and Broca's area) vital for language and speech production > Temporal lobe (and Wernicke's area) vital for language comprehension
- Different methods for the assessment and investigation of neurologically-based communication disorders			Grey is the surface – cerebral cortex Children with soft non wrinkly brains will have intellectual issues
Nervous system			common causes of acquired communication disorders Sudden incidences are; > Stroke > Traumatic Brain Injury (TBI) Progressive diseases are; > Alzheimer's disease > Parkinson's disease > Multiple Sclerosis (MS)
Complex collection of nerve cells (billions)	that transmit signals between different parts of the body - allows you to do things like walking, speaking, swallowing		
Structurally – NS has TWO components	Central nervous system (CNS) - Brain (incl. cerebellum & brain stem → image) ▪ Spinal Cord		



Nervous system requires a high blood flow > Brain made up of cells (nerve cells) > They are the key players BUT to function properly; ▪ Nerve cells depend on adequate supply of oxygen and nutrients (e.g., glucose) through a dense network of blood vessels		Brain lesions (cont) Blood flow is suddenly interrupted to an area of brain (↓ oxygen & ↓ glucose) → Nerve cells begin to die Symptoms and effects depend on the lesion site Change of behaviour Sensory deficits memory loss speech/language problems complete paralysis of half of the body weakness of one entire side of the body If the stroke occurs in the left side of the brain, the right side of the body will be affected, and vice versa Traumatic Brain Injury (TBI) - OPEN HEAD INJURY Sudden damage to the brain caused when the scalp/skull is broken, fractured, or penetrated Damage to brain tissue and blood vessels		Brain lesions (cont) Damage is typically widespread or diffuse to an area or areas within the brain TBI - CLOSED HEAD INJURY Results when an outside force impacts the head BUT the skull is not broken, fractured, or penetrated shaking of the brain inside the bony skull results in bruising and tearing of brain tissue and blood vessels Damage is typically widespread or diffuse to an area or areas within the brain TBI – Symptoms Effects largely dependent upon location and extent of the brain injury Change of behaviour Vision impairments Sensory deficits Paralysis, movement difficulties		Brain lesions (cont) Swallowing disorders Speech and language problems Progressive diseases ALZHEIMER'S DISEASE Most common type of dementia in older adults Dementia progressive deterioration in cognitive functions (e.g., thinking, communication) Significant loss of brain volume (nerve cell death) Incidence rising with ageing population Clients with Alzheimer's Disease Inappropriate social behaviour Poor memory Problems performing routine tasks Problems with abstract thinking and judgement Confusion Speech, language and swallowing difficulties PARKINSON'S DISEASE Degeneration/death of nerve cells leads to movement & cognitive impairments	
Brain lesions Stroke Rapid loss of brain function due to an injury to blood vessels in the brain Risk factors - Overweight - Physical inactivity - Heavy drinking - Use of illegal drugs - High blood pressure - Cigarette smoking - High cholesterol - Diabetes Blood supply disturbed due to A clot (Infarct/ Ischemic stroke) - 80% Bleeding (Haemorrhage/ Haemorrhagic stroke) - 20%							

Progressive diseases (cont)

Occurs in
around 1% of the
population aged
over 60

Symptoms Tremor (can
affect limbs +
jaw, tongue,
face in some
cases)

Absence of/
Reduced
movement

Muscle rigidity

Stooped posture

Dementia (40%
cases)

MULTIPLE
SCLEROSIS Demyelinating
disease

- in which the
protective cover
(Myelin) of nerve
cells in the brain
and spinal cord
are damaged

- Disrupts the
ability of the
nervous system
to communicate
properly (i.e.
information
transfer affected)

- > More common
in women 20-40
years old

- > Cause not
known (genetics
& environmental
factors such as
infections
proposed)

Symptoms vary depending
on the lesion
sites

Progressive diseases (cont)

Fatigue

Mobility problems

Problems with thinking, learning
and planning

Speech and swallowing diffic-
ulties