Cognition

Cognition: what is it?	▪ Thought or Consciousness
	▪ The mental events or processes that allow you to acquire and work with information or knowledge
Cognition: what "proce-sses"?	▪ Memory, working (short-term) — temporary storage & long-term — persistent storage I
	▪ Language (ability to understand & express thoughts)
	▪ Attention (conce-ntration, allows you to focus on)
	▪ Executive functions (control of behaviour, problem solving, planning & strategy)

Cognition (cont)

▪ Perceptual function (allows you to take in information through senses, then utilise this information to respond & interact with the world)

▪ Motor function (voluntary movements: dialing the phone, un/buttoning clothes etc)

▪ Social cognition (recognising emotion of others, how you deal with others, imagine what someone else might be thinking or feeling etc)

Cognitive impairment Terms

Dementia

Alzheimer's

Major neuro-cognitive disorder (NCD)

Alzheimer's is the most common dementia

Many people use major neuroc-ognitive disorder instead of saying dementia

Cognitive impairment

− It is NOT normal for age-re-lated cognitive decline to interfere with activities of daily living!
- If the cognitive decline does interfere with activities of daily living then it is a cognitive impairment

Age-related cognitive decline

Evidence: Seattle Longit-udinal Study:	➢ began in 1956 focusing upon age changes in cognitive abilities
	➢ on multiple measures – • 80% of participants showed little decline – 60 y.o. • 67% showed little decline – 81 y.o.
Memory: decreases	• moderate and not experienced by everyon?
	• substantial, beginning in early adulthood and affecting everyone?
Speed: decreases	• learning, proces-sing, problem-s-olving

Major NCD

Diagnosis:
▪ decline in one or more cognitive abilities (based on concerns and confirmed in testing)
▪ significant enough to interfere with activities of daily living
▪ decline is not reversible
▪ Age-related changes
▪ Physiological, age-related changes, when the elderly are trained, there is the ability to improve before the decline. Reversible
▪ If it is a cognitive impairment is not reversible, you can train them but they won't get better. Progressive the client gets worse

Irreversible NCD

"irreversible"—progressive; no recovery, worsening symptoms
Statistics
▪ 50 million people worldwide
▪ ~70,000 Kiwis living with dementia today (1.4% of the total population)
▪ triple by 2050
Contributing factors: life expectancy

Irreversible cognitive impairment

Damage to nerve cells in the brain
Area of the brain affected — Subcortical damage
• Cause: e.g., Parkinson's (PD)
Cortical damage
• Cause: e.g., Alzheimer's (AD)
• No point in training because nerves are dying, this isn't happening with the physiological effect of aging as the neurons are just separated and not connecting so with the training they can reconnect again. When nerve cells are dying they cannot reconnect so it is irreversible.
• Depends where the nerve cells are dying so if it's in the subcortical damage then it's dementia due to Parkinson's whereas if it is cortical damage it is Alzheimer's.
• Can have both at the same time

Subcortical: Parkinson's

early stages:	motor impairments
	resting tremor
	immobility/rigidity → slow movement
	difficulty walking

Subcortical: Parkinson's (cont)

	Dysarthria (speech problems)
progression:	cognitive issues
	executive function, memory, processing speed
	40% cases develop dementia
	When this issue progresses it has cognitive issues

Cortical: Alzheimer's

Stats
➢ the most common type of dementia → 50-80% of all dementia diagnoses
➢ in 5-15% of all people aged 65+
➢ in 15-50% of all people aged 80+
➢ more common in women than men

MCI and Stages of AD

Mild cognitive impairment (MCI)
• mild NCD (DSM-5)
• affects especially new memories
• little effect on activities of daily living (ADL) → independence in everyday activities
• not all MCI becomes AD

early (mild) AD

• noticeable decline, especially new memories
• affects task performance—increasing difficulty with ADL
• increasing language difficulty —vagueness
• independent living with support

middle-stage (moderate) AD

• much support needed
• even easier ADL becomes difficult
• decreasing vocabulary and communicative participation
• behavioural issues—e.g., aggression, hallucination

late-stage (severe) AD

• professional support—living outside the home
• issues remembering essential life information
• loss of function— e.g., muteness, motor function

Diagnosis of AD

• Interviews (person, family)
• Medical imaging (brain scans)
• Medical and cognitive tests

Language issues in AD

Sentence comprehension
• multiple verbs in a sentence
• multiple nouns that can perform the action
Grammar
• preference for simple structures in sentence production
• difficulty with irregular past tense forms
Discourse
• vagueness; less information given
• reliance on simple words, esp. verbs
Language in AD diagnosis
Montreal Cognitive Assessment (MoCA)
• 3 items confrontation naming
• repetition of two complex sentences
• say all the words you can think of beginning with the letter ___
Mini Mental State Exam (MMSE)
• naming and repetition
• follow spoken and written commands
• write a sentence

Communicative interventions for early AD

Adaptive
▪ regain control after communicative failure

Communicative interventions for early AD (cont)

- e.g., encourage, give time to organise thoughts or ask partner to speak slowly

Facilitative

- prevent or repair communication breakdown
- e.g., description in place of word

Scripting

- practicing spoken discourse

Communicative interventions for mid-to-late AD

Focus on communicative participation

- communication vs. isolation

SLP trains the caregiver as a communication partner

- monitor, advise, encourage, and modify

Changes to caregiver's communication habits

- short sentences
- simple, familiar words
- slower speech rate
- repetition
- signalling of topic changes

Caregiver attitude toward the person with AD

- respect
- encourage participation

Communicative interventions for AD: Broad points

Egan et al. (2010) review, Collins & Hunt (2022)

- memory aids can help with specific topic maintenance
- e.g., memory books, personalized images (e.g., family members, previous occupation)
- caregiver training, positive relationships and shared activity can help with increasing utterances or non-verbal expressions
- divided attention has negative effects

Williams, Theys, and McAuliffe

- targeting verbs may improve the production of both verbs and nouns