Bi/Multilingual aphasia and Dementia : Description, assessment and rehabilitation

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Monolinguals or bilinguals

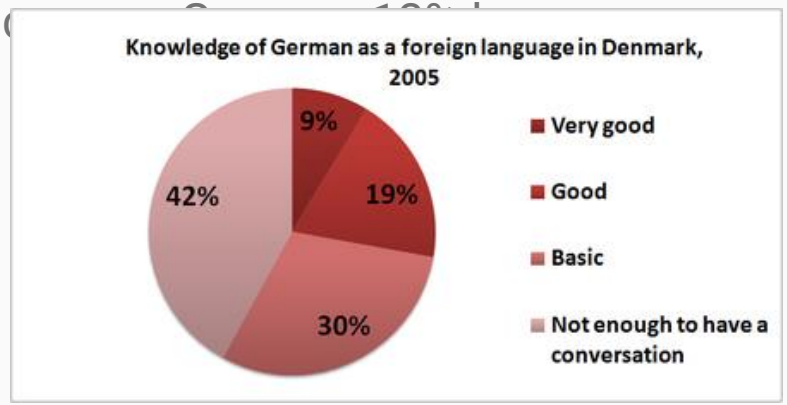
50% of world's population is bilingual and this is on increase

86% of Danes speak English as their L2; 47% [illegible] Swedish

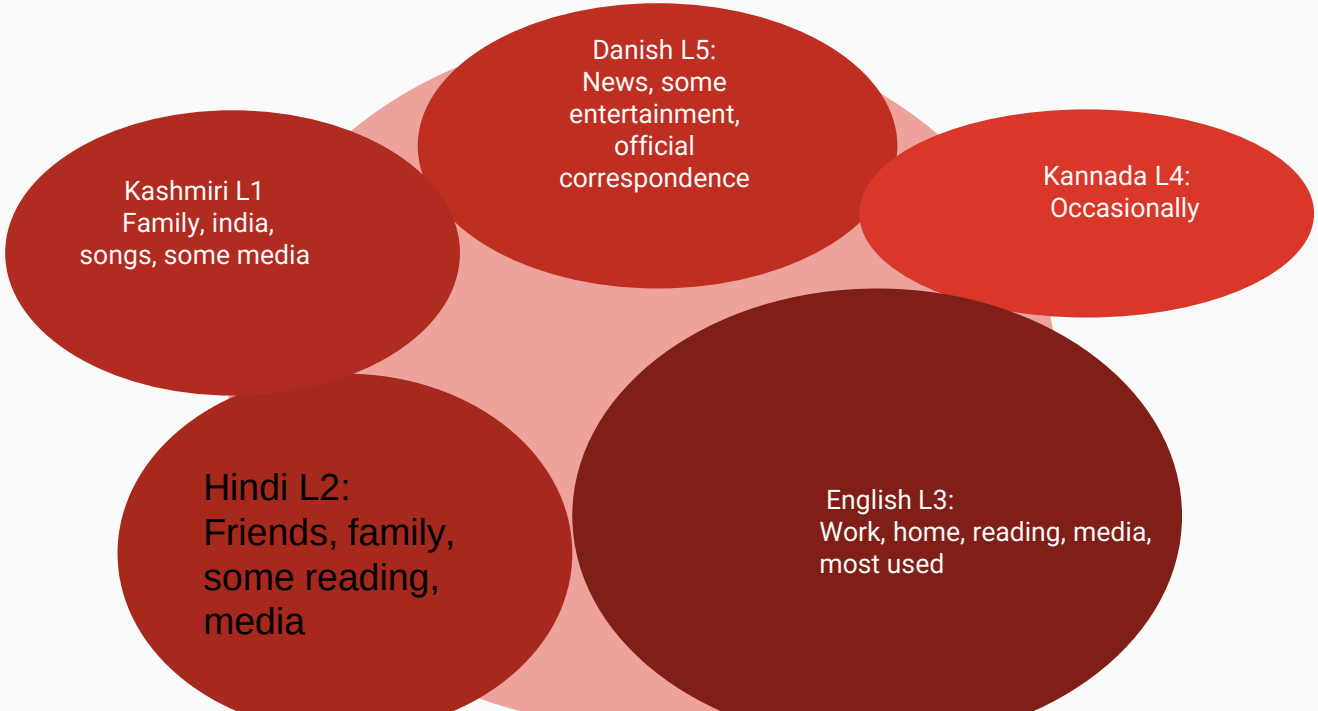
Faroese, Greenlandic or Kalaallisut

Other languages:

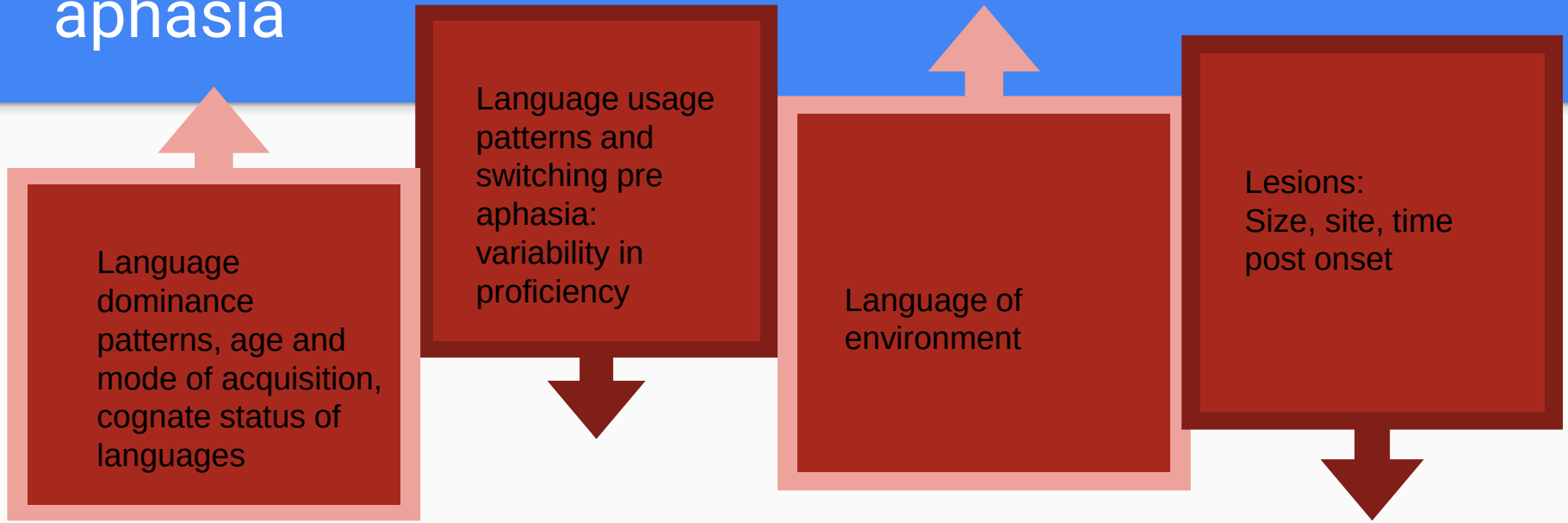
Denmark: number of immigrants by country of origin 2023 | Statista



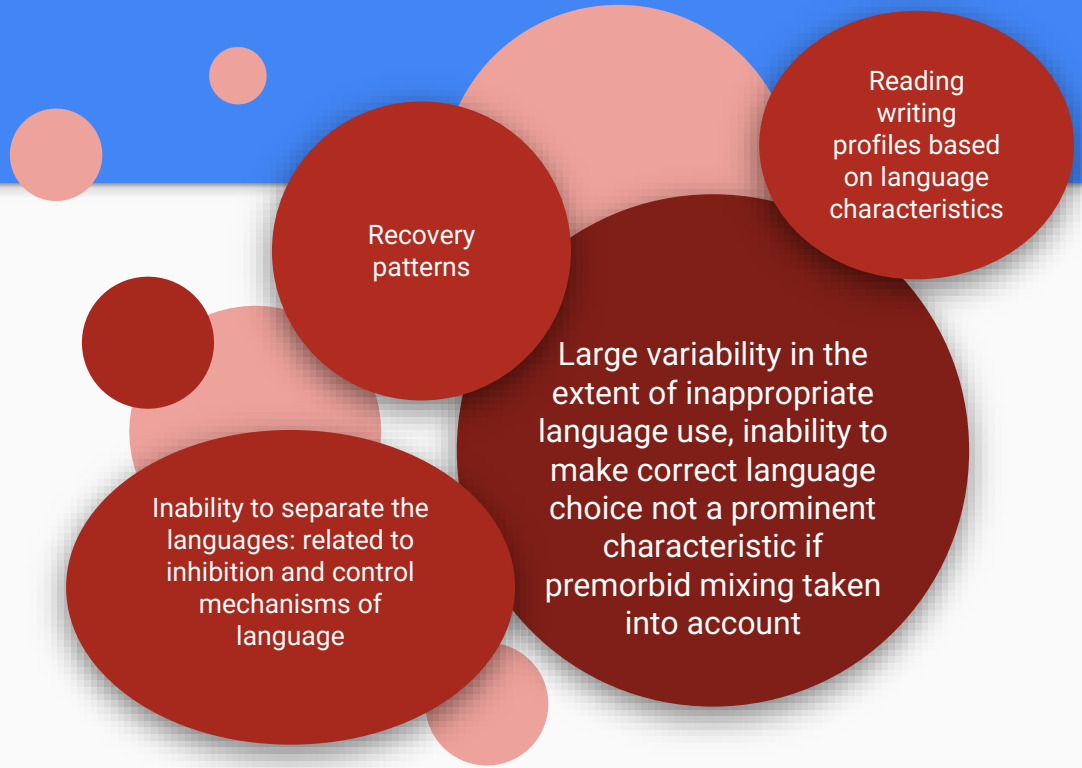
Bilingual profile



Factors influencing manifestation of bilingual aphasia



Manifestation of aphasia in bilinguals



Recovery patterns

64%

Parallel Recovery

Recovery parallels premorbid language abilities

18%

Differential Recovery

One language better,disproportionate to premorbid abilities

7%

Blending Recovery

Uncontrollable mixing of languages

5%

Selective Recovery

Language loss in only 1 language

6%

Antagonistic
Alternate antagonistic
Successive

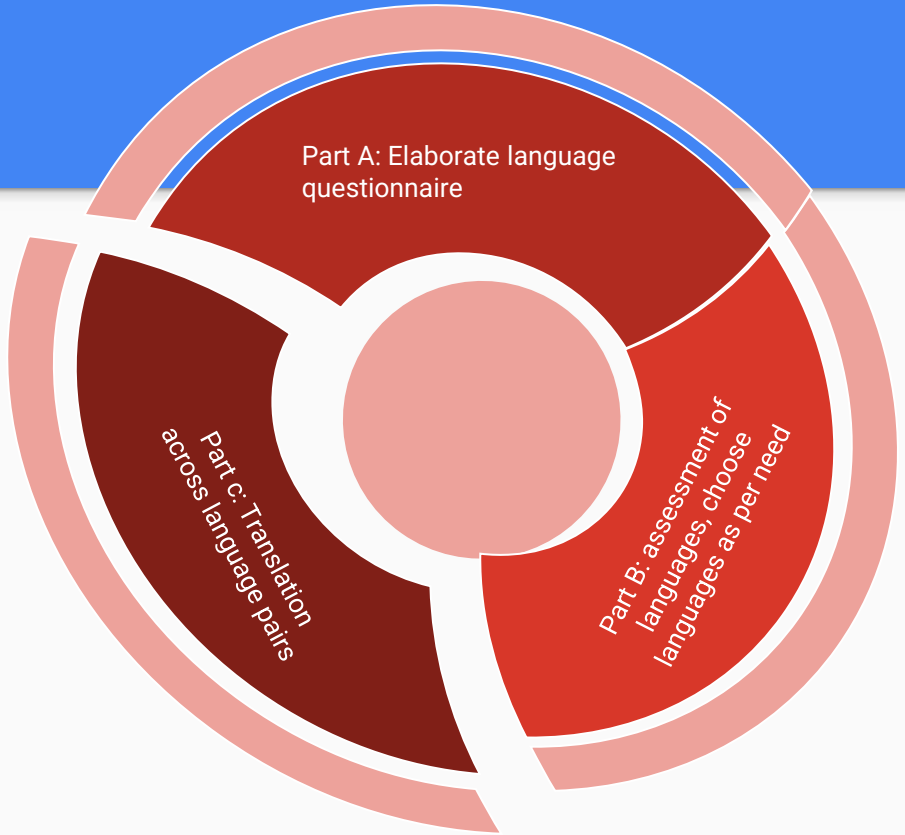
- Negative impact of recovery
- Negative impact in cyclic manner
- One recovers completely first

Assessment: Guidelines

- A clear unambiguous description of language knowledge
- Kind of interferences: comparison with premorbid skills
- Control of language mode during assessment
- Acute: basic communication, Chronic : comprehensive; periodic reassessments
- Cultural and professional impact of language usage and choice for therapy
- Motivation and client input

BAT

- 60 languages, 150 pairs
- Profiles skills across languages
- Danish-German, Danish-English and Danish-Bosnian
- Bilingual Aphasia Test (BAT) | Linguistics - McGill University



Additional tests

- Multilingual aphasia examination
- WAB
- Psycholinguistic assessments of language processing in aphasia (PALPA)
- BDAE
- Aachen aphasia test in various languages
- Pragmatic abilities will have to be evaluated as BAT does not look into it
- Attitudes, ideas can vary and in some cultures, therapy is a foreign and perplexing concept

Therapy approaches and considerations:

Traditional treatments	Language Consideration	Specific approaches	Symptom based strategies
MIT, Cueing, general stimulation, auditory stimulation,	Cueing: language based Consider shared aspects in naming and reading	Cognate therapy: benefits from L2 to L1	Switch back through translation Using language switching as an asset Teaching pragmatic constraints

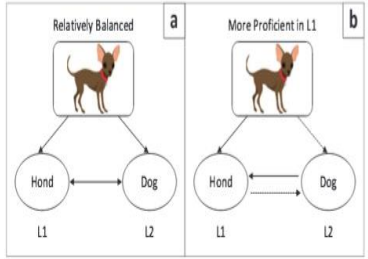
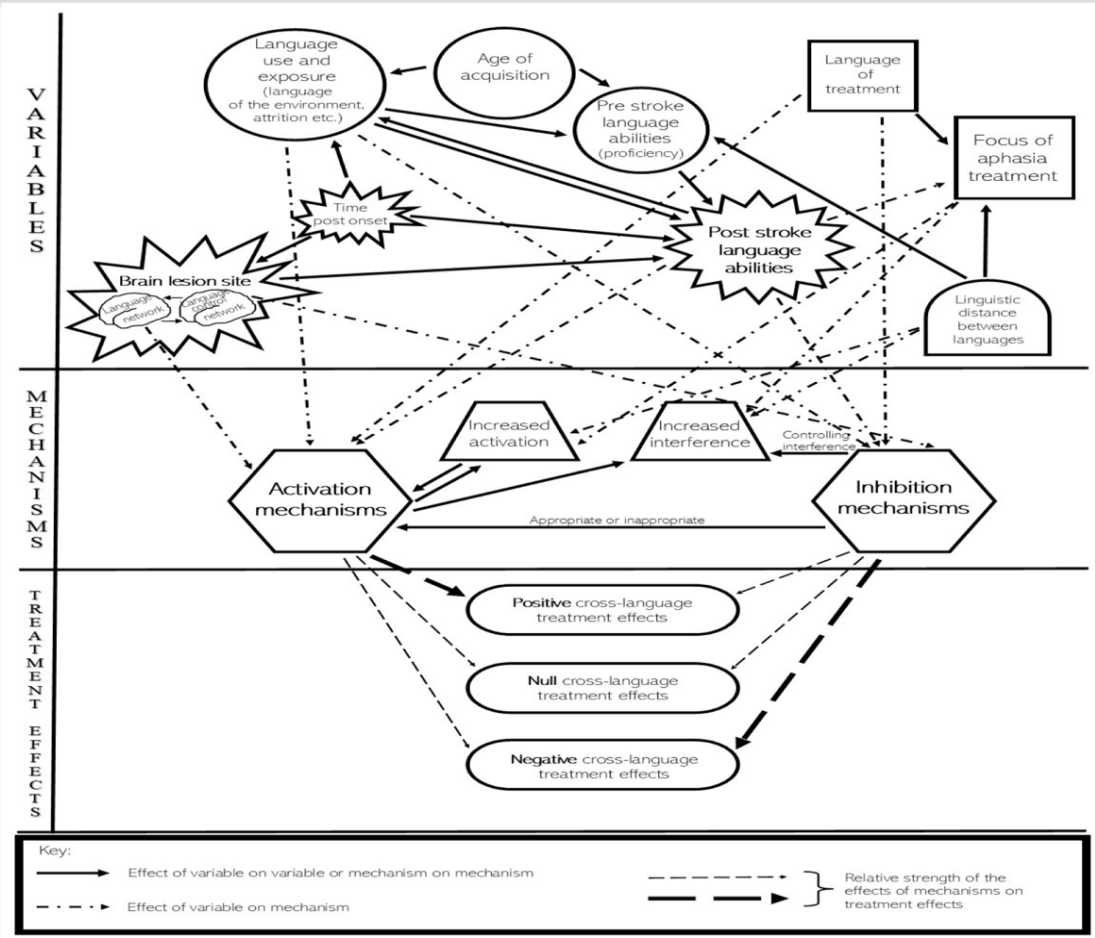


FIGURE 1: Model of bilingual language.

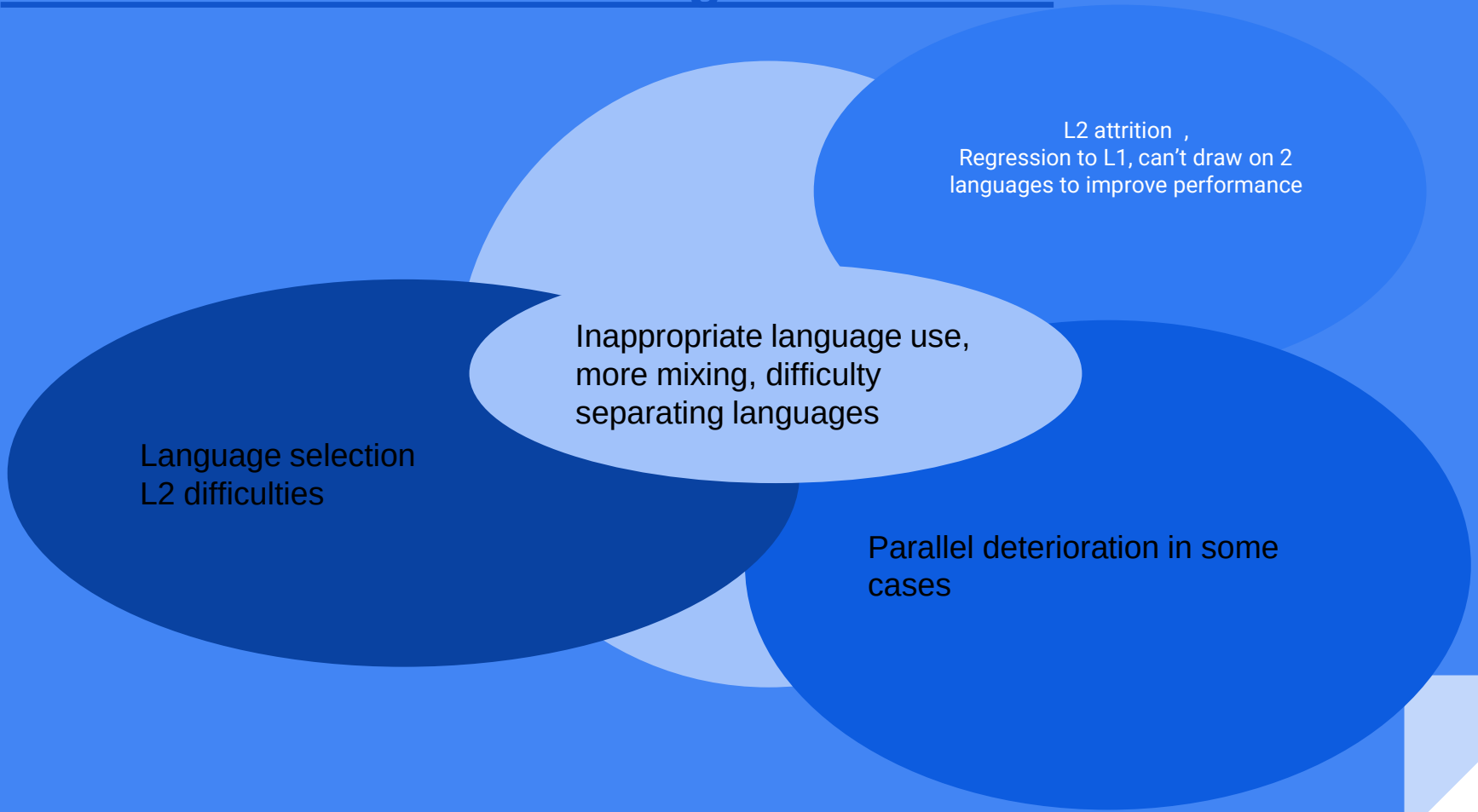
Variables


VARIABLES
MECHANISMS
TREATMENT EFFECTS
Language use and exposure (language of the environment, attrition etc.)
Age of acquisition
Pre stroke language abilities (proficiency)
Language of treatment
Focus of aphasia treatment
Time post onset
Post stroke language abilities
Brain lesion site
Language network
Language control network
Linguistic distance between languages
Increased activation
Increased interference
Controlling interference
Activation mechanisms
Inhibition mechanisms
Appropriate or inappropriate
Positive cross-language treatment effects
Null cross-language treatment effects
Negative cross-language treatment effects
Key:
Effect of variable on variable or mechanism on mechanism
Effect of variable on mechanism
Relative strength of the effects of mechanisms on treatment effects

Final thoughts to consider.....

- Consider language profile
- What contributes to quality of living
- Using language as a resource
- Older adults revert back to L1
- Stop making assumptions about monolingualism

Manifestation in multi/bilingual dementia



Cognitive processes

Increased demands of maintaining two languages

+

Decline of recent information and better retention of older information

→

Early regression of second language in complex cognitive testing even if it might be preserved in social and occupational activities

Memory interactions

Characteristics	Declarative Knowledge	Procedural Knowledge
Definition	Knowledge of facts, concepts, and principles	Knowledge of how to do something or perform a task
Type of Knowledge	"Knowing that"	"Knowing how"
Examples	Knowledge of history, geography, and science	Knowledge of cooking, playing a musical instrument, and driving a car
Acquisition Method	Study and memorization	Practice and repetition
Transference	Easily transferred from one situation to another	More difficult to transfer from one situation to another

- Dissociation across languages on past tense generation task in bilingual AD and PD subjects (Cameli et al, 2005)
- Tyler and colleagues (2002): temporal lobe damage as in semantic dementia corresponded to an impairment in irregular inflection.
- Selective deficits in irregular verbs across languages seen in bilingual aphasics (De Diego et al, 2004, Cholin, 2007) as well as in Alzheimer's disease (Hernandez et al, 2006).
- Braber et al (2005) attributed it to phonological complexity of regular past tenses (walked vs ran).

Primary progressive aphasia



- Hernandez (2008) studied Spanish Catalan bilingual with PPA and reported greater difficulty in naming verbs compared to nouns and better skills in L1
- George and Mathuranath (2010) report on a bilingual PPA in Malayalam and English, better performance in L1 initially as well as after 1 year, decline in both L1 and L2 eventually
- In multilingual patients with semantic dementia, semantic anomia was progressively more impaired in their second and third languages compared to their primary languages. Words named and comprehended in one language were not consistently named and comprehended in other languages they could speak (Clark et al, 2004)
- Paucity of studies on bilinguals, refer for recent review https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10900184/

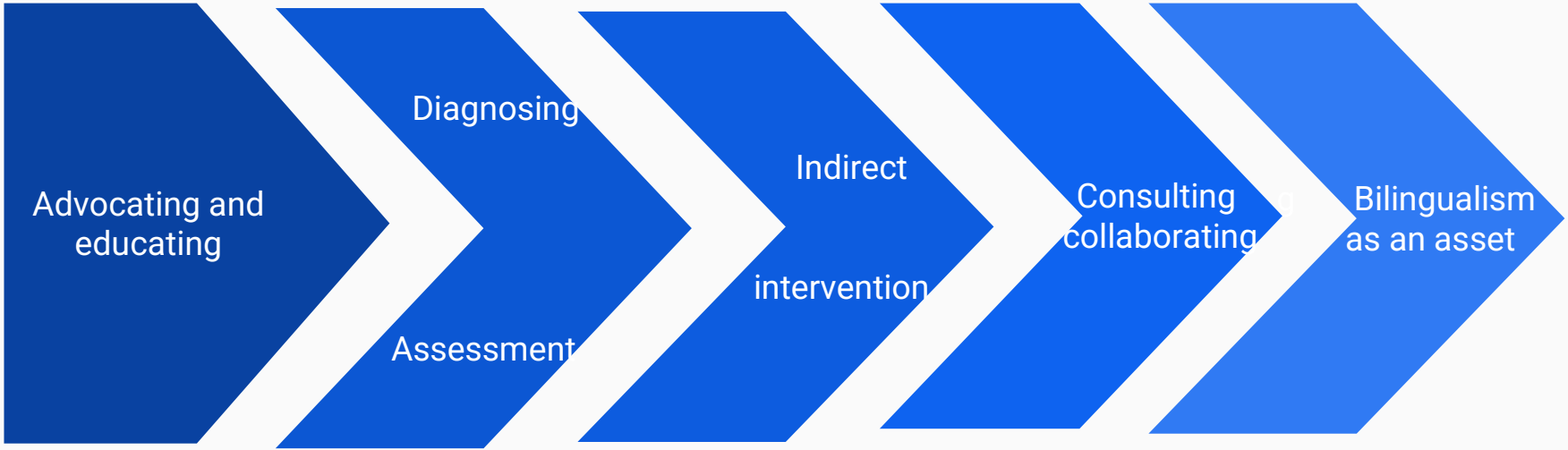
Assessment of cognitive communicative difficulties:

- Language history, bilingual questionnaires
- BAT (especially phonemic and semantic fluency sections) https://www.mcgill.ca/linguistics/research/bat
- Verb naming
- WAB, BDAE
- Isaac's set test (semantic fluency)
- Word list acquisition and recall test
- Clock drawing test
- Boston naming test
- Mini mental status examination
- Arizona battery of cognitive communicative disorders
- Wechsler Memory Scale (WMS)
- Addenbrooke's Cognitive Examination-Revised
- Cognitive linguistic quick test

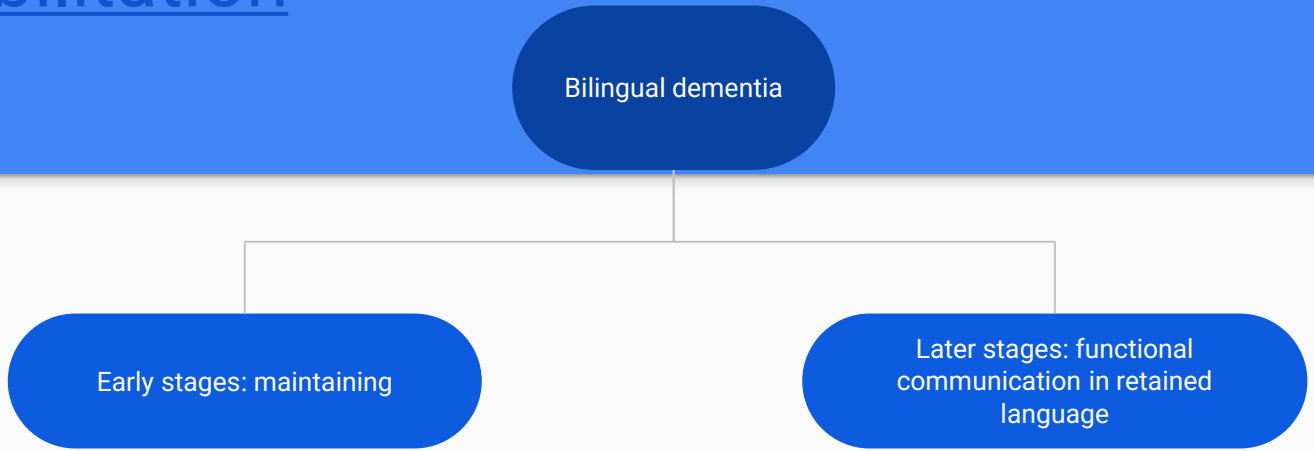
Additional assessments

- Swallow assessment
- Quality of life and functional outcomes
- Tracheostomy examination
- Communication activities of daily living
- Functional assessment of communication skills for adults

Role of SLP


Advocating and educating
Diagnosing
Assessment
Indirect
intervention
Consulting collaborating
Bilingualism as an asset

Rehabilitation



- If L1 (preserved language) is different from environmental language great ways to communicate with help from family members and tech
- Swallowing issues: food from native culture
- Educate yourself about socio cultural norms of L1 culture
- Interpretation services, help from family/L1 speakers
- Hospital language could be inaccessible causing anxiety and irritability

Sensitivity to needs

Her daughter was there, …then the menu was there, she said, I'm fed up with this food; then I asked her in the Indian language, her daughter doesn't understand because she was born here and brought up here, but her mother speaks it, then I gave her so many menu lists , …her favourite dishes are masala dosa and pani poori.

I just want him to calm himself down, so... and if he doesn't listen to me, There's a lady who works here, she speaks the same language as him, so it is easy for him as well to understand her, so I just call her and say, oh, can you please help? sometimes he points, like, you know, stomach. If you ask him,

like, what's wrong with you, he will speak in his language, but he will point

You try to talk… I mean, we ask the family the translation of the language, so we try to remember those words, language, and that's how we communicate with them. And we will rub his back and then try to calm him down.

Q and A