Language

is

the key to quality of life

Overview of what I would like to share with you today

- Language in healthy ageing:
- How is language affected in healthy ageing? Development versus deterioration!
- Two contrasting views regarding language and other cognitive functions/skills in healthy ageing:
  1) 'Cognitive decline'
  2) 'The myth of cognitive decline'
- Language following brain damage: 'Aphasia'
- Principles of experience-dependent neuroplasticity (Kleim & Jones, 2008)
- Some Dos and Don'ts

1) Cognitive decline

Researchers assert that cognitive-processing capacities which pertain to language decline across the lifespan, particularly in healthy older persons:

→ Word-finding/-retrieval: reduced number of items named correctly on confrontation/picture naming tasks

→ difficulties understanding more complex sentences in comprehension tasks

→ fewer correctly recalled items on a paired associate learning task, etc.

Development: More elaborated discourse

Larger vocabulary

Memory ?

'Noise' ?

2) 'The myth of cognitive decline':

Analyses of the cognitive processing abilities of older persons must take into account all the experiences and the information older persons have accumulated in their memory or mental lexicon, and the manner in which learning takes place.

Slower responses reflect a growing search problem due to a person's increased information-processing load inherent from a lifetime of learning. The amount and range of knowledge and skills acquired throughout the lifespan results in an increase in the overall amount of information to be processed at any one given time.

"Slower latencies reflect learning, not 'decline' "

(Ramscar, Hendrix, Shaoul, Milin & Baayen, 2014)

Aphasia

"Aphasia refers to the disturbance of any or all of the skills, associations and habits of spoken or written language, produced by injury to certain brain areas which are specialized for these functions …."

(Goodglass & Kaplan, 1972, 1983)

Causes of aphasia:

1) Stroke (CVA): Ischemia(= insufficient blood flow), thrombosis (= blood clot), hemorrhage (=a bleed), embolus(=free-floating mass creating a blockage),
2) Brain tumor, 3) Trauma, 4) Infection ….

All aphasics have word-finding difficulties!
All language modalities usually similarly affected with regard to types of difficulties

4 main types of aphasia:

Broca's: 'telegraphic' speech (function words omitted /substituted); agrammatic sentence production; verb retrieval and comprehension of complex syntactic structures impaired

Wernicke's: language comprehension severely impaired; fluent speech production: paragrammatism; phonological and/or semantic errors (=paraphasias/jargon)

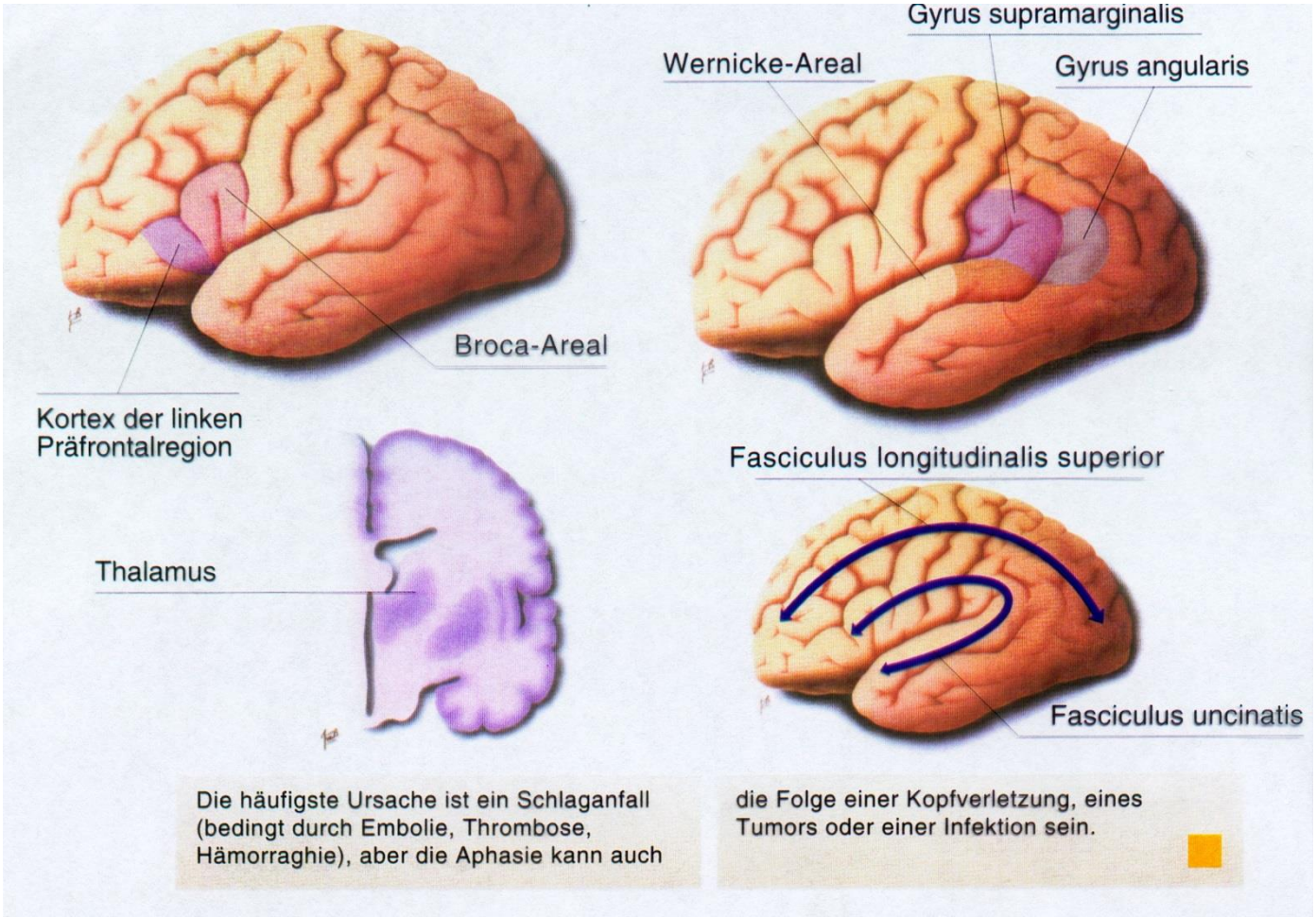
Anomic: Word-finding/-retrieval most impaired; fluent speech production

Global: Most severe form; all language modalities impaired to a greater extent

(Conduction aphasia, transcortical motor aphasia, transcortical sensory aphasia)

PPA!

Lesions resulting in aphasia



UCB GmbH Pharma, 1995

Aphasia therapy

Goal: improved (language) performance on treated items and ….

Facilitation – transfer – carryover – generalization of therapy effects to: untreated items – other modalities – spontaneous speech

Ultimate goal: enhanced (verbal and/or nonverbal) communication resulting in a better quality of life for the aphasic client

Spontaneous recovery!

ELA®–SYNTAX PROGRAM

Therapy Steps for the Syntax Program:

1) 'Memory – Last session': The PWA is asked to recall the sentences worked on in the previous session.
2) 'Old cards': Oral sentence production is practiced with the 4 to 6 photo cards worked on in the previous session.
3) 'New cards': Construction of a sentence is practiced using 4 to 6 new cards one after another.
4) 'Taking apart' the sentence: Answering questions regarding the verb and thematic roles. Final production of target sentence.
5) 'Comprehension check': for all of the stimuli selected for that session.
6) 'New cards – Second time': Production of the sentences a second time.
7) 'Memory – New cards': The PWA is asked to recall the new sentences worked on in that session.

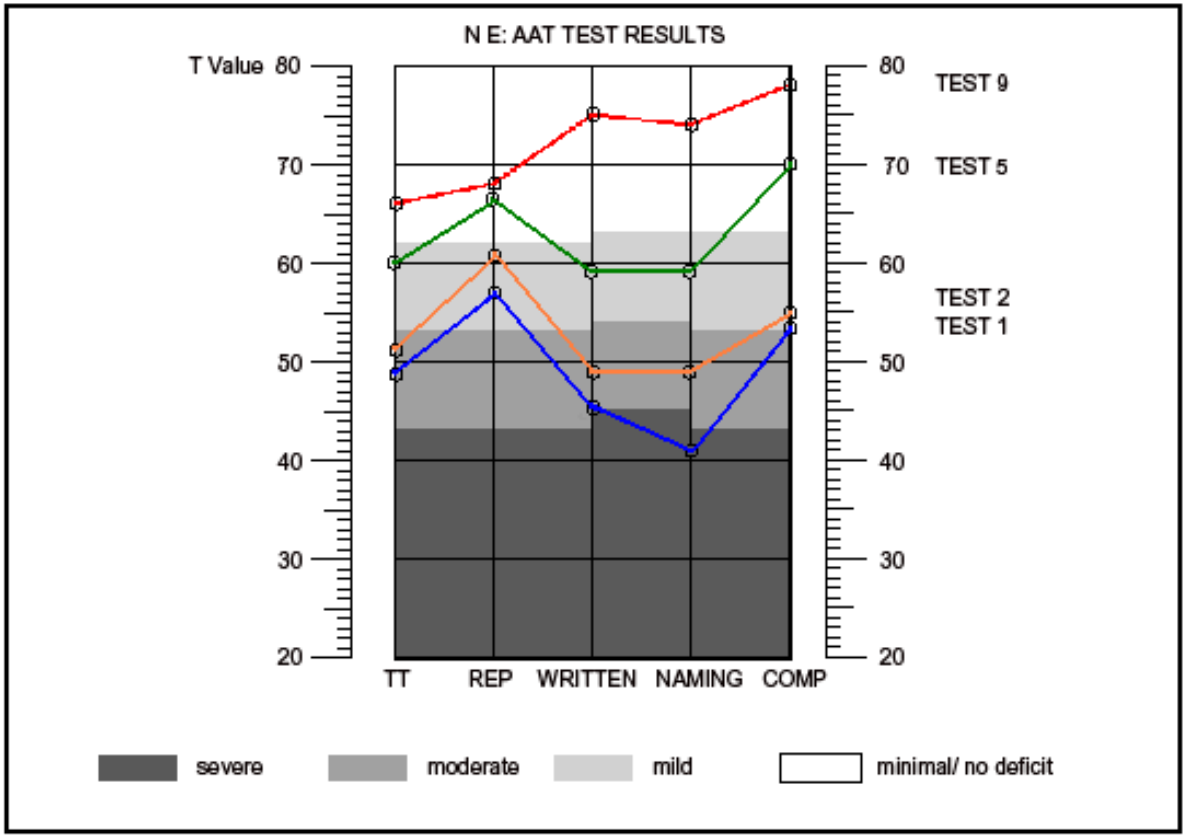
Homework: The PWA dictates the sentences worked on in the therapy session to relative/care-giver or he/she writes down the sentences. The homework is given to the therapist at the beginning of the next session.

Programs for Text – Dialogue – Written language training

Everyday Life Activities Photo Series (ELA®)

NE: Aachen Aphasia Test Results: Test 1(pre-therapy) – 2 (post-therapy) – 5 – 9

Evolution: global → dynamic → Broca's → anomic → agraphia without alexia → no aphasia (according to the AAT)



NE: Homework- Drawing from memory

Protocol 3: Dialogue training

Mutter: möchtest Du der Oma telephonieren od einen Brief schreiben?

Tochter: Ich möchte einen Brief schreiben! Gib mir bitte ein schönes Briefpapier!

Mutter: Ich habe kein schönes – geh doch eines kaufen!

Tochter: Ich will nicht erst einkaufen gehen – ich will es jetzt schreiben!

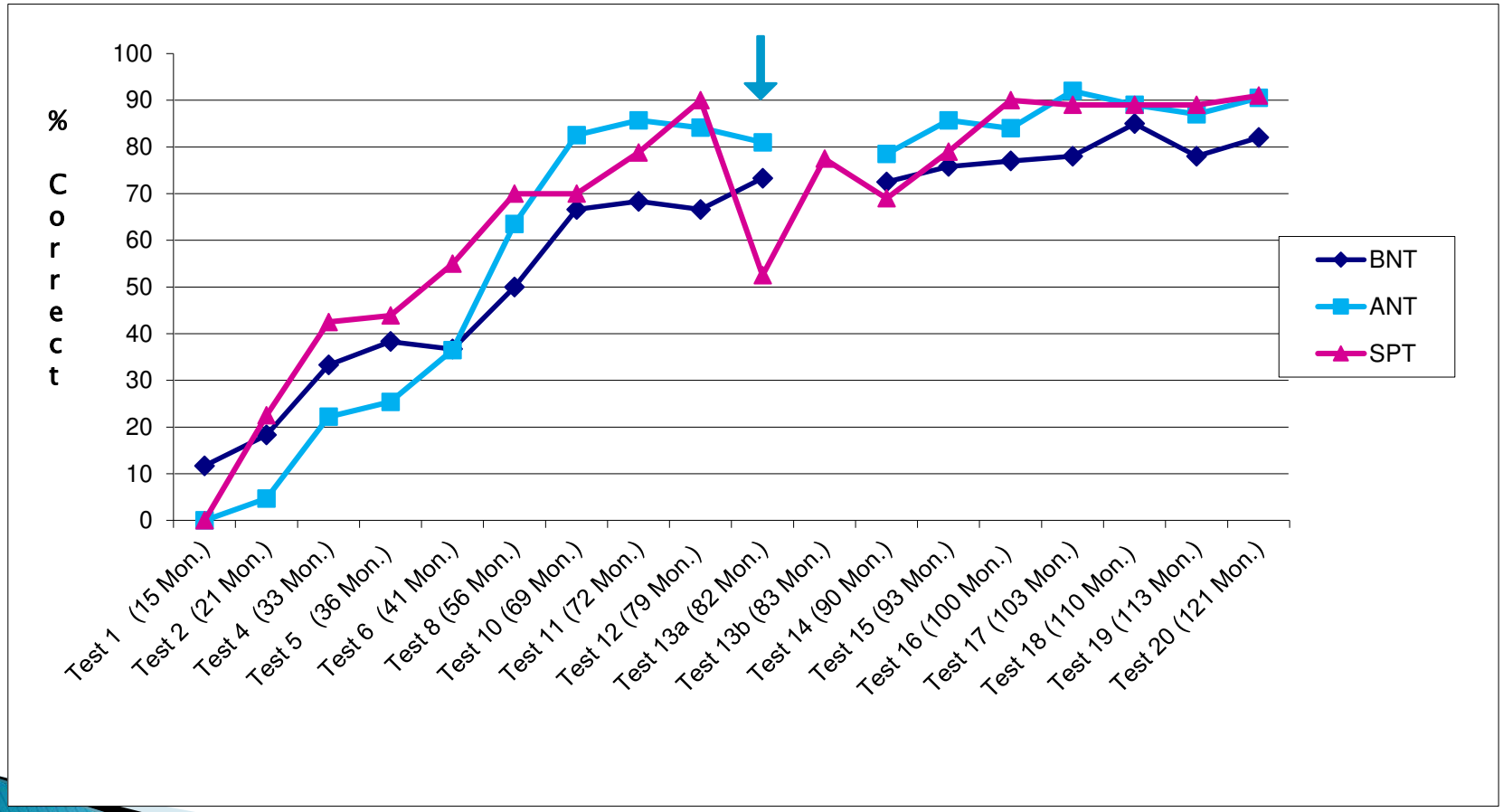
Mutter: Nimm Dir ein weißes Papier u. schreib was nettes drauf!

(jetzt schreibt die Tochter:)

Tochter: Liebe Oma!
Ich höre jetzt auf dem Walkman, den Du mir geschenkt hast Musik! Ich danke Dir vielmals dafür – die Freude ist sehr, sehr groß!
Auf meinem Weg aus Schule höre ich Musik u. auf dem Heimweg höre ich auch Musik & Beim Fragen höre ich auch Musik! Das war ein sehr guter Geschenk von Dir Oma! Am Samstag komme ich Dich

Protocol 1: Syntax

TH: Test results for 15 to 121 months post onset of aphasia: Test 1, 2, 4, 6, 8, 10, 11, 12, 13a, 13b, 14, 15, 16,17, 18, 19, 20



TH: Testing and therapy over 1000 hours

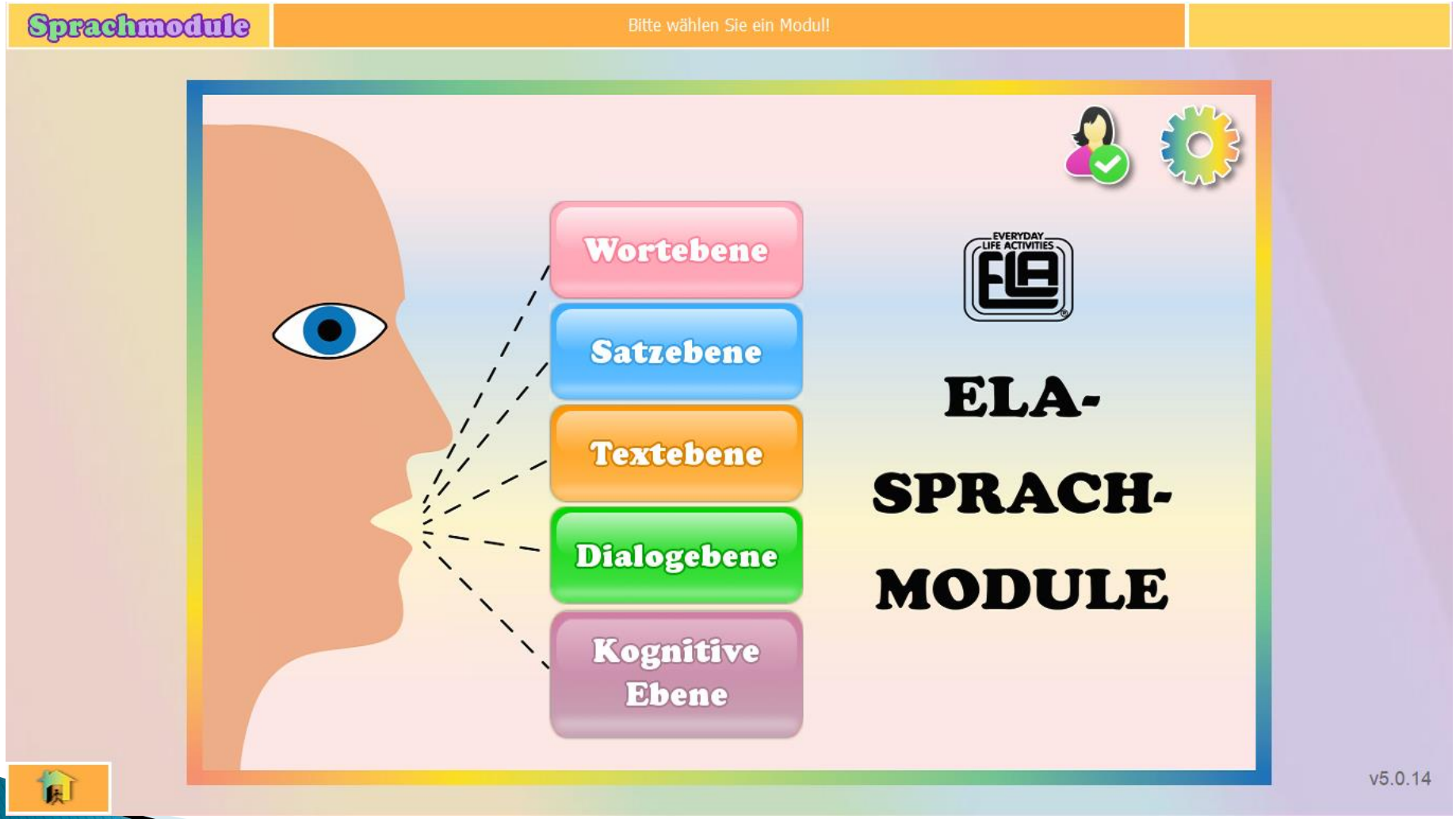
Principles of experience-dependent Neuroplasticity

1. **Use It or Lose It**	Failure to drive specific brain functions can lead to functional degradation.
2. **Use It and Improve It**	Training that drives a specific brain function can lead to an enhancement of that function.
3. **Specificity**	The nature of the training experience dictates the nature of the plasticity.
4. **Repetition matters**	Induction of plasticity requires sufficient repetition.
5. **Intensity matters**	Induction of plasticity requires sufficient training intensity.

Kleim & Jones, 2008

Principles of experience-dependent Neuroplasticity

6. Time Matters	Different forms of plasticity occur at different times during training.
7. **Salience Matters**	The training experience must be sufficiently salient to induce plasticity.
8. Age Matters	Training-induced plasticity occurs more readily in younger brains.
9. **Transference**	Plasticity in response to one training experience can enhance the acquisition of similar behaviors.
10. **Interference**	Plasticity in response to one experience can interfere with the acquisition of other behaviors.

Kleim & Jones, 2008

ELA®-Language Modules (2022)