Birstonas, Lithuania
October 2020

Assessment of Language Workshop

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My linguistic roots

- Father's Side: Austrohungarian Empire

- Mother's Side: Polish-German Language Battles

- Growing up in Cracow

- Study: Germany

FREIBURG im Breisgau, Germany

- Environment:
  - Neurology
  - Psychology
  - Linguistics

- Theoretical background
  - The "modularity of mind"
  - Shift towards new models of mind
  - Interactive
  - Dynamic

BERNE

- My very first patient
- from Somalia
- ?schizophrenia
- neologisms

- thought disorder?
- or language disorder?
- Edinburgh: excessive use of 2nd person pronouns in people who later developed schizophrenia *(Watson et al, 2012 BJP)*

CAMBRIDGE

- Theoretical background:
    - Neurodegeneration as a window into the human mind

- The new challenges:
    - The relationship between dementia & aphasia
    - How to integrate cognition & motor functions

- Large cohorts of patients with neurodegenerative diseases:
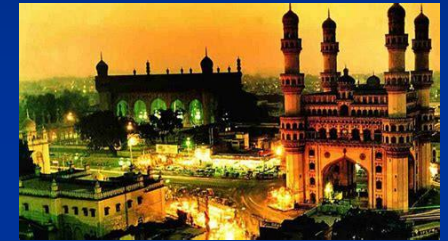   - Dementias
    - Movement Disorders

EDINBURGH

- PPLS
  - School of Philosophy, Psychology & Language Sciences

- Research in India (with Suvarna Alladi)

- 2010-2018 President of the WFN RG ADCD
  - World Federation of Neurology Research Group on Aphasia, Dementia & Cognitive Disorders
  - Teaching in South America, Iran, India, China, Mongolia

- Bilingualism/Multilingualism
  - Including a 7y old daughter, not quite multilingual

The goals of cognitive assessment

- Diagnosis:
  - Etiological (disease classification)
  - Functional (understanding better patients' needs)
  - *(for health professionals, families & carers)*

- Prognosis

- Monitoring of treatment

The trade-offs of assessment

- Length vs. brevity
  - Not only practicality but also tolerability

- Number of domains vs. number of items

- Practicality (ease of administration & scoring, unequivocal results) vs. ecological validity

- Universality vs. social/cultural/linguistic appropriateness

The importance of language assessment

- Impact on patient's life
  - "*but she can walk*"

- Impact on the perception by others:
  - "*people think I am drunk*"

- Language as a gateway for other tests:
  - Interpretation of other test results
  - Informed consent

The steps of language assessment

- Observation (analysis of spontaneous speech)

- Elicitation (e.g. naming, comprehension)

- Test batteries

- *Additional tests (e.g. neuroimaging, neurophysiology)*

Levels of language assessment

- Sounds

- Words

- Sentences

- Context

Spontaneous speech

- Mutism, aphonia

- Phonetic/phonological errors (incorrect sounds)

- Prosodic errors/foreign accent syndrome

- Semantic errors (incorrect meaning)

- Pragmatic errors (incorrect context)

Assessment of spontaneous speech

- Methods of elicitation:
    - Spontaneous conversation
    - Semi-structured interviews
    - Picture description

- Types of errors:
    - Anomia leading to paraphasias, circumlocutions etc.
    - Agrammatism & paragrammatism
    - Conduit d'approche & conduit d'eccart

- Methods of scoring:
    - Fluency (words per minute)
    - Quantification of errors
   - Rating scales

Language assessment: naming

- **Methods of elicitation:**
  - **Real objects (seeing, manipulating)**
  - **Pictures and drawings**
  - **Videos**
  - **Naming to description**

- **Assessment beyond anomia:**
  - **Cueing (phonological, semantic, syntactic)**
  - **Assessing preserved knowledge**
  - **Recognition**

Language assessment: comprehension
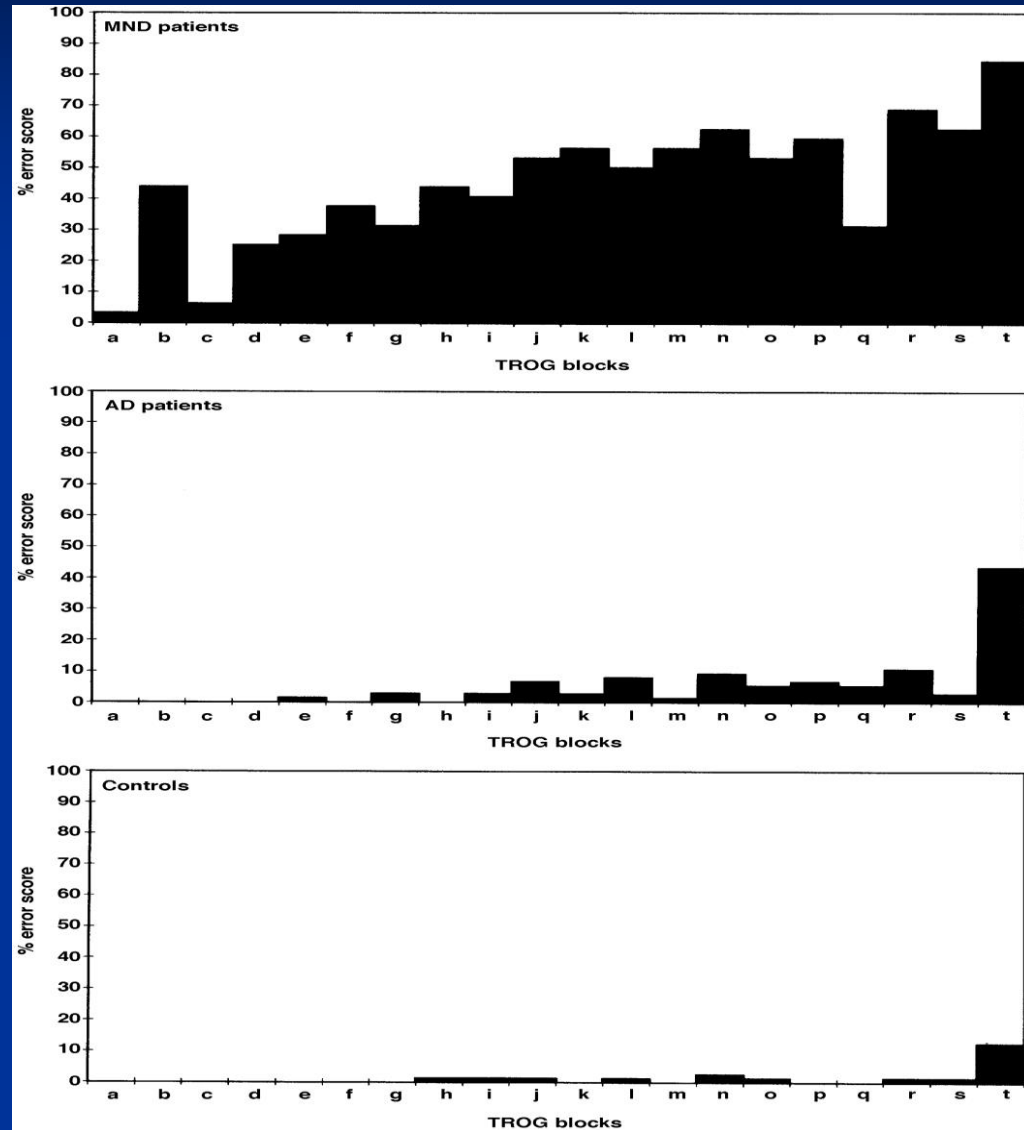
- **Levels of complexity:**
    - Single word comprehension
    - Sentence comprehension
    - Comprehension of meaning (stories, jokes, metaphors)

- **Methods of assessment:**
    - Word - Picture matching
    - Production of definitions
    - Recall and interpretation of stories

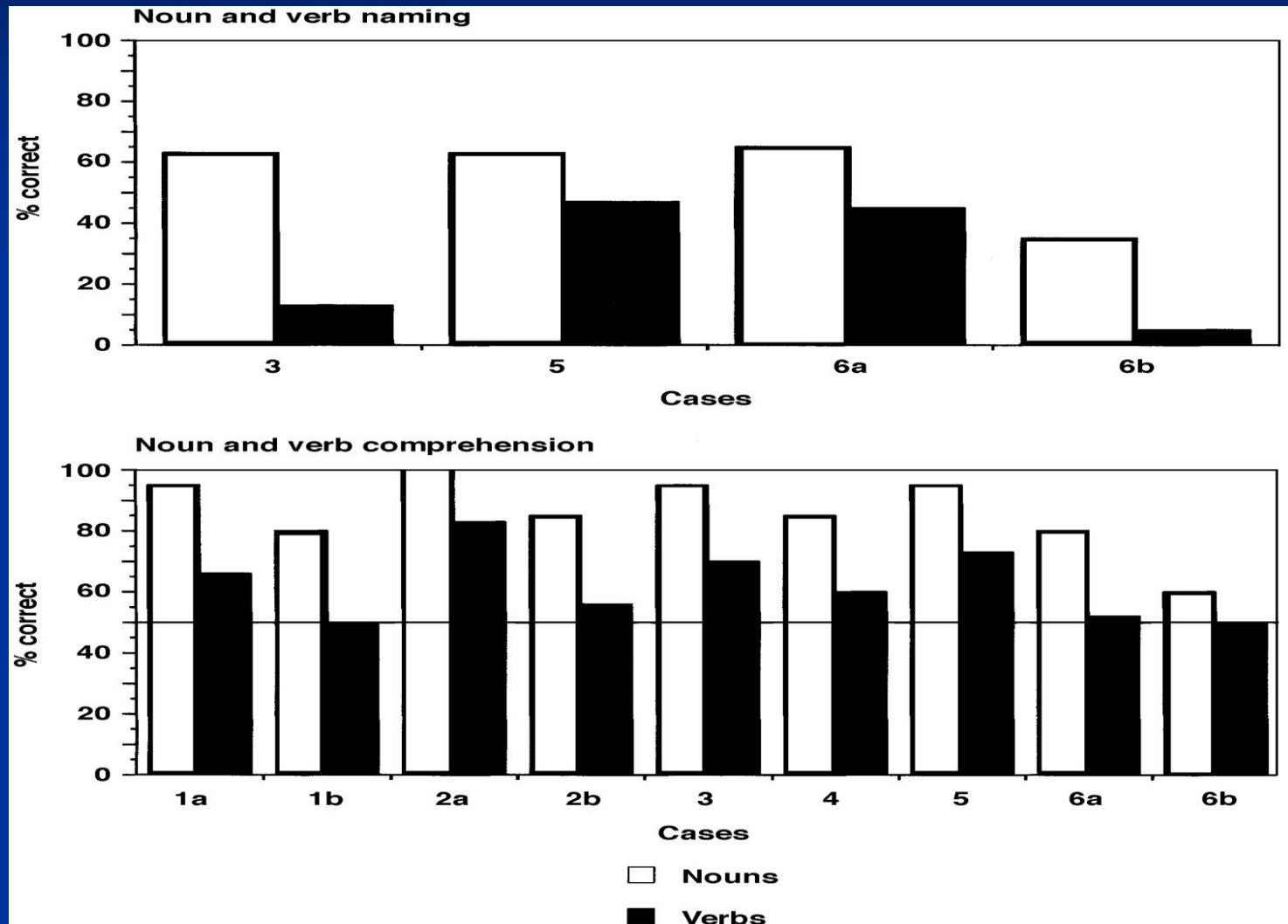- **Assessment of non-verbal knowledge (e.g. picture association)**
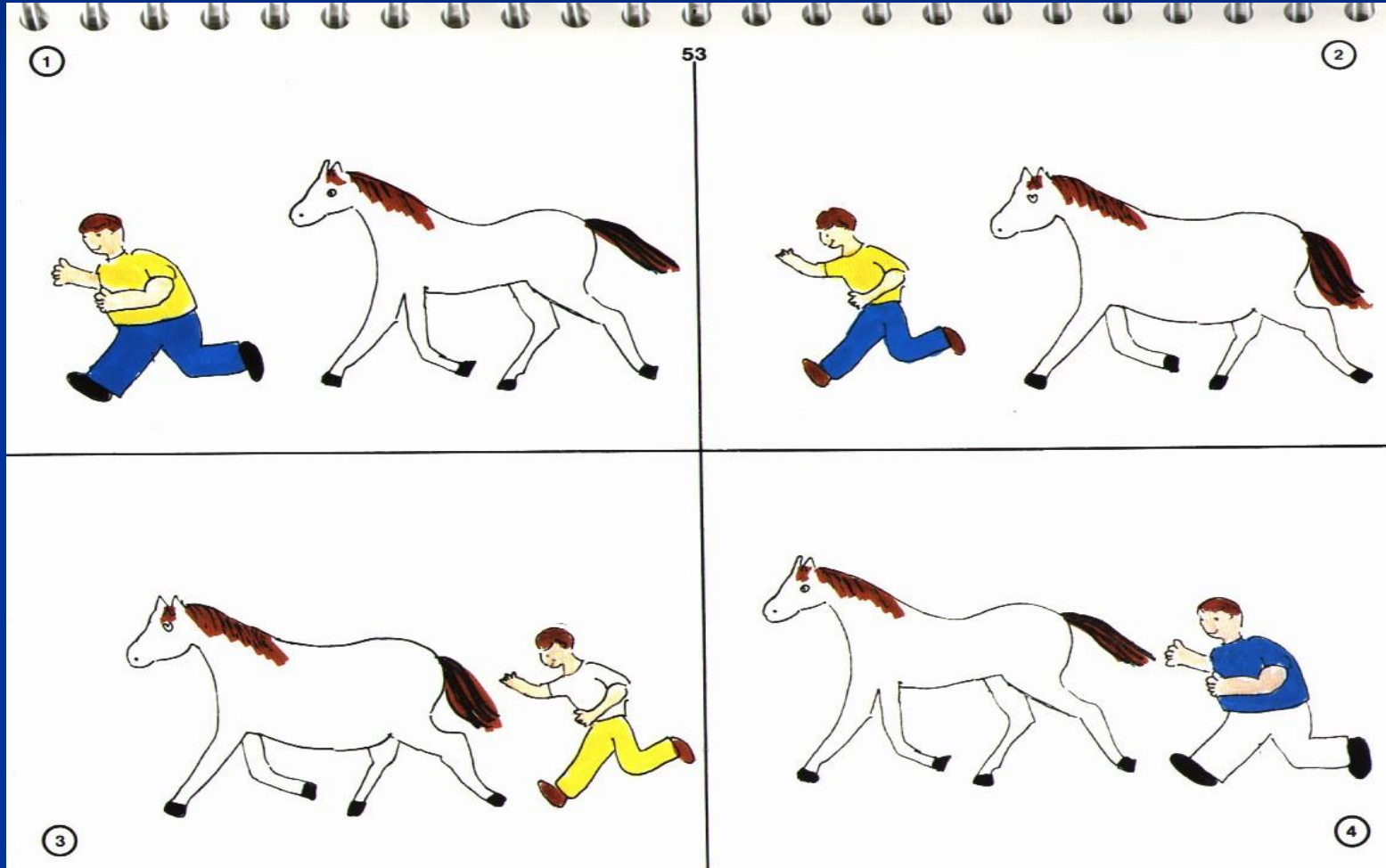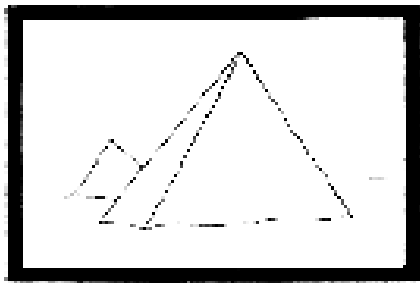
Language Comprehension in MND/Dementia

Noun/verb naming & comprehension in MND/Dementia
Bak et al 2001, Brain

pyramid

palm tree   pine tree

writing

typing   stirring

Aphasia assessment: repetition

- **Levels of repetition:**
  - Single words
  - Sentences (high and low probability)
  - Non-words

- **Digit span:**
  - Forwards
  - Backwards

Language assessment: further tests

- **Phonology:** Phoneme identification, subtraction, rhyme production

- **Semantics:** synonym judgement

- **Syntax:** Grammaticality judgement

- **Pragmatics:** Interpretation of proverbs

- **Dynamic language production:** Sentence completion

Aphasia test batteries based on the classical aphasia classification

- **BDAE (Boston Diagnostic Aphasia Examination)**

- **WAB (Western Aphasia Battery)**

- **FAST (Frenchay Assessment Screening Test)**

- **AAT (Aachen Aphasia Battery)**

Aphasia test batteries beyond the Wernicke-Lichtheim triangle

- **PALPA (Psycholinguistic Assessment of Language Processing in Aphasia)** */Lesser, Kay, Howard/*

- **ANELT (Aachen Nijmegen Everyday Language Test)** */Leo Blomert/*

Language assessment beyond vascular aphasia syndromes

- **Primary progressive aphasia**

- **Dementia**

- **Movement Disorders**

- **MS**

Language as part of cognitive bedside screening batteries

- **MMSE (Mini-Mental State Exam)**

- **ACE (Addenbrooke's Cognitive Evaluation)**

- **MoCA (Montreal Cognitive Assessment)**

- **ECAS (Edinburgh Cognitive Assessment)**

Languages in aphasia research: history

- Until 1945: research conducted predominantly in German & French

- Arnold Pick (1913) stresses the importance of cross-linguistic studies

- Since 1945: The dominance of English

Languages in aphasia research: current state

1265 papers since 2000 *(Beveridge & Bak, 2011)*

- English: 61,4%
- German: 7%
- Italian: 6.4%
- Dutch: 4.7%
- French: 3.8%
- Spanish: 2.8%
- Chinese: 2.5%
- Greek: 1.7%
- Hebrew: 1.3%

Languages in aphasia research: impact & treatment

Number of citations:

- 30-50: (21 papers): 15 English, 3 Italian
- **> 50: (7 papers) 100% English**

Papers on aphasia treatment:

- 85% on English
- **> 90% on English, German & Dutch**

Similarities between languages

- **Genetic approach**: common origin with subsequent divergence

- **Typological approach**: structural similarities (convergence) through language change and language contact

Broca's aphasia & agrammatism

Traditional view (based on the evidence from Germanic)

- Agrammatism & "telegraphic speech":
  - Omission of function words / "closed class words"
  - Use of uninflected verb forms

- => "putting together words without grammar"

- Gives rise to general claims about the "grammar module"

Broca's aphasia & agrammatism

Evidence from morphologically complex languages
(e.g. Slavonic languages, Greek, Semitic languages)

- No use of uninflected forms
  - No infinitives
  - No bare stems

- No omission of function words

- Existing inflections in incorrect context

Wernicke's aphasia

Traditional view

- Paragrammatism and paraphasias
- "Satzverschränkungen"
- Comprehension deficits

Evidence from morphologically complex languages

- Phonological errors in the stem, not in inflections
- "inflectional salad"
- Frequent conduit d'approche & conduit d'ecart

Polish non-fluent (Broca) aphasics

- Produce inflected forms
    - No uninflected stems
    - No infinitives / nominatives

- Produce existing forms…
    - No neologisms / incorrect morpheme combinations

- …but in an incorrect context:
    - e.g. incorrect person, number or tense

- Errors in stems and inflections

Polish fluent (Wernicke's) aphasics

- Produce frequent phonological errors:
  - In the stem (even very frequent ones)
  - But NOT in the inflections

- "Inflectional salad" & multiple infections:
  - Czu-je-lam
  - feel – 1st-SG-PRES – 1st-SG-PAST

- Frequent conduit d'approche & conduit d'ecart
  - => at least partial insight

The spectrum of bilingualism

Traditional definition: early, parallel acquisition of two languages leading to a perfect, native-like command of both

Problems with the classical definition:

- Consecutive vs. parallel acquisition
- Changing dominance through the lifespan
- Diglossia: different context for different languages
- Attrition
- Neglects all types of non-native mastery of languages

Patterns of bilingual aphasia

- Parallel: 76%
- Differential: 12%
- Selective: 4%
- Blended: 7%

Paradis 2004

Differential aphasia vs. differential recovery?

Generalisation of treatment effects from one language to another?

Patterns of differential bilingual aphasia

- First language best preserved *(Ribot 1881)*

- Last language best preserved *(Pittres 1895)*

- Emotionally most relevant language best preserved *(Minkowski 1928)*

- Relevant language best preserved *(Goldstein 1948)*

- Different type of aphasia in both languages:
  - Broca in English, Wernicke in Hebrew *(Albert & Obler 1975)*

Test translation vs. adaptation

- Translation: L1 -> L2

- Adaptation: L1 -> Underlying functions -> L2

- The problem of backtranslation

Is the "mother tongue" always best?

- **Different stages in life**

- **Different contexts of use**

- **Literacy**

- **People are often not aware of their linguistic profile**

Conclusions

- Language disorders present differently depending on the affected language(s)
  - => Diagnostic tools cannot be simply translated
  - => Treatments have to be language-specific

- => Bilingual =/= two monolinguals in the same brain

  (Francois Grosjean)

- *(=> bilingual aphasia =/= two monolingual aphasias*

- => We need more cross-linguistic research

@thbaketal