Diagnosing strengths and weaknesses in S/FL reading: What do SLA and Testing have to offer?

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Outline

- diagnosis
- language testing, second language acquisition, SLATE
- constructs: reading in a second or foreign language (= defining constructs)
- PISA, Pearson and DIALUKI studies (= attempts at operationalising constructs)
Diagnosis

- Focus on learners’ strengths and weaknesses; on their prediction, even explanation
- Very under-developed and under-theorised in language testing and teaching
- Diagnosis requires a better understanding of language abilities at a less general level than is currently the case
- Need to define constructs both theoretically and operationally.

(see Alderson 2005, 2007; Huhta 2008)
Diagnosis

• Diagnosis common in medicine, car mechanics and first language reading
• Can we learn from these areas?
• Symptoms of illness, not wellness?
• Understanding causes of malfunctioning?
• Developing tests that will identify problems
• Developing suitable, meaningful feedback
• Effective advice on remediation?
Language testing

- Large scale, high-stakes proficiency testing dominates research agendas
- Emphasis on written language for practical reasons
- Effects of writing and speaking test tasks increasingly researched and understood
- Little innovation in the testing of reading
- More interest in the integration of skills than in components of skills
- Concern for reliability and validity
LT vs SLA – as seen from language testers’ viewpoint

- Testing is concerned to measure what is stable in language ability – little point in measuring what will change in a week’s time
- SLA concerned with variability of linguistic performance, be that task, L1 or individual factors
Second language acquisition

- Detailed analysis of performance on written and spoken tasks
- Indices of development in accuracy, complexity and fluency
- Little research into comprehension
- Little awareness of variability due to tasks
- Little concern for reliability and validity

(see also Norris & Ortega 2003)
SLA vs LT

- **SLA:**
  - interested in the particular – particular morphemes, speech acts
  - driven by linguistics and by concern for pedagogy
  - = worm’s eye view

- **LT**
  - interested in performance across a range of tasks, texts, settings
  - more influenced by measurement theory and applied linguistics
  - = space satellite’s view
Diagnosis = a fusion of SLA and LT?

- Needs a theory of language development from SLA
- Needs insight from LT into variability in performance across test task facets and into designing valid and reliable measures
- Needs to be concerned with the particular, be that 3rd person “s”, or particular sounds, or phoneme – grapheme correspondence
- Needs to be sure of predictability (not generalisability)
SLA and T in E

- A common interest in the Common European Framework of Reference for Languages: Learning, teaching, assessment (CEFR)
- CEFR = learners as social agents; notional/functional, sociolinguistic approach to language use; scales of “language” “development”
- Role of development of particular languages based on particular L1s?
- Relation between functional and linguistic development?
SLATE – Second Language Acquisition and Testing in Europe

- Synergy between language testing researchers and researchers of second language acquisition?
- Insights into constructs?
- Operationalisation in tasks?
- Language-testing-informed SLA?
- SLA-informed language testing?
- Diagnosis of linguistic strengths and weaknesses?
Second Language Acquisition & Testing in Europe (SLATE)

What is SLATE?

The SLATE network is a European-wide research network brought together through a common interest in the relationship between second / foreign language development, levels of second-language proficiency, and language testing research.

- Dutch
- English
- Finnish
- French
- German
- Italian
Construct

One cannot develop sound language tests without a method of defining what it means to know a language, for until you have decided what you are measuring, you cannot claim to have measured it (Spolsky 1989:140).
We firmly believe that it is of crucial importance that language testing benefits from insights from applied linguistics as a discipline, and that language test development and research contribute to the development of applied linguistic theory. But perhaps this can only be achieved if applied linguists take more account of the problems of designing an international language test, and consider how their theories might best be articulated and adapted to suit that purpose. (Alderson and Clapham, 1992:164).
Defining constructs – What is reading?

- Huge field, enormous literature – for L1
- Much less for L2, and L2 highly derivative of L1 reading theory.
- Reading is: rapid; efficient; comprehension; interactive; strategic; flexible; purposeful; evaluative; learning; linguistic (Grabe, 2009, Ch 1).
What is reading?

- Low-level processes: must be highly automatised for fluent reading, i.e. cannot stop ourselves recognising words
Rapid and automatic recognition of known words

car

– you cannot decide not to recognise
... but only if the word is known

linja-auto

Inferencing / background knowledge (of e.g. other languages) may of course help but that requires attention and is not automatic
What is reading?

- Rapid and automatic recognition of a large number of words crucial
  - Orthographic processing at the sub-word level
  - Phonological processing
  - Semantic and syntactic processing
  - Lexical access
  - Morphological processing
  - Context effects
What is reading?

**Working memory**

Long–term memory vs working–memory

- Working memory: limited size, limited parallel processing capacity. Once operations automatized less strain on the processing capabilities of working memory.
- The system managing attention = *executive control*.
- Supported by two further systems, the *phonological loop*, and the *visuo–spacial sketchpad*. The phonological loop allows the replaying and recall of subvocalised sounds while the *visuo–spacial sketchpad* does the same for images and special relations.
- The processing involved in reading comprehension is phonological.
At the lower-level of reading comprehension working memory performs a large number of functions. It supports phonological, orthographic, and morphological processing. It stores activated words. It combines activated words. It carries our semantic and syntactic processing at the clause level. It probably suppresses irrelevant information without conscious effort. It also builds the semantic ideas units.
**Comprehension processes**

- **Higher-level** reading processes take place to build models of the text as a whole and extract meaning at a supra-word supra-clause level. A key feature of higher-level processes in reading comprehension is that attentional resources *can* be applied to them, unlike for instance, word recognition which is purely automatic. For example, you can choose in how much detail you want to read a text (a higher order process), but you cannot choose whether or not to recognise a known word (a lower order process).
Major components of higher level reading comprehension processes

A) a text model of reader comprehension
B) a situation model of reader interpretation
C) a set of reading skills and resources under the command of the executive control in working memory (strategies, goals, inferences, background knowledge, comprehension monitoring)
The function of the text level model of comprehension is the extraction of the meaning the writer is attempting to convey.

The situation model of reader interpretation is the synthesis of the reader’s background knowledge with the text model, taking into account the purpose of the reader in reading the text.
Building a text model of reader comprehension

- Linkages into a semantic network.
- Overlap of elements of the networks.
- Suppression of less important information.
- Simple inferencing.
- Restructuring of text into summaries.
Building a situation model of reader interpretation

- Reader purpose
- Task expectation
- Genre activation
- Similar story instances
- General background knowledge resources
- Evaluation of the importance of information
- Attitudes towards writer, story, genre, episode
- Inferences needed for interpretation (of genre, episode, hierarchical organisation, purpose)
Cognitive models (Grabe, 2009)

- Construction–Integration
- Structure Building Framework
- Landscape View of Reading
- Capacity Constrained READER
- Interactive Compensatory
- Verbal Efficiency
- Compensatory–Encoding
- Simple View of Reading
- Rauding
- Dual–Coding Theory
- Word–recognition models
- (Psycholinguistic Guessing Game)
Don’t panic! We are not going to go into detail about these!

The point is that

a) These are all based on empirical evidence, with the important exception of the Psycholinguistic Guessing Game

b) the latter has been the most influential of all reading models in ELT

c) all these models except for PGG are based on L1 reading, not L2.
L2 reading a reading problem or a language problem?

- Some research on this question, posed by Alderson in 1984
- Evidence suggests that L2 reading is more of a language problem than a reading problem
- Threshold of language proficiency beyond which L1 reading can transfer to L2
- Many L1 reading problems transfer to L2 reading (Sparks et al)
L2 reading a reading problem or a language problem?

- L1 reading theory ignores the language issue and assumes that children have an adequate command of the spoken language.
- L2 reading cannot make such an assumption.
- L2 reading problems likely vary across different L1 backgrounds.
- Deep vs shallow orthographies
- Alphabetic vs non-alphabetic languages
Reading in a second or foreign language (SFL)

Little is known about

- how SFL reading develops
- how to identify strengths and weaknesses
- which abilities contribute most to the development of overall SFL reading performance
- how teachers can best facilitate reading abilities
Diagnosing reading and writing in SFL

- Funded by UK Economic and Social Research Council, Australian Council for Educational Research, Pearson Assessment, Academy of Finland and University of Jyväskylä

- Three related projects
  - Reading in the language of instruction in PISA
  - Reading in L2 in Pearson Test of English Academic
  - Reading and writing in SFL in Finland (DIALUKI)
What features of task demands and texts best predict item and task difficulty?

What process of describing item and task content will result in the greatest reliability of judges?

What model of reading processes and text variables will be most helpful for test developers, response coders and teachers, to predict difficulty and to use pedagogically?

How does ability to read in L1 relate to SFL reading ability?
Which aspects of the constructs underlying SFL reading tests can expert judges agree upon?

Which reported SFL reading skills have the greatest predictive validity and diagnostic utility?

Which learner performance and background learner variables predict item and task difficulty, and measures of learner ability?
Can diagnostic measures of L1 reading and writing predict difficulties in SFL reading and writing?

How does SFL proficiency in reading and writing develop in psycholinguistic and linguistic terms?

Which features or combinations of features characterise different CEFR proficiency levels?

Cooperation between language testers, other applied linguists and psychologists (L1 reading)

Cooperation with TOPLING project (SLA, Maisa Martin)
DIALUKI - Diagnosing reading and writing in a second or foreign language

The Research Project is funded by the Academy of Finland, the University of Jyväskylä and the UK Economic and Social Research Council (ESRC).

Overview
The project studies the diagnosis of reading and writing abilities in a second or foreign language. It seeks to identify the cognitive features which predict a learner's strengths and weaknesses in those areas. The project brings together scholars from applied linguistics, psychology and assessment to engage in multidisciplinary work and to develop innovative ways of diagnosing the development of second and foreign language abilities.

The main contribution of the project will be to offer novel, well-grounded theoretical insights and to develop a range of methodologies to study second and foreign language development and its diagnosis. We are exploring the causes underlying strengths and weaknesses in language development, and the relationship between literacy skills in one's first language and the development of second language abilities. The results of the project will also have practical implications by providing a sounder theoretical basis for the development of curricula, pedagogic materials and diagnostic tests.
Finnish speaking learners of English as FL at ages 10/11, 14/15 and 17/18

Russian-speaking learners of Finnish as SL at beginner and intermediate levels

Cross-sectionally and longitudinally
  • 5 x 200 learners (cross-sectional study)
Three major studies in DIALUKI

**Study 1** (in 2010): The value of a range of L1 diagnostic procedures in SFL literacy, in order to select the best predictors for further longitudinal study.

**Study 2** (in 2011): The effects on SFL reading and writing of training in reading-related skills by means of a computerized learning game either in Finnish or in English over a 6–10 week period.

- **Graphogame** for diagnosing & treating dyslexia

**Study 3** (in 2011 – 2012/13): The development of literacy skills, and the relationship of this development to the diagnostic measures, over a 2–3 year period.
Cognitive/psycholinguistic measures:
- Fast lexical access process
- Phonological loop
- A backwards digit span memory task
- Rapid Automatic Naming (RAN) tasks.
- Phonological awareness through non-word based tasks
- The phoneme deletion test
- Segmentation tests of words
- Oral reading fluency and miscue tests
Reading as many words as possible in one minute

<table>
<thead>
<tr>
<th>Osio</th>
<th>Vastaus</th>
<th>P.</th>
<th>Osio</th>
<th>Vastaus</th>
<th>P.</th>
<th>Osio</th>
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<td>40. kauneimmillaan</td>
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<td>mies</td>
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<td>talo</td>
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<td>42. kyynel</td>
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<td>44. kortistot</td>
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<td>45. lakritsi</td>
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<td>80. pihlajanmarjat</td>
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<td></td>
<td>49. professori</td>
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# Rapid Automatic Naming (letters)

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<td></td>
<td>A O S A S T P O T A</td>
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<tr>
<td></td>
<td>T S P O T S A S O P</td>
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<tr>
<td></td>
<td>S A T P A P O A P S</td>
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</tbody>
</table>
Reading rapidly presented words
Reading rapidly presented words

day
Reading rapidly presented words
Reading rapidly presented words
## Phoneme deletion

<table>
<thead>
<tr>
<th>Stimulus</th>
<th>Correctness of the repetition</th>
<th>Phoneme deleted</th>
<th>Correctness of the deletion</th>
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</thead>
<tbody>
<tr>
<td>1. kaaS</td>
<td></td>
<td>kaa</td>
<td></td>
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<tr>
<td>2. Tauk</td>
<td></td>
<td>auk</td>
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<tr>
<td>3. Hok</td>
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<td>ok</td>
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<td>etc</td>
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<td>TOTAL CORRECT</td>
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<td>TOTAL CORRECT</td>
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## Backward digit span memory test

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<tbody>
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<td>1.</td>
<td>2 – 5</td>
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<tr>
<td>2.</td>
<td>5 – 7 – 4</td>
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<tr>
<td>3.</td>
<td>7 – 2 – 9 – 6</td>
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<tr>
<td>4.</td>
<td>4 – 1 – 3 – 5 – 7</td>
</tr>
<tr>
<td>5.</td>
<td>1 – 6 – 5 – 2 – 9 – 8</td>
</tr>
<tr>
<td>6.</td>
<td>8 – 5 – 9 – 2 – 3 – 4 – 2</td>
</tr>
<tr>
<td>7.</td>
<td>6 – 9 – 1 – 6 – 3 – 2 – 5 – 8</td>
</tr>
</tbody>
</table>
Study 1

Linguistic measures

Receptive vocabulary (PPVT, XLEX/ YLEX, Nation, plus L1 vocabulary)

L1 reading tests (including PISA tests)

Reading tests in SFL English and Finnish (Pearson General and DIALANG)

Writing tests in L1 and SFL (CEFLING/TOPLING and Pearson General)
Motivation and background variables

- Iwaniec Motivation measure of Instrumentality, Intrinsic Interest, Motivational Intensity, Parental Encouragement, Anxiety, Self-regulation and Self-concept
- Background variables based on PISA questionnaire
- Self-assessment questionnaire
- Think-alouds and interviews
How can SLA and EUROSLA help?

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