Reading disorders in mental retardation. Dyslexia or not ?

Annick COMBLAIN,
University of Liege – FAPSE
Department of Cognitive Sciences
Speech and language pathology unit

Seminar « Cross views on dyslexia »
Liège, 20 april 2004

Reading

- Complex and composite ability implying several basic skills such as :
  - Syllabic or rhyme awareness → about 4 y.o.
  - Phonemic awareness → contemporary with reading acquisition
- In French : discovering the phonemic correspondence is necessary to learn to read
- Phonemic awareness → to explicit learning and psychological maturational process
- Positive correlation between :
  - phonological awareness level
  - Reading and spelling abilities

Reading and phonological awareness in Down syndrome.

- DS individuals are able to reach a good level in reading <u>but</u> what about phonological awareness ? → 2 point of view :

Cossu et al. (1990, 1993)

Evans (1994)

- DS children are able to read in spite of low performances on metaphonological tasks.

Morton & Frith (1993)

Cupples & Iaconno (2000)

- In DS as in typical children, reading and phonological awareness are strongly linked.

Morton & Frith (1993)

- competence ≠ performance
- Performance on metaphonological tasks do not only involve access to phonological representations → cognitive level influence ?

Gombert (2002)

- DS children = low metaphonological abilities (< to TC) but strongly linked with their reading level
- ≠ regarding the proposed tasks

Metaphonological tasks : DS children ≠ typical children

- DS children : no gradual evolution rhyme perception → phoneme perception (≠ TC)
  - DS : initial phoneme detection > rhyme detection
  - 2 possible explanations :

- DS : less exposed to « language games » using rhyme
- Teaching methods preferentially use phonemes

DS : reading statistics

- Pueschel & Hoppmann (1993) – United States :

  - 7 – 10 y.o. → 20%
  - 11 – 16 y.o. → 47 %
  - 17 – 21 y.o. → 50 %

  peuvent lire plus de 50 mots

  - 7 – 10 y.o. → 47 %
  - 11 – 16 y.o. → 61 %
  - 17 – 21 y.o. → 67 %

  peuvent lire des phrases

Cognitive strategies for reading TChildren = DS children ?

- Very few studies
- Buckley, Birds & Byrne (1996) :
  - DS children make the same errors than young typical readers :
    - Visual errors
    - Semantic errors

    } Indicate the use of a logographic strategy
    No knowledge of grapho-phonological correspondence principles.
  - Use of the logographic strategy during a (atypical) long period → <u>hypothesis</u> : more difficulties than TC with the alphabetic strategy acquisition

- Gombert (2002) → in DS children :
  - Nonword visually ≠ known word : performance ↘
  - Nonword visually similar to a known words : performance ↗
  - Use of analogies with wellknown words in nonwords reading
  - difficulty in applying grapho-phonological correspondence rules to items without any lexical relation with a wellknown word
  - .

Comprehension and reading in DS

reading = decoding x comprehension

What about this component ?

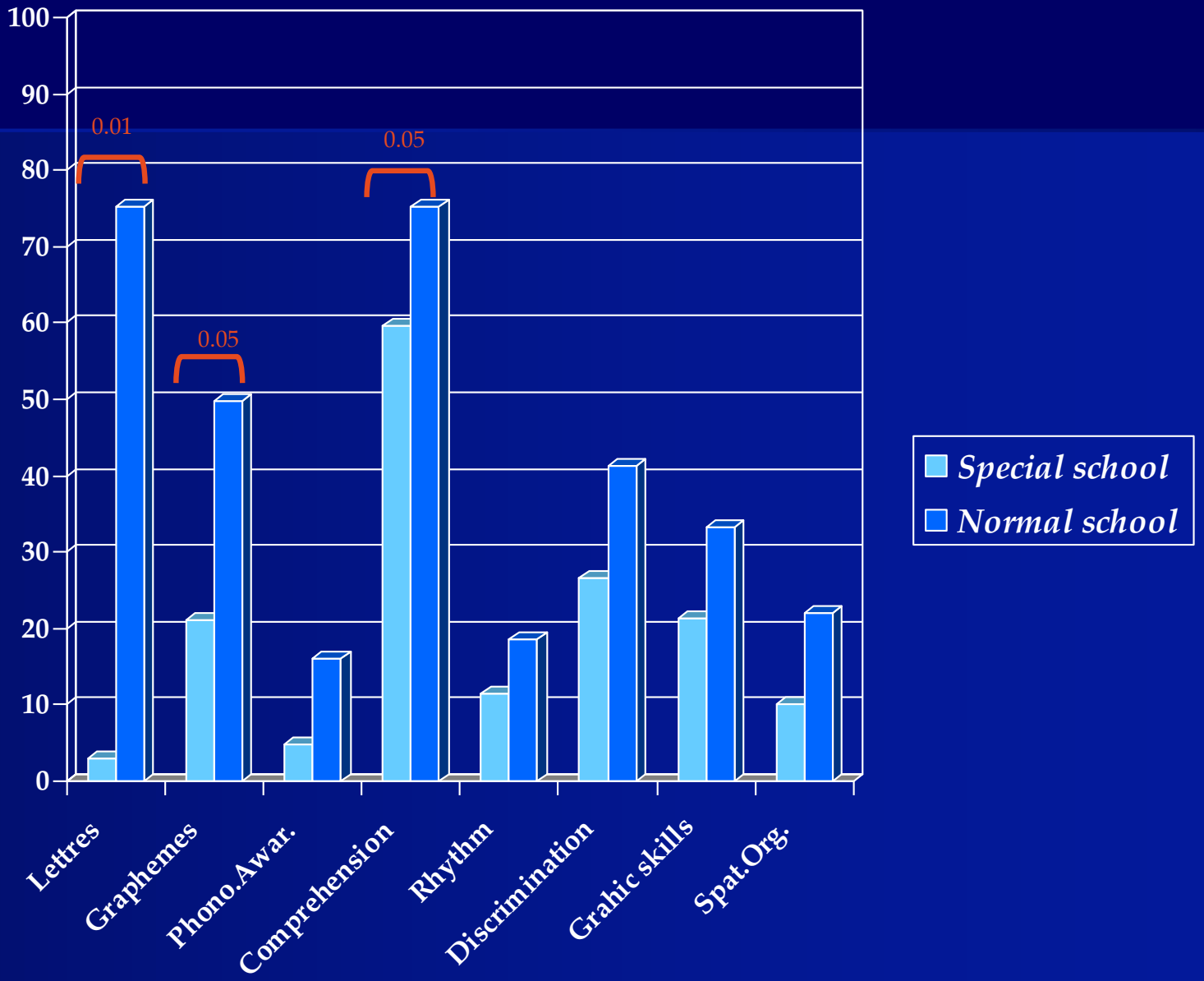
- Very few studies
- The limited oral comprehension seems to limit the development of reading comprehension

Observations in DS Children

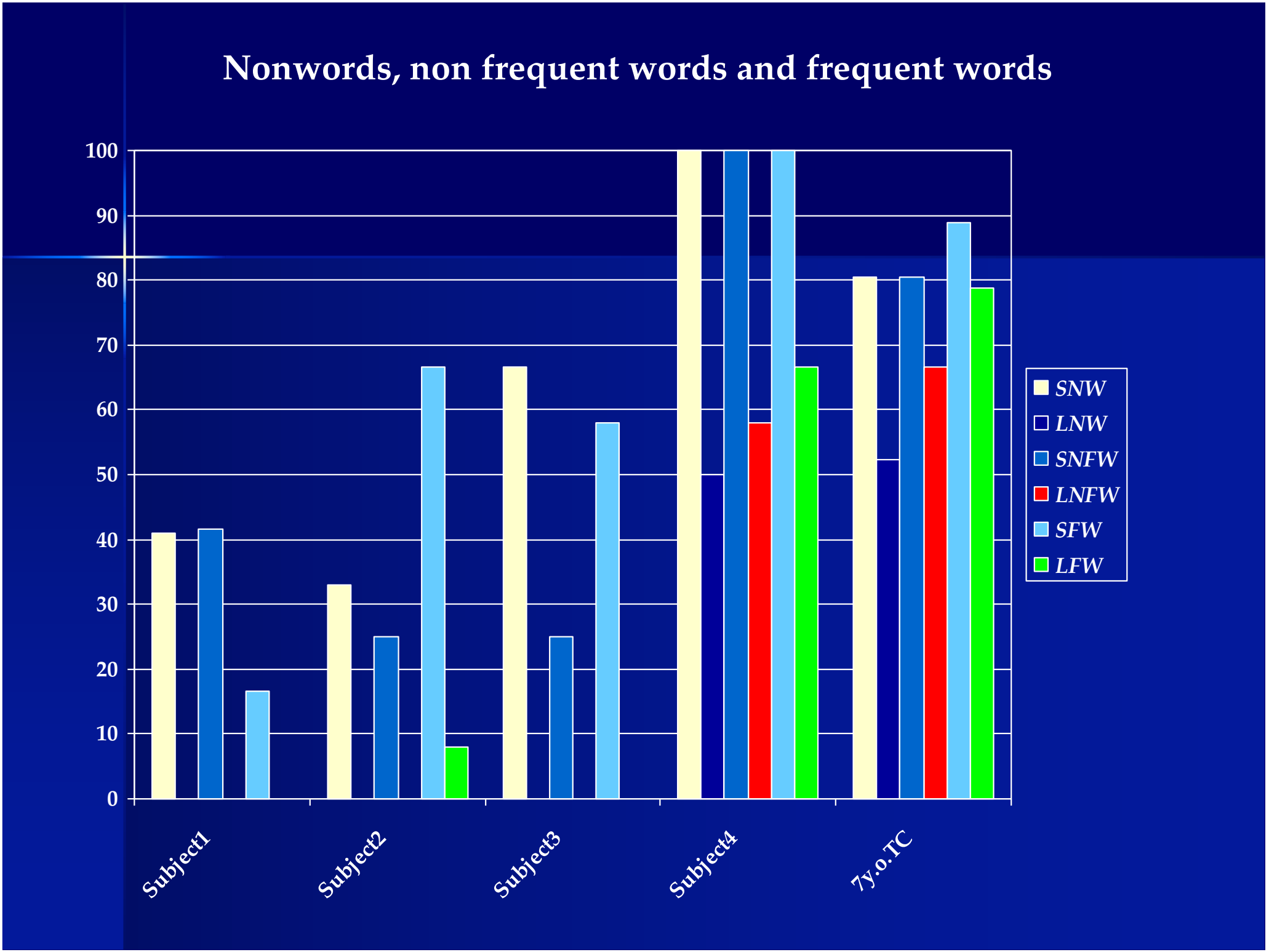
- 10 DS children aged from 7 à 11 y.o.
  - 5 attending special school and 5 attending normal school
  - Matched on the EVIP (PPVT) level → $\mu = 6$ y.o.

- Assessed domains :
  - Single word reading → BELEC
  - Sentences → L2MA et ORLEC
  - Metaphonology (including names of letters and sound of letters) → BELEC + Lecocq
  - Memory → nonword repetition (BELEC)
  - Oral comprehension → ECOSSE (TROG)
  - Prerequisite for the first school grade → NBA-T : spatial organisation; rhythm, visual discrimination, graphic skills and memory (visual and auditive)

Results (%)


100
90
80
70
60
50
40
30
20
10
0
0.01
0.05
0.05
Lettres
Graphemes
Phono.Awar.
Comprehension
Rhythm
Discrimination
Grahic skills
Spat.Org.
Special school
Normal school

Nonwords, non frequent words and frequent words



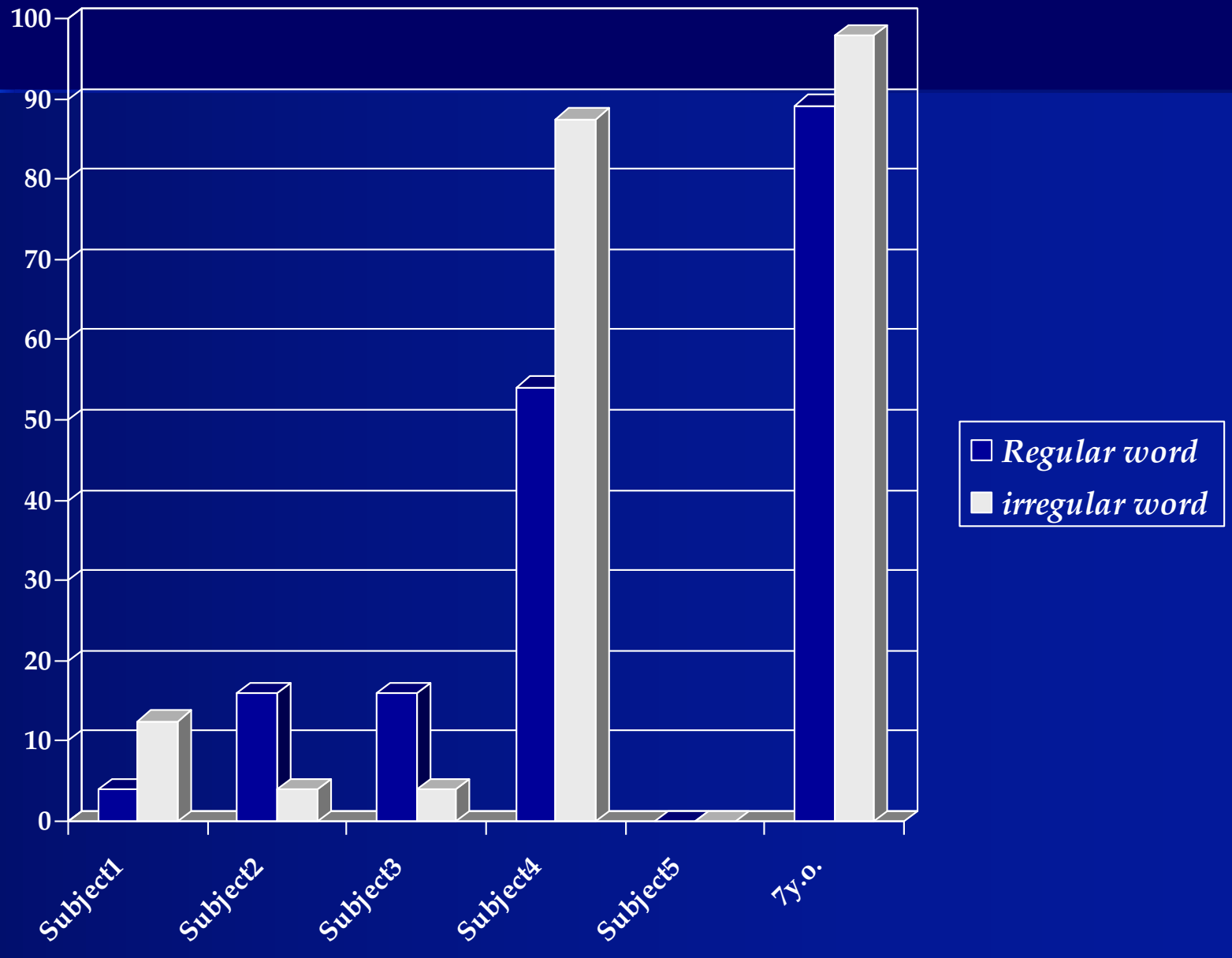
- No frequency effect → frequent words vs non frequent words : p=0.55

- No lexicality effect :
  - nonwords vs frequent words : p=0.98
  - nonwords vs non frequent words : p=0.56

- No length effect → short words vs long words : p=0.30

- No complexity effect → simple words vs complex words : p=0.68

Regular and irregular words



- No regularity effect

- Most frequent errors :
  1. Omission of one or more syllables
  2. Phoneme omission
  3. Confusion of visual similar letters (b/d)
  4. Confusion of non voicing / voicing consonants (p/b)