Developmental Dyslexia

Definition:

Reading development lags behind other academic abilities despite absence of sensory deficits. Adequate opportunity for learning to read has been provided.

Sometimes require reading level to be 2 yrs below grade level while other skills may be at grade level

“Jackie”

Case reported by Margaret Snowling (1992)

Age: 10 yrs, 10 mos
WISC IQ scale: 115, verbal 98, performance 131
Schonell Graded Word Reading Test: 8 yrs. 6 mos
Schonell Spelling test: 8 yrs. 0 mos

Subscales of WISC:
Superior performance on object assembly, block design
Impaired performance on digit span, arithmetic

Language skills

Speech halting, hesitations (describing a picture of a picnic):

“So they set out… they went…they went… I mean… and… so they had their picnic, and about an hour…no a few minutes……they….they packed up…and… got onto their bikes”

Phonological errors in picture naming:
Escalator -> exclavator
Stethoscope -> telescopic thing, st-stesesemator

Cognitive Deficit Approach

Find out how dyslexic children differ from children without reading disorder

1. Visual perceptual deficit - b/p, was -> saw confusions
Rapid visual processing deficit found in some studies, not others

Problem: often the tests involve working with orthographic materials, dyslexics may be poorer because they have less exposure to print.

E.g., studies that have compared copying of English vs. Hebrew characters at short exposure durations have found deficit for English, not Hebrew

2. Verbal deficit

A. Verbal stm deficit
B. Slow picture naming
C. Poor phonological skills - rhyme judgments

Phonemic awareness: Debate over the importance of this. Is deficit causal or result of reading difficulty
Morais showed that non-literate adults had difficulty with phonemic segmentation

D. “fast-for-word” approach (Tallal) rapid auditory processing deficit

Individual Differences

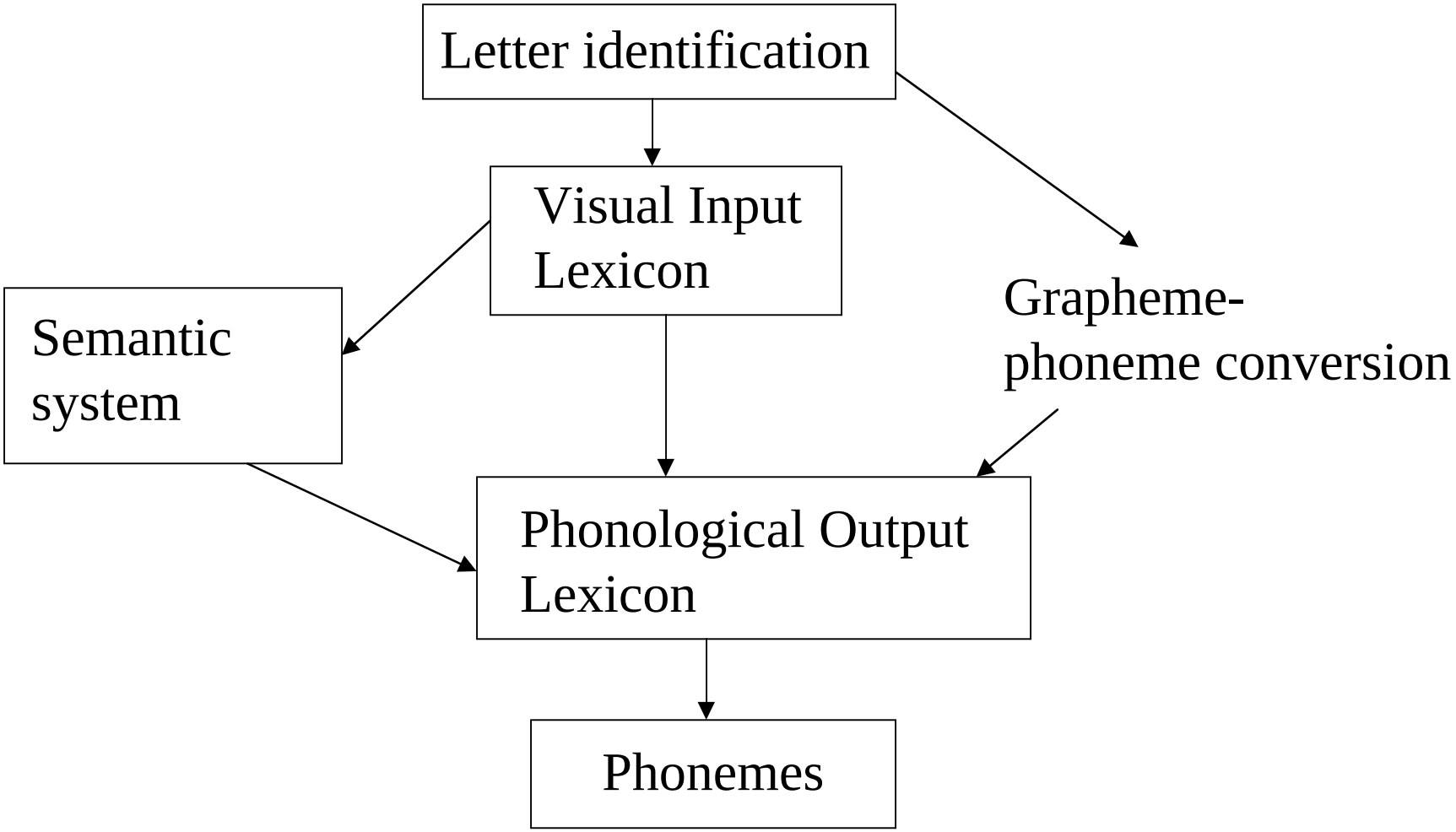
Reading a complex skill, any component of which might be impaired

Castles and Coltheart:

Some children show a phonological dyslexic pattern (word reading better than nonword reading

A smaller group shows surface dyslexic pattern (regular words and nonwords read relatively well, irregular words read poorly)

Dual (Triple?) Route Model

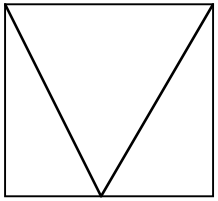


Case A. H.
McCloskey & Rapp (2000)

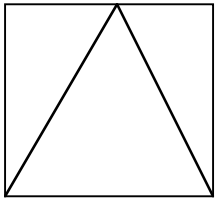
College student at prestigious university

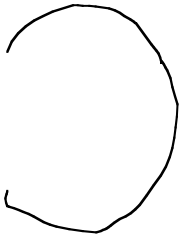
Visual-spatial deficit:

Target



AH's copy





Reading simple words: 88% correct

Reading Errors:

dog	hog
pen	den
lamp	lamb
snail	nails
chain	cabin
hand	band
nose	noise
church	cherish
apple	appeal

Knowledge-based constraint (i.e., top-down effects in reading text)

1. reading words in context much more accurate

2. reading aloud normal text, made sequencing errors much more often than controls - but where unimportant

speed and determination -> determination and speed

3. reading sequence altered text aloud

e.g., The horse had learned to him recognize

RH spontaneously corrects 85% of the time, controls 24% of the time

Effect of flicker on word reading:

Steady light	Flicker
23% errors	1% errors

Opposite of prediction from fast visual processing deficit hypothesis

Transient vs. steady-state visual systems

Eye Movements in Reading Text

Foveal region: 1 - 2 degrees visual angle
Parafoveal region: 5 additional degrees
Peripheral: anything beyond

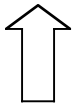
Typically readers fixate 200-300 ms, move eyes forward 8 characters

Perceptual span:

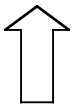
Moving window paradigm -

“A few things led me to mistakenly conclude that the candidate..”

X xxx xxxxx xxx xx to mistakenly concludx xxxx xxx xxxxxxxx



X xxx xxxxx xxx xx xx xxxxxxxxx conclude that the canxxxxx



In English: 3-4 characters to left of fixations, 15 to right

In Hebrew: reverse

word identification span smaller - only 5-7 characters to right of fixation

boundary technique - change word after eye moves past boundary

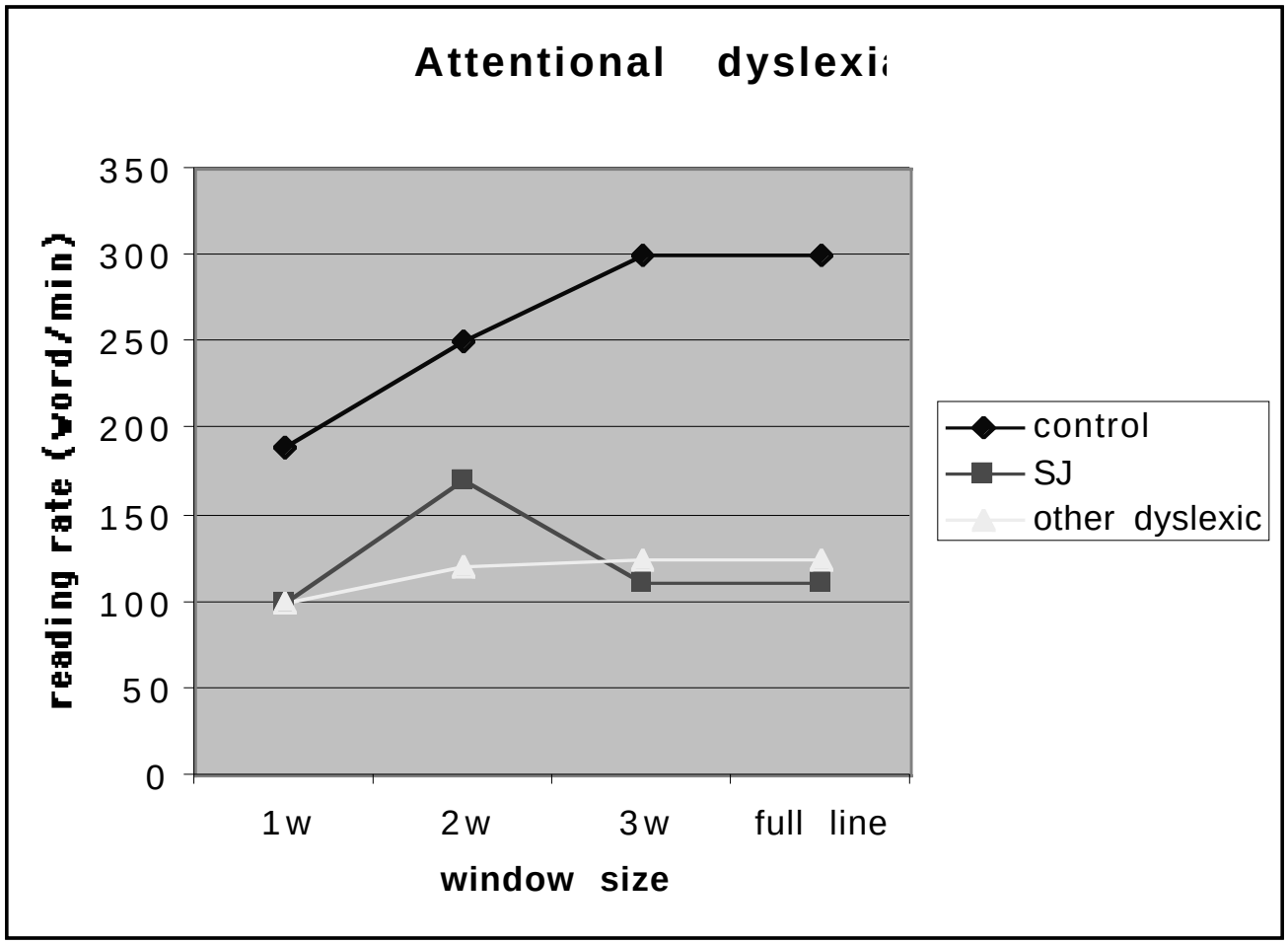
first few letters of parafoveal word picked up

Selective Attentional Dyslexia
Rayner, Murphy, Henderson &Pollatsek

40 yr old college professor, life-long reading problems

single word reading abilities normal

moving window paradigm


Attentional dyslexia
reading rate (word/min)
350
300
250
200
150
100
50
0
1w
2w
3w
full line
window size
control
SJ
other dyslexic