SEDE DEL CORSO

CTS.CENTRODARI

PRESSO LA SCUOLA MEDIA STATALE "PACINOTTI"
via C. De Cristoforis, 2
VII Istituto Comprensivo – PADOVA

I MECCANISMI ATTENZIONALI NEI DSA:
DALLE NEUROSCIENZE ALLA SCUOLA

ASSOCIAZIONE la Nostra Famiglia

"Eugenio Medea"
ISTITUTO DI RICOVERO E CURA A CARATTERE SCIENTIFICO

Andrea Facoetti Ph.D

General Psychology Department, University of Padua, ITALY

Child Psychopathology Unit, Scientific Institute "E. Medea"
Bosisio Parini, (LC), ITALY

II Parte: 19 Novembre 2015

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I MECCANISMI ATTENZIONALI NEI DSA:
DALLE NEUROSCIENZE ALLA SCUOLA

19 Novembre 2015 ore 16:30 – 19:30	**L'ATTENZIONE NEI DSA** ▪ Che cos'è l'attenzione e i suoi disturbi nei DSA Relatore: **Andrea Facoetti** *Assistant Professor - Department of General Psychology - University of Padova*

SEGRETERIA (PROGETTAZIONE, ORGANIZZAZIONE E GESTIONE)

AURELIO MICELLI	CENTRO TERRITORIALE DI SUPPORTO PER LE TECNOLOGIE E LA DISABILITÀ *Referente CTS.centroDARI di Padova* Tel.: 049.8073100 Email: cts.padova@gmail.com

Specific Learning Disorder

Specific Learning Disorder

Diagnostic Criteria

A. Difficulties learning and using academic skills, as indicated by the presence of at least one of the following symptoms that have persisted for at least 6 months, despite the provision of interventions that target those difficulties:

1. Inaccurate or slow and effortful word reading (e.g., reads single words aloud incorrectly or slowly and hesitantly, frequently guesses words, has difficulty sounding out words).
2. Difficulty understanding the meaning of what is read (e.g., may read text accurately but not understand the sequence, relationships, inferences, or deeper meanings of what is read).
3. Difficulties with spelling (e.g., may add, omit, or substitute vowels or consonants).
4. Difficulties with written expression (e.g., makes multiple grammatical or punctuation errors within sentences; employs poor paragraph organization; written expression of ideas lacks clarity).
5. Difficulties mastering number sense, number facts, or calculation (e.g., has poor understanding of numbers, their magnitude, and relationships; counts on fingers to add single-digit numbers instead of recalling the math fact as peers do; gets lost in the midst of arithmetic computation and may switch procedures).
6. Difficulties with mathematical reasoning (e.g., has severe difficulty applying mathematical concepts, facts, or procedures to solve quantitative problems).

B. The affected academic skills are substantially and quantifiably below those expected for the individual's chronological age, and cause significant interference with academic or occupational performance, or with activities of daily living, as confirmed by individually administered standardized achievement measures and comprehensive clinical assessment. For individuals age 17 years and older, a documented history of impairing learning difficulties may be substituted for the standardized assessment.

C. The learning difficulties begin during school-age years but may not become fully manifest until the demands for those affected academic skills exceed the individual's limited capacities (e.g., as in timed tests, reading or writing lengthy complex reports for a tight deadline, excessively heavy academic loads).

D. The learning difficulties are not better accounted for by intellectual disabilities, uncorrected visual or auditory acuity, other mental or neurological disorders, psychosocial adversity, lack of proficiency in the language of academic instruction, or inadequate educational instruction.

Note: The four diagnostic criteria are to be met based on a clinical synthesis of the individual's history (developmental, medical, family, educational), school reports, and psychoeducational assessment.

Dislessia Evolutiva: I criteri di inclusione:

1) Rapidità e/o accuratezza nella lettura (di parole e/o non parole) al di sotto di 2 D.S. rispetto all'età cronologica del bambino. *La prova di lettura di testo (MT) inferiore ad 1 D.S. rispetto all'età cronologica.*

2) Una normale esperienza di istruzione scolastica;

3) Un QI totale uguale o superiore a 85 (criterio della discrepanza);

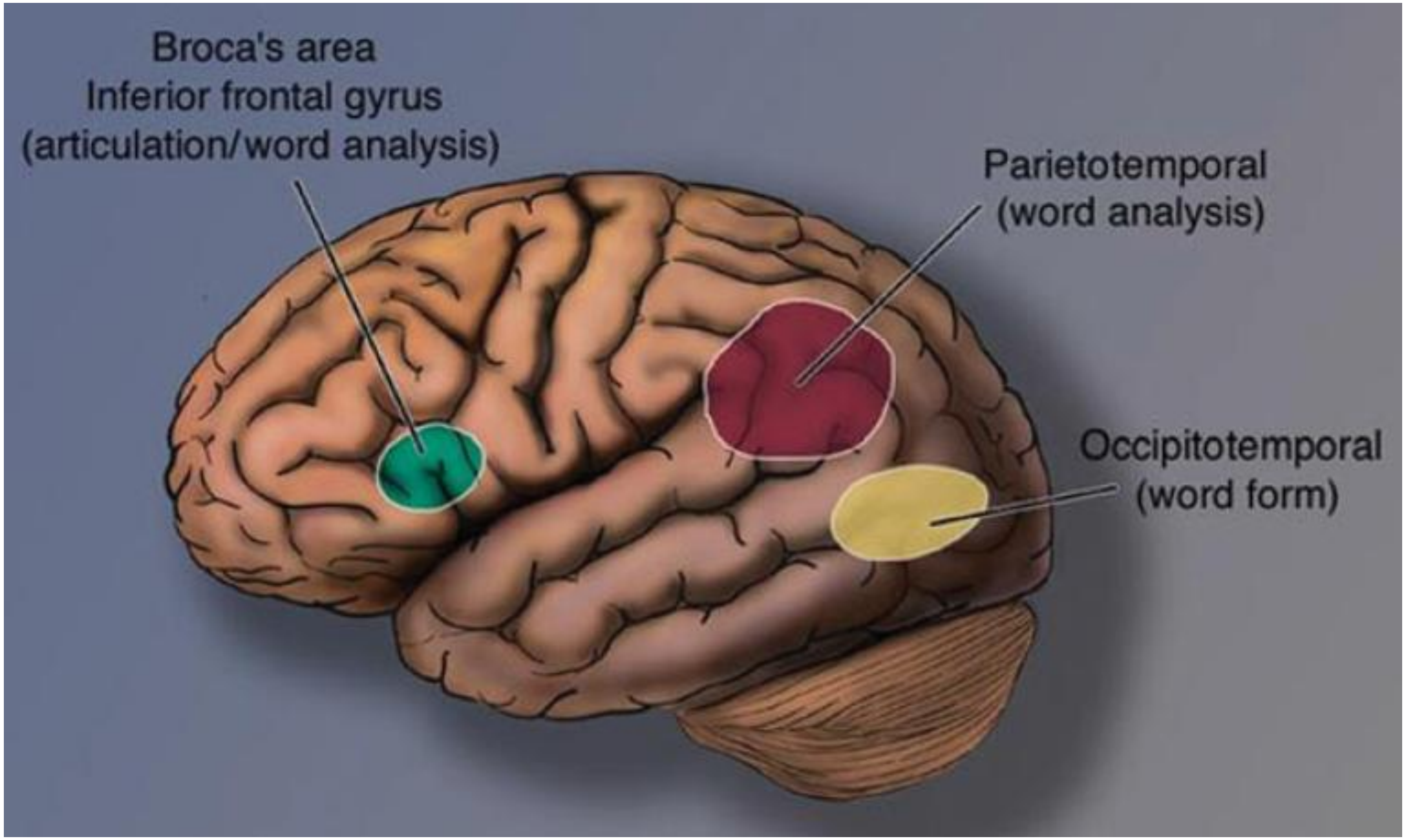
4) L'assenza di gravi disturbi relazionali e/o psico-affettivi;

5) Normale (o corretta) vista e udito;

6) L'assenza di disturbi neurologici, tali da giustificare la significativa compromissione delle abilità di lettura ;

7) L'assenza di un disturbo da deficit dell'attenzione con iperattività;

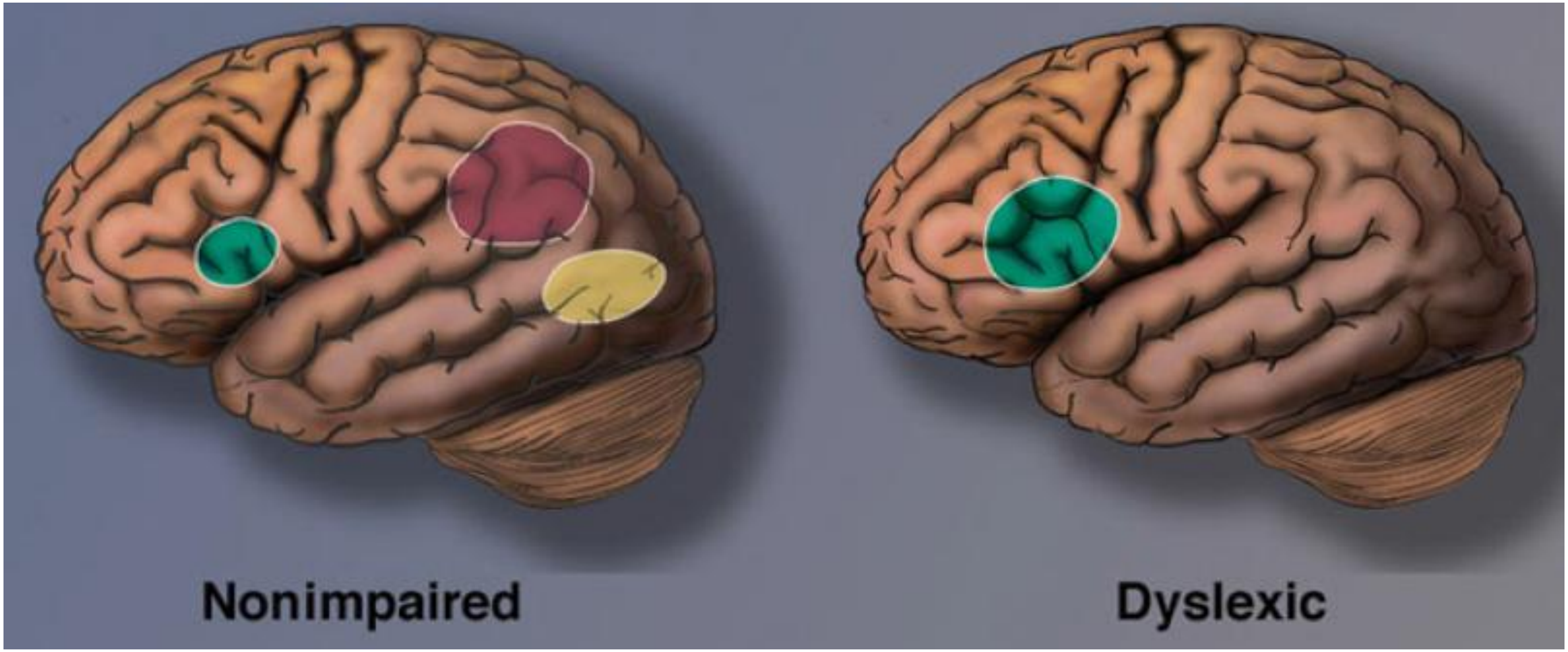
Neurobiologia della lettura



A special thank to Kenneth Pugh

Imparare a leggere
=
Integrare la lettera con il suono corrispondente (mappaggio lettera-suono)

Disordini della fonologia e dell'Ortografia: Causa o Effetto?



<u>Ipotesi Eziologiche</u> della Dislessia Evolutiva

"Storia" della Dislessia: le Fasi della Ricerca

- **IPOTESI VISIVA** = "CECITA' PER LE PAROLE", teoria Magnocellulare con disfunzione dell'attenzione spaziale.

- **IPOTESI UDITIVA** = Difficoltà nell'elaborazione "temporale" degli stimoli uditivi, deficit nell'elaborazione fonologica in presenza di rumore.

SENSORIALE

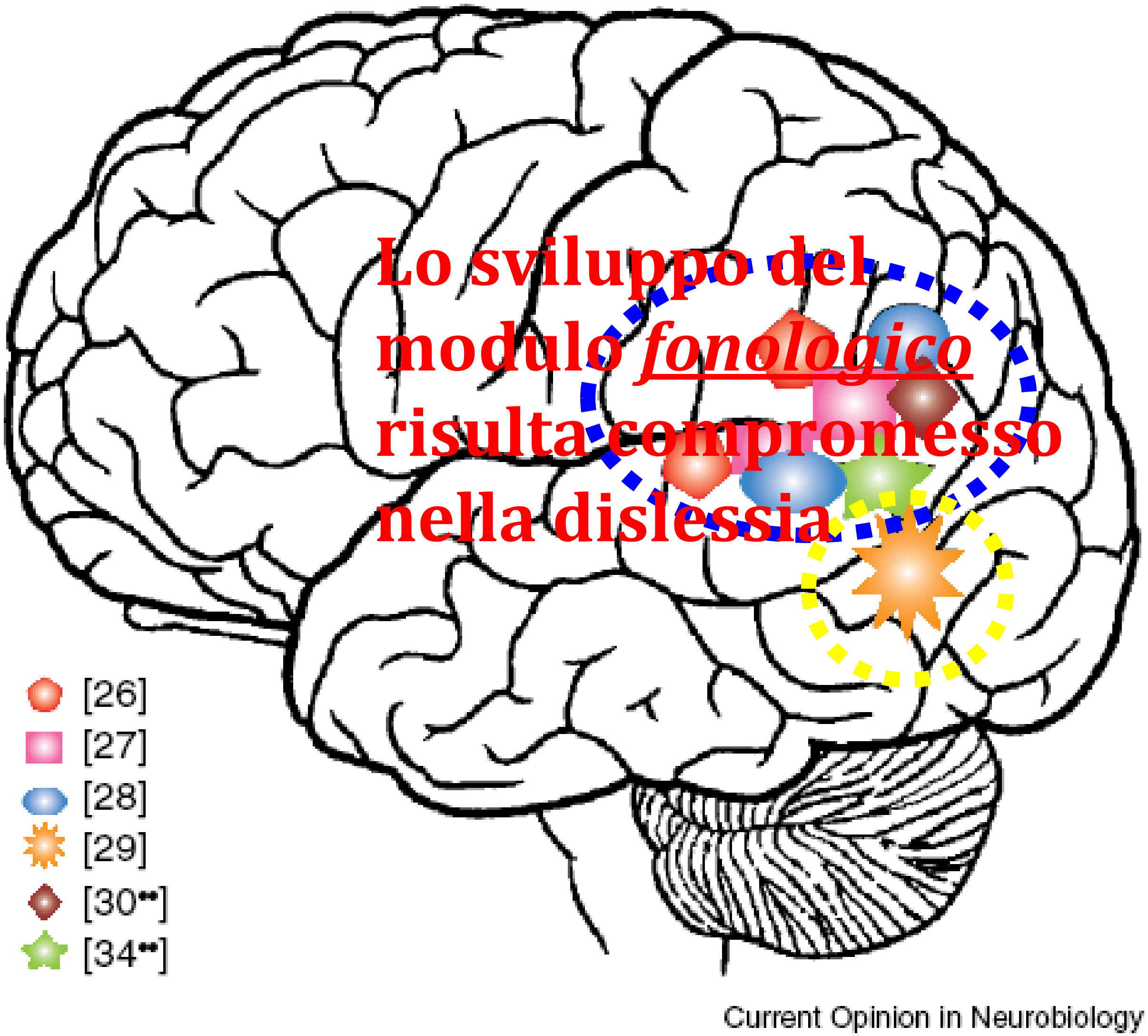
LINGUAGGIO

- **IPOTESI FONOLOGICA** = Difficoltà ad elaborare i suoni specifici del linguaggio (Fonemi).
- **IPOTESI MNESTICA** = Deficit nel mantenere e/o manipolare i fonemi in un magazzino di memoria.
- **IPOTESI DENOMINAZIONE RAPIDA** = Deficit nei meccanismi di automatizzazione legati alla mappaggio cross-modale (e.g. conversione grafema-fonema).

- **IPOTESI DEI SOTTOGRUPPI** = deficit visivo vs. uditivo - fonologico tuttavia, tuttavia il problema dei Misti.

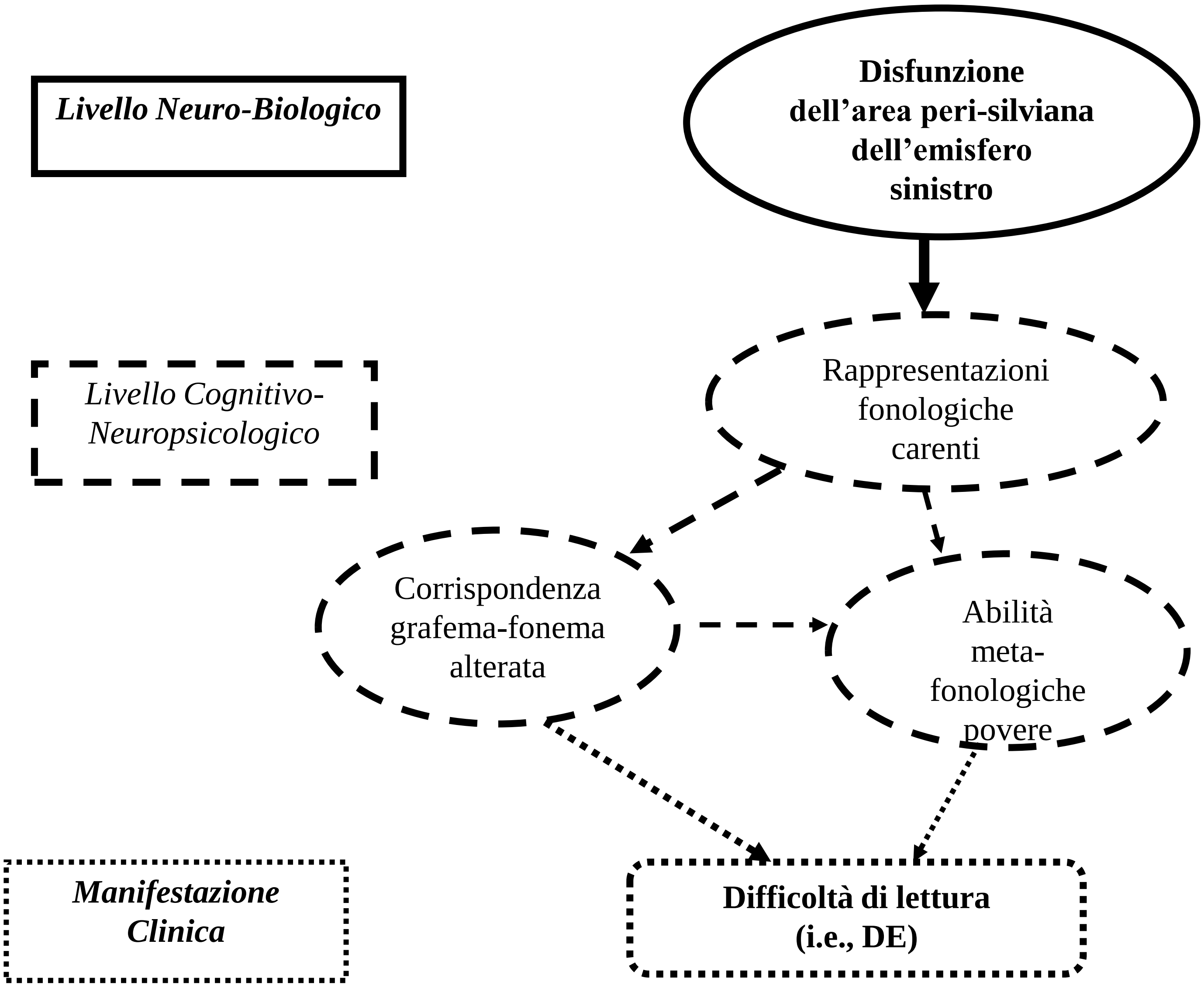
- **IPOTESI SOVRAMODALE** = disturbo visivo e uditivo - fonologico.

Sono veramente queste le basi neurobiologiche della dislessia???



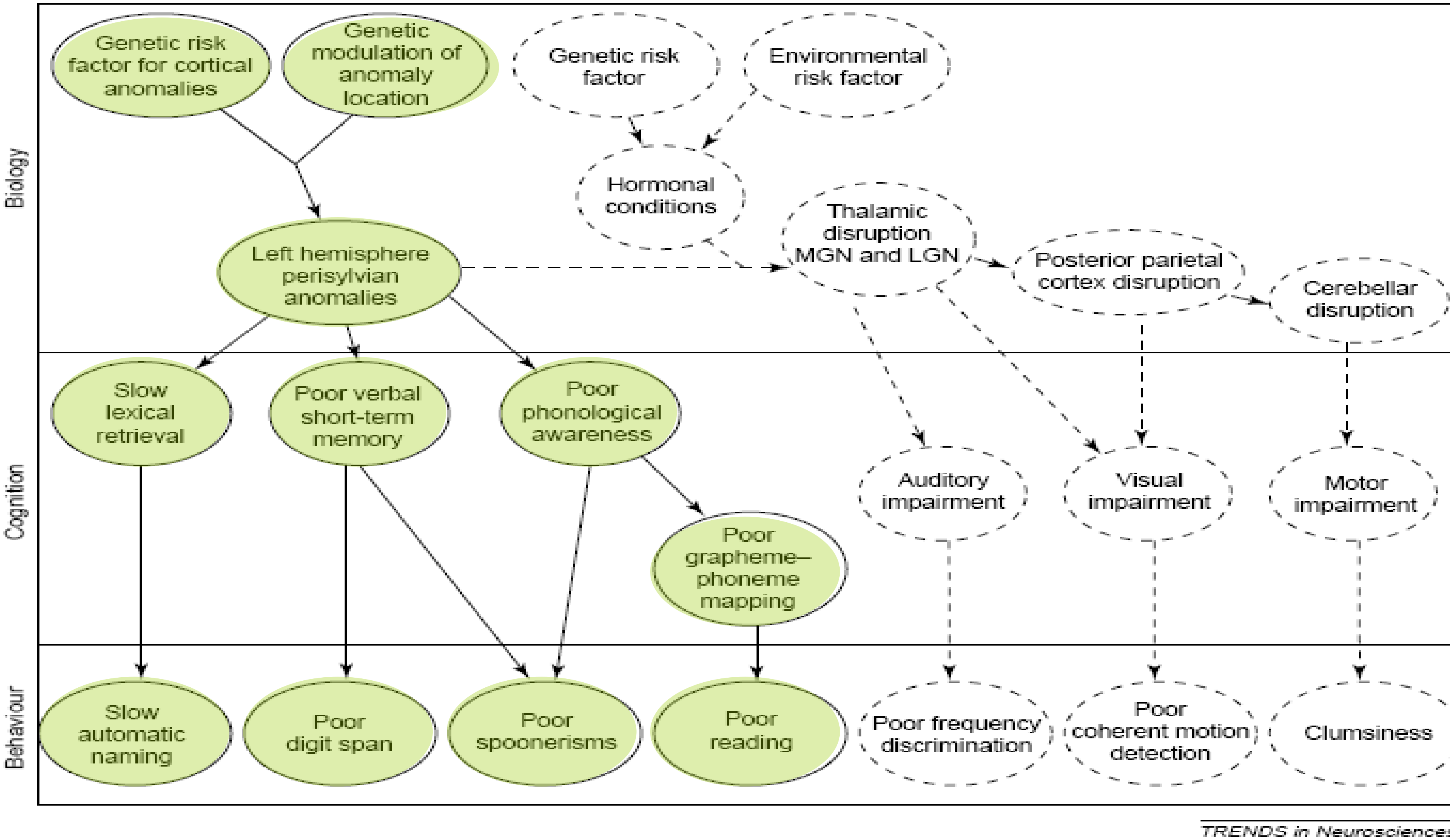
From Temple (2002)

Ipotesi Fonologica della Dislessia (Ramus, 2003): Sintomi Centrali



<u>Ipotesi Fonologica</u> della Dislessia (Ramus, 2003):

Sintomi Centrali (in grigio) e Sintomi Associati (tratteggiati)



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SCIENCE DIRECT
Cognition 91 (2004) 77–111
COGNITION
www.elsevier.com/locate/COGNIT

Is there a causal link from phonological awareness to success in learning to read?

Anne Castles[a,b,*], Max Coltheart[a]

[a]Macquarie Centre for Cognitive Science, Macquarie University, Sydney, Australia
[b]Department of Psychology, The University of Melbourne, Parkville, Australia

Received 10 February 2003; revised 13 May 2003; accepted 6 August 2003

Longitudinal and experimental training studies are examined in detail, as these are considered most appropriate for exploring a causal hypothesis of this nature. A particular focus of our analysis is the degree to which studies to date have controlled for existing literacy skills in their participants and the influence that these skills might have on performance on phonological awareness tasks. We conclude that no study has provided unequivocal evidence that there is a causal link from competence in phonological awareness to success in reading and spelling acquisition. However, we

Categorizing sounds and learning to read—a causal connection

L. Bradley & P. E. Bryant

Department of Experimental Psychology, University of Oxford, Oxford OX1 3UD, UK

Children who are backward in reading are strikingly insensitive to rhyme and alliteration[1]. They are at a disadvantage when categorizing words on the basis of common sounds even in comparison with younger children who read no better than they do. Categorizing words in this way involves attending to their constituent sounds, and so does learning to use the alphabet in reading and spelling. Thus the experiences which a child has with rhyme before he goes to school might have a considerable effect on his success later on in learning to read and to write. We now report the results of a large scale project which support this hypothesis.

Our study combined two different methods. The first was longitudinal. We measured 403 children's skills at sound categorization before they had started to read, and related these to their progress in reading and spelling over the next 4 yr: at the end of this time the size of our group was 368. The second was intensive training in sound categorization or other forms of categorization given to a subsample of our larger group. We used both methods because we reasoned that neither on its own is a sufficient test of a causal hypothesis and that the strengths and weaknesses of the two are complementary.

Il deficit Fonologico: Causa o Effetto della Dislessia?

La Neuro-plasticità è alla base dello sviluppo cerebrale

How Learning to Read Changes the Cortical Networks for Vision and Language

Stanislas Dehaene,[1,2,3,4*] Felipe Pegado,[1,2,3] Lucia W. Braga,[5] Paulo Ventura,[6] Gilberto Nunes Filho,[5] Antoinette Jobert,[1,2,3] Ghislaine Dehaene-Lambertz,[1,2,3] Régine Kolinsky,[7,8] José Morais,[7] Laurent Cohen[9,10,11]

Does literacy improve brain function? Does it also entail losses? Using functional magnetic resonance imaging, we measured brain responses to spoken and written language, visual faces, houses, tools, and checkers in adults of variable literacy (10 were illiterate, 22 became literate as adults, and 31 were literate in childhood). As literacy enhanced the left fusiform activation evoked by writing, it induced a small competition with faces at this location, but also broadly enhanced visual responses in fusiform and occipital cortex, extending to area V1. Literacy also enhanced phonological activation to speech in the planum temporale and afforded a top-down activation of orthography from spoken inputs. Most changes occurred even when literacy was acquired in adulthood, emphasizing that both childhood and adult education can profoundly refine cortical organization.

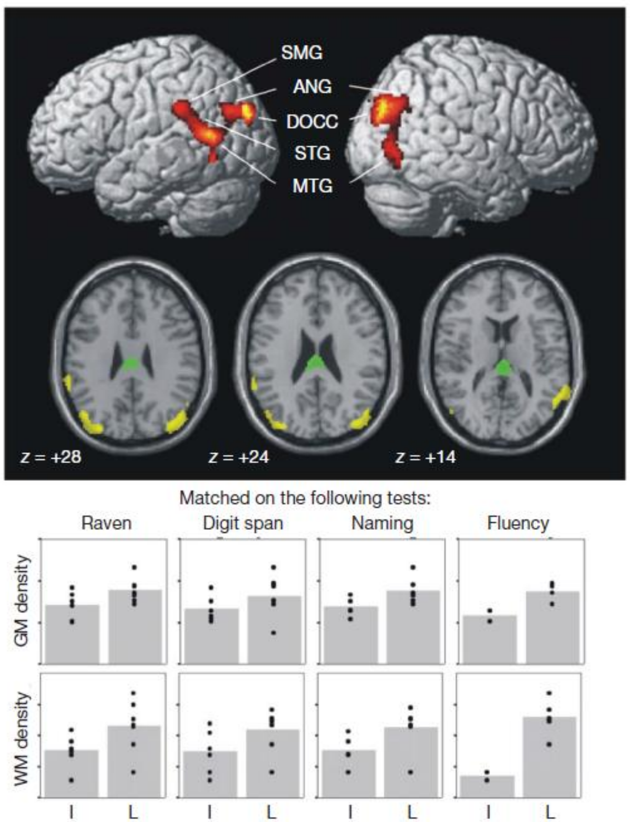
Vol 461|15 October 2009|doi:10.1038/nature08461 nature

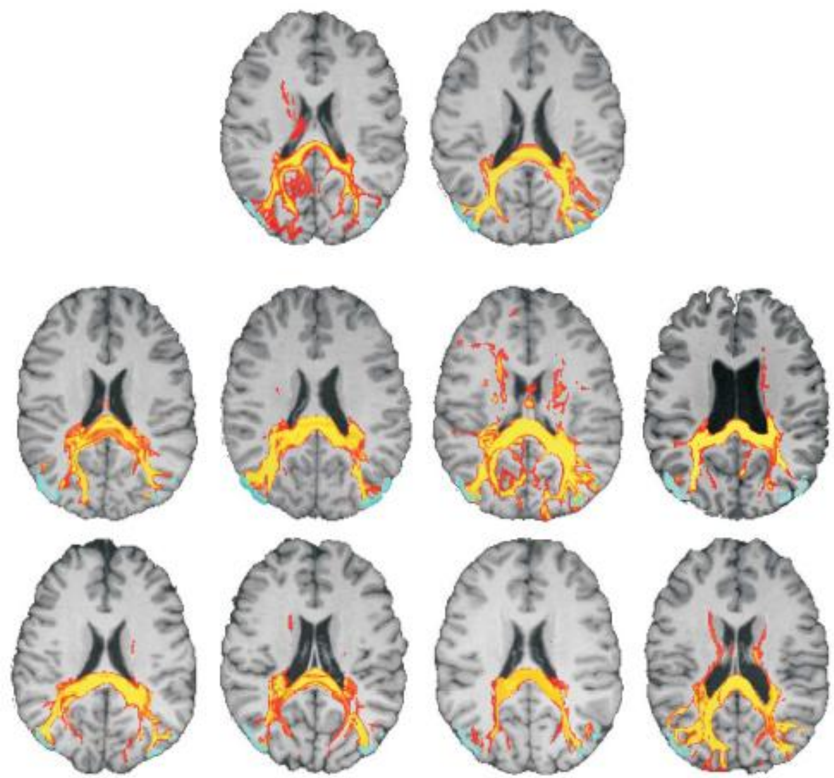
Late-literates had more white matter in the splenium of the corpus callosum and more grey matter in bilateral angular, dorsal occipital, middle temporal, left supramarginal and superior temporal gyri. The importance of these brain regions for skilled reading was investigated in early literates, who learnt to read as children. We

LETTERS

An anatomical signature for literacy

Manuel Carreiras[1,2,3,4], Mohamed L. Seghier[5], Silvia Baquero[6], Adelina Estévez[4], Alfonso Lozano[6], Joseph T. Devlin[7] & Cathy J. Price[5]



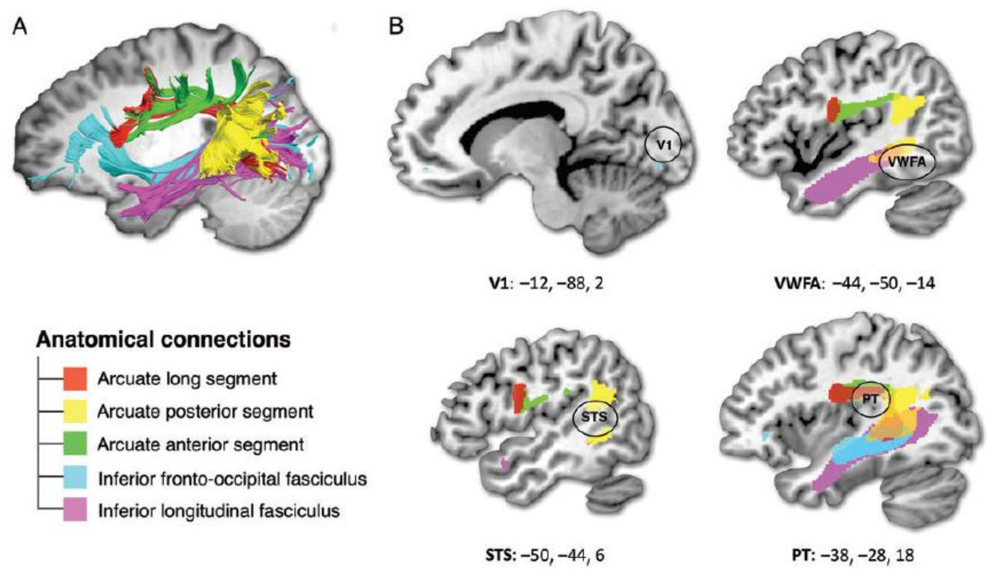


Cerebral Cortex April 2014;24:989–995
doi:10.1093/cercor/bhs383
Advance Access publication December 12, 2012

Learning to Read Improves the Structure of the Arcuate Fasciculus

Michel Thiebaut de Schotten[1,2,3], Laurent Cohen[3,4,5], Eduardo Amemiya[6], Lucia W. Braga[6] and Stanislas Dehaene[7,8,9,10]

The acquisition of literacy results from an effortful learning process that leads to functional changes in several cortical regions. We explored whether learning to read also leads to anatomical changes within the left intrahemispheric white matter pathways that interconnect these regions. Using diffusion tensor imaging tractography, we compared illiterates with ex-illiterates who learned to read during adulthood and literates who learned to read during their childhood. Literacy related to an increase in fractional anisotropy and a decrease in perpendicular diffusivity in the temporo-parietal portion of the left arcuate fasciculus. The microstructure within this pathway correlated with the reading performance and the degree of functional activation within 2 dominant brain regions involved in reading: The Visual Word Form Area in response to letter strings, and the posterior superior temporal cortex in response to spoken language. Thus, the acquisition of literacy is associated with a reinforcement of left temporo-parietal connections whose microstructure predicts overall reading performance and the functional specialization of the Visual Word Form Area. This anatomical magnetic resonance imaging marker may be useful to predict developmental reading disorders.



The Journal of Neuroscience, January 15, 2014 • 34(3):901–908 • 901

Behavioral/Cognitive

An Investigation into the Origin of Anatomical Differences in Dyslexia

Anthony J. Krafnick,[1] D. Lynn Flowers,[1,2] Megan M. Luetje,[1] Eileen M. Napoliello,[1] and Guinevere F. Eden[1]
[1]Center for the Study of Learning, Georgetown University Medical Center, Washington, DC 20057, and [2]Wake Forest University Baptist Medical Center, Winston-Salem, North Carolina 27157

read at the same level as the dyslexics. Consistent with previous reports, dyslexics showed less GMV in multiple left and right hemisphere regions, including left superior temporal sulcus when compared with age-matched controls. However, not all of these differences emerged when dyslexics were compared with controls matched on reading abilities, with only right precentral gyrus GMV surviving this second analysis. When similar analyses were performed for white matter volume, no regions emerged from both comparisons. These results indicate that the GMV differences in dyslexia reported here and in prior studies are in large part the outcome of experience (e.g., disordered reading experience) compared with controls, with only a fraction of the differences being driven by dyslexia per se.

Brain Advance Access published August 14, 2014
doi:10.1093/brain/awu229
Brain 2014: Page 1 of 6 | 1
BRAIN
A JOURNAL OF NEUROLOGY

REPORT

Neuroanatomical precursors of dyslexia identified from pre-reading through to age 11

Kristi A. Clark,[1] Turid Helland,[2,3] Karsten Specht,[2,4] Katherine L. Narr,[5,6] Franklin R. Manis,[7] Arthur W. Toga[1] and Kenneth Hugdahl[2,8,9]

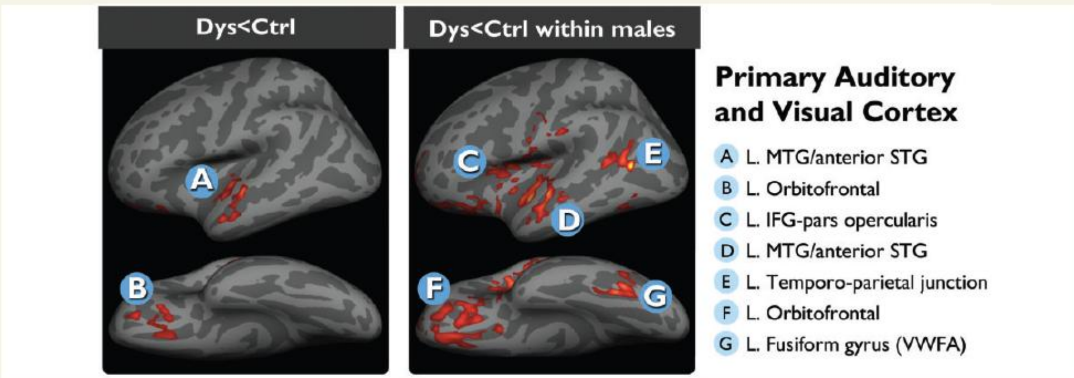


Figure 2 Neuroanatomical signature of dyslexia. Regions of thinner cortex in the left hemisphere observed in children diagnosed with dyslexia (Dys) compared to those who were not (Ctrl). These data are cross-sectional from MRI 3, when the children were in the sixth grade. The *left* panel shows the whole group differences, whereas the *right* panel shows the differences when only the males were considered. IFG = inferior frontal gyrus; MTG = middle temporal gyrus; STG = superior temporal gyrus; VWFA = visual word form area.

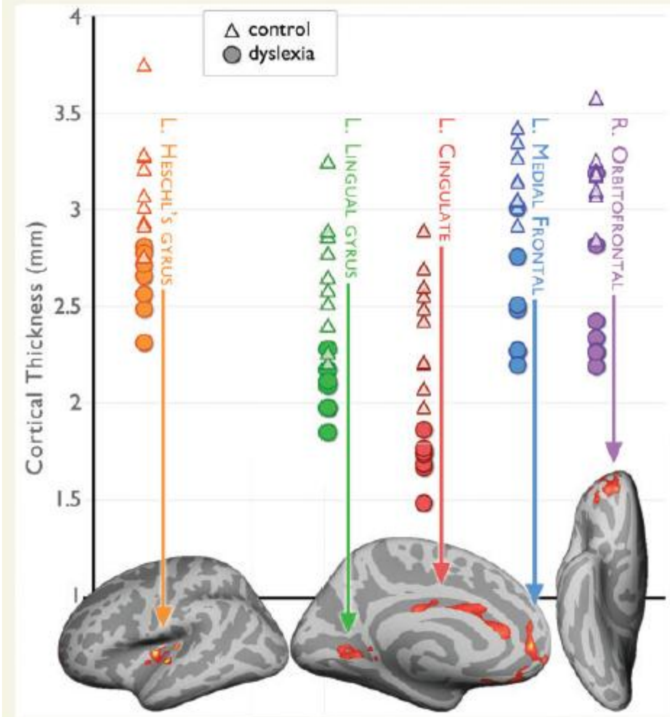


Figure 1 Early signs of dyslexia. Pre-reading differences in cortical thickness between children who later went on to develop dyslexia (Dys) and those who did not (Ctrl). Images: regions in which Dys < Ctrl before the onset of reading. Raw cortical thickness values are plotted for each of the regions.

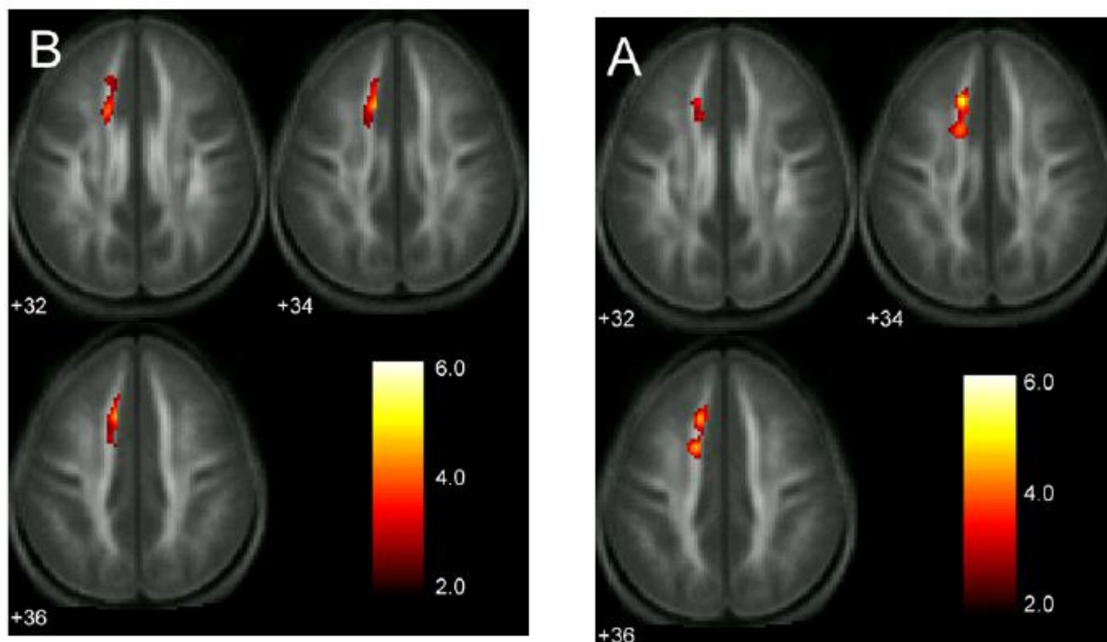
Developmental dyslexia is a common reading disorder that negatively impacts an individual's ability to achieve literacy. Although the brain network involved in reading and its dysfunction in dyslexia has been well studied, it is unknown whether dyslexia is caused by structural abnormalities in the reading network itself or in the lower-level networks that provide input to the reading network. In this study, we acquired structural magnetic resonance imaging scans longitudinally from 27 Norwegian children from before formal literacy training began until after dyslexia was diagnosed. Thus, we were able to determine that the primary neuroanatomical abnormalities that precede dyslexia are not in the reading network itself, but rather in lower-level areas responsible for auditory and visual processing and core executive functions. Abnormalities in the reading network itself were only observed at age 11, after children had learned how to read. The findings suggest that abnormalities in the reading network are the consequence of having different reading experiences, rather than dyslexia *per se*, whereas the neuroanatomical precursors are predominantly in primary sensory cortices.

Neuron
Clinical Study

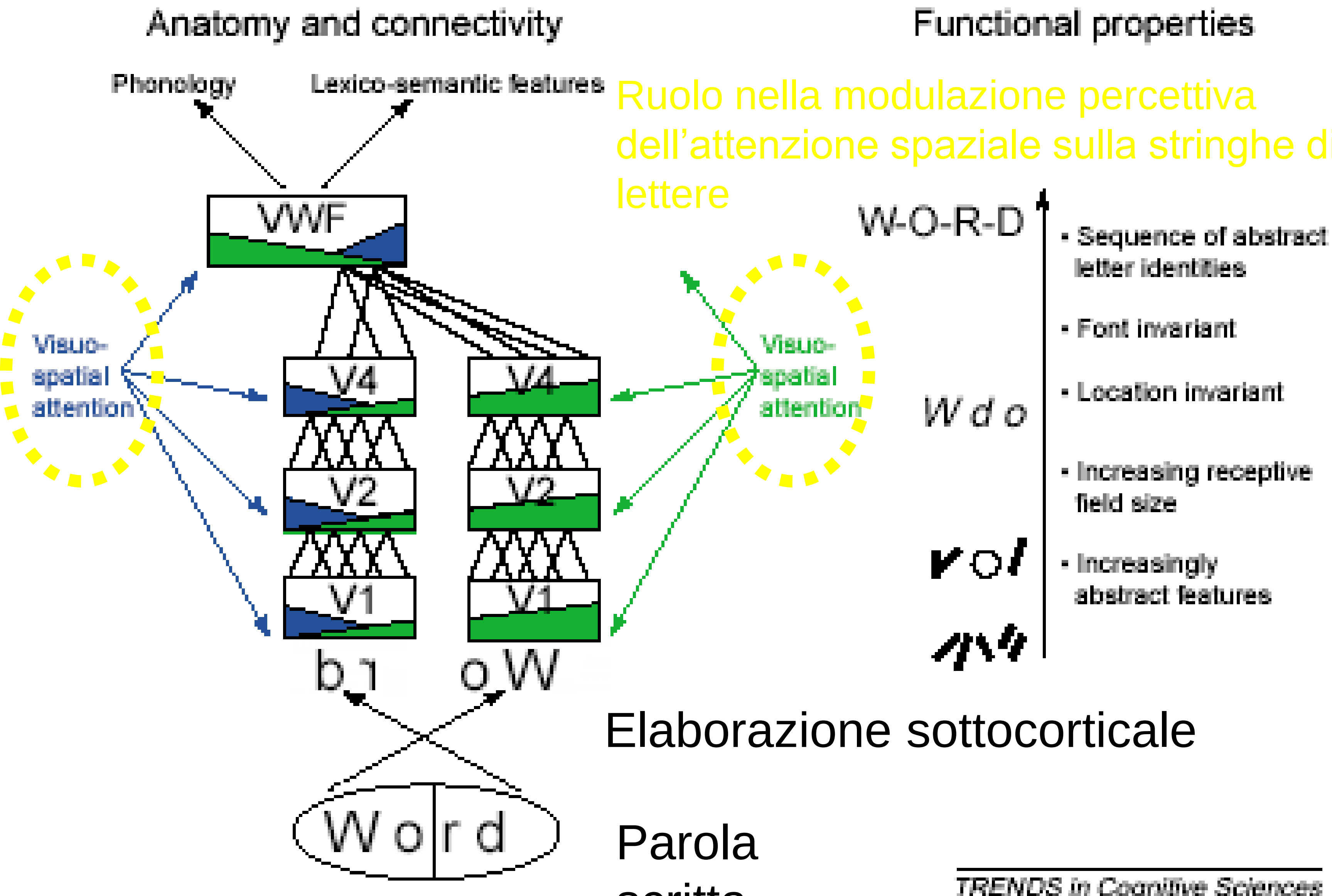
Altering Cortical Connectivity: Remediation-Induced Changes in the White Matter of Poor Readers

Timothy A. Keller[1,*] and Marcel Adam Just[1]
[1]Center for Cognitive Brain Imaging, Department of Psychology, Carnegie Mellon University, Pittsburgh, PA 15213, USA
*Correspondence: tk37@andrew.cmu.edu
DOI 10.1016/j.neuron.2009.10.018

Neuroimaging studies using diffusion tensor imaging (DTI) have revealed regions of cerebral white matter with decreased microstructural organization (lower-fractional anisotropy or FA) among poor readers. We examined whether 100 hr of intensive remedial instruction affected the white matter of 8- to 10-year-old poor readers. Prior to instruction, poor readers had significantly lower FA than good readers in a region of the left anterior centrum semiovale. The instruction resulted in a change in white matter (significantly increased FA), and in the very same region. The FA increase was correlated with a decrease in radial diffusivity (but not with a change in axial diffusivity), suggesting that myelination had increased. Furthermore, the FA increase was correlated with improvement in phonological decoding ability, clarifying the cognitive locus of the effect. The results demonstrate the capability of a behavioral intervention to bring about a positive change in cortico-cortical white matter tracts.



Area della Forma Visiva delle Parole



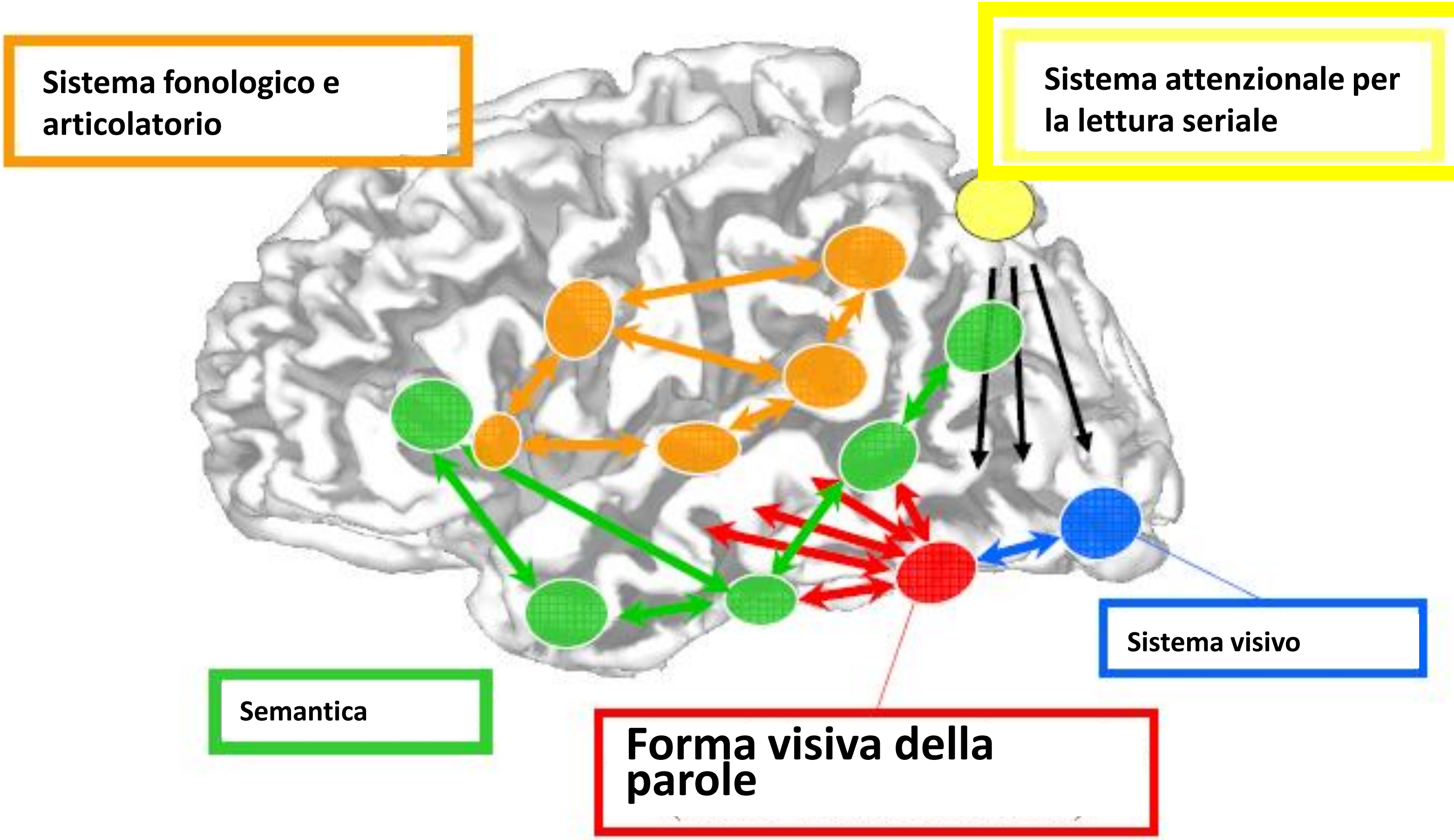
Ruolo nella modulazione percettiva dell'attenzione spaziale sulla stringhe di lettere

Elaborazione sottocorticale

Parola scritta

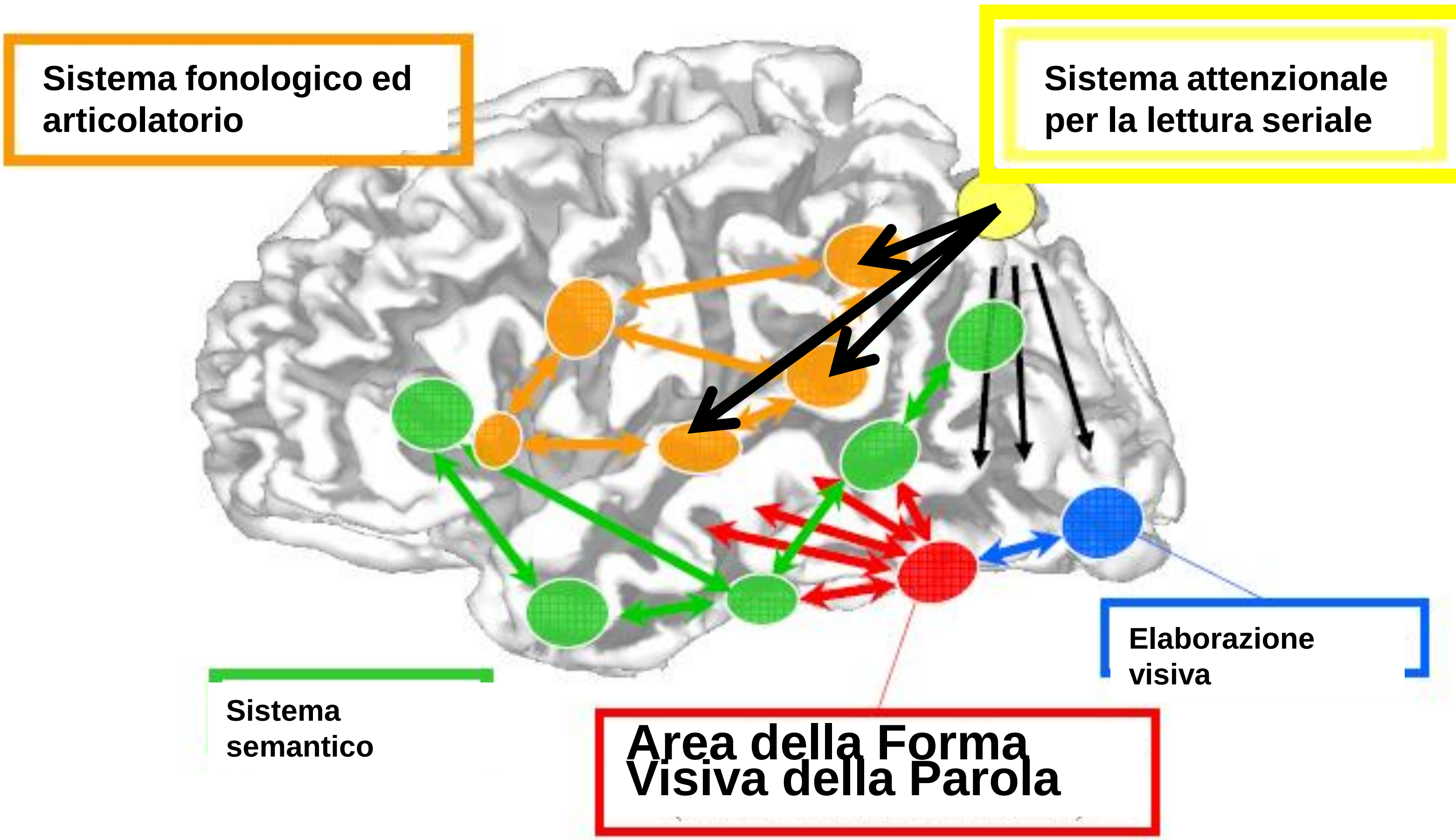
Anatomia Funzionale della Lettura

Stanislas Dehaene (da "I neuroni della lettura"; Raffaello Cortina Editore, 2009)



Anatomia Funzionale della Lettura

Da “I neuroni della lettura” di Stanislas Dehaene

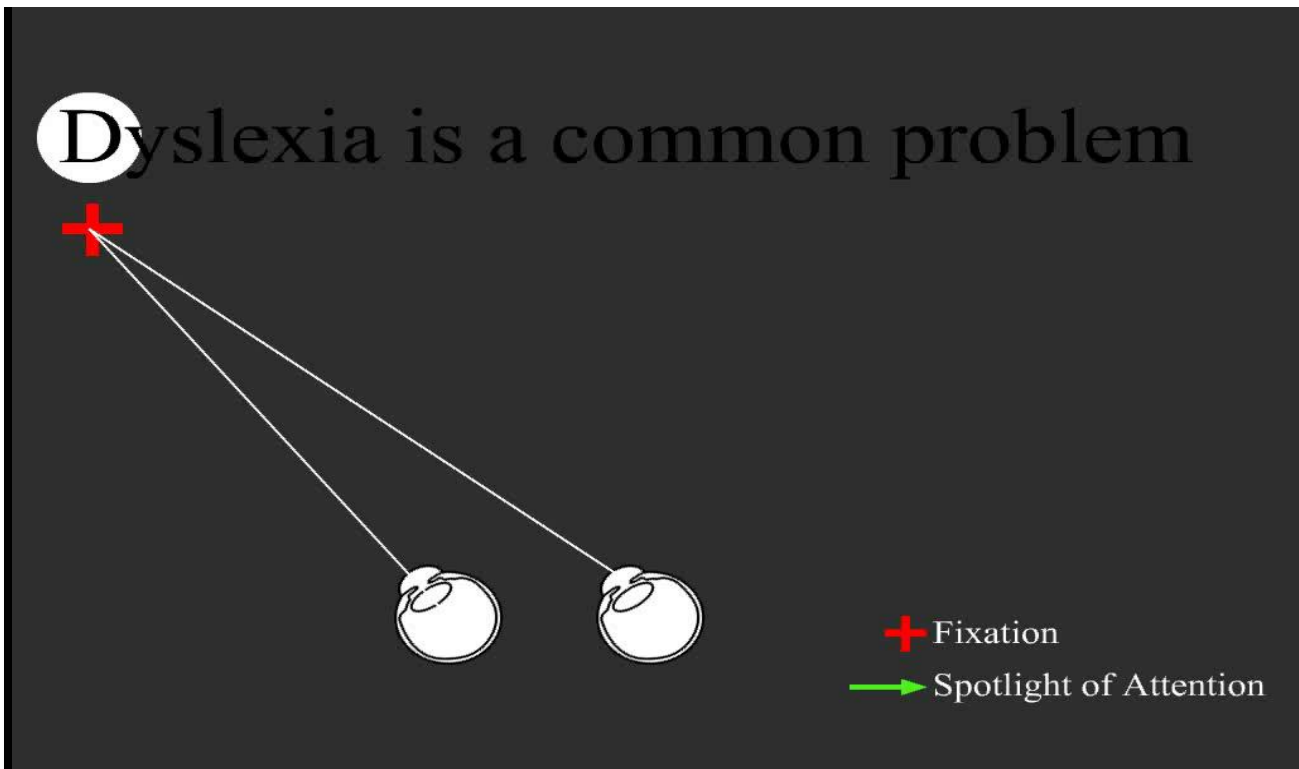


Opinion

Dyslexia: a deficit in visuo-spatial attention, not in phonological processing

Trichur R. Vidyasagar[1] and Kristen Pammer[2]

[1] Department of Optometry & Vision Sciences, University of Melbourne, Parkville, Vic 3010, Australia
[2] Department of Psychology, The Australian National University, Canberra A.C.T., Australia



Che cos'è l'**Attenzione**, i diversi tipi di attenzione, aree corticali modulate e come si misura

L’attenzione

- Si definisce *attenzione* l’insieme dei processi che costituiscono la funzione cognitiva di <u>selezione</u> (“filtro”) dell’informazione.

La memoria

- Si definisce *memoria* l’insieme dei processi che costituiscono la funzione cognitiva di <u>mantenimento</u> (i.e., immagazzinamento, conservazione e recupero) dell’informazione che è alla base dell’<u>apprendimento</u>.

I diversi tipi di attenzione

- **Spaziale ("dove"):** capacità di selezionare un OGGETTO che occupa una specifica posizione nello spazio;
esempio, *stai attenta all'auto* ***a destra****!*

- **Selettiva ("che cosa"):** capacità di selezionare un OGGETTO con una specifica caratteristica;
esempio, *stai attenta all'auto* ***rossa****!*

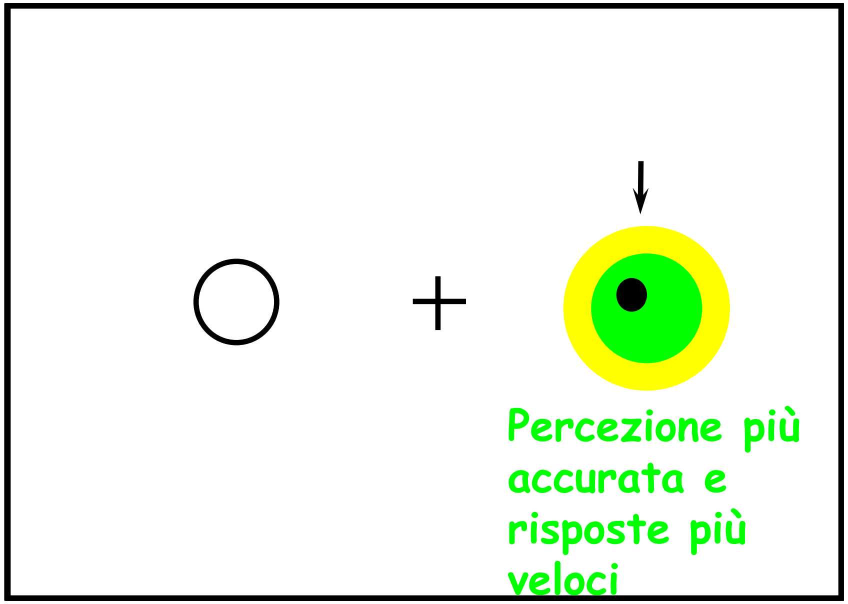
- **Temporale ("quando"):** capacità di selezionare un OGGETTO che compare in un preciso momento nel tempo;
esempio, *stai attenta all'auto* ***che star per arrivare****!*

Poi c'è l'attenzione Sostenuta ("quanto tempo") ma questa è un'altra storia (???ADHD???)

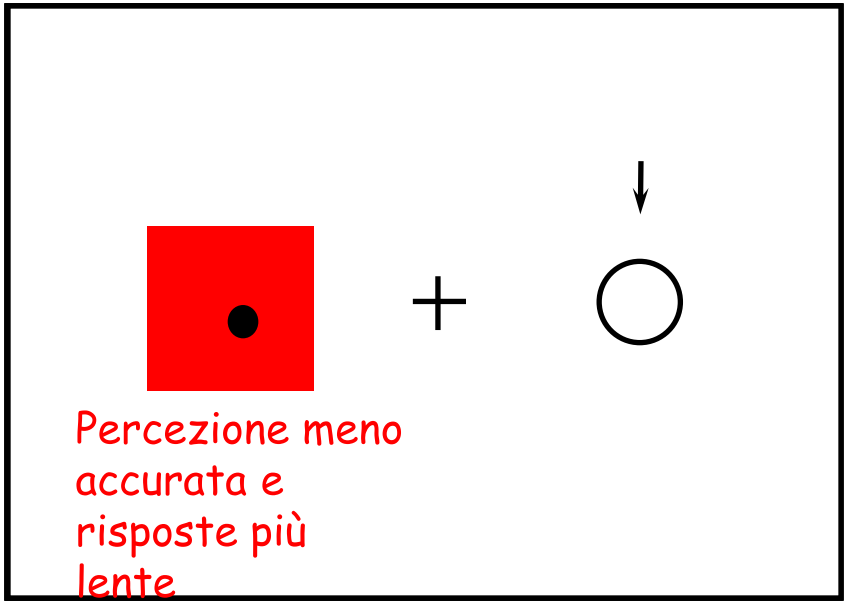

Facilitazione del segnale
Inibizione del rumore

Effetto dell'Indizio Spaziale:

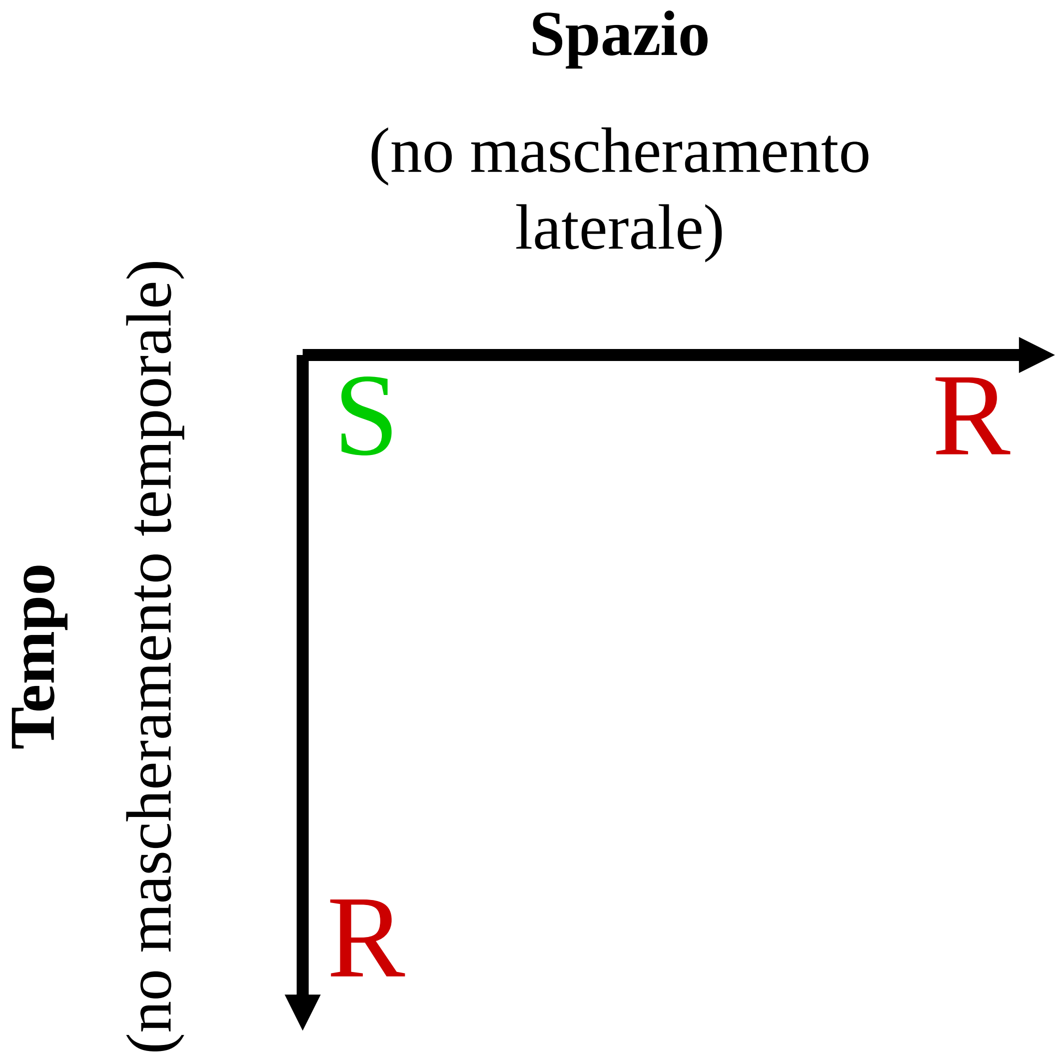
Facilitazione



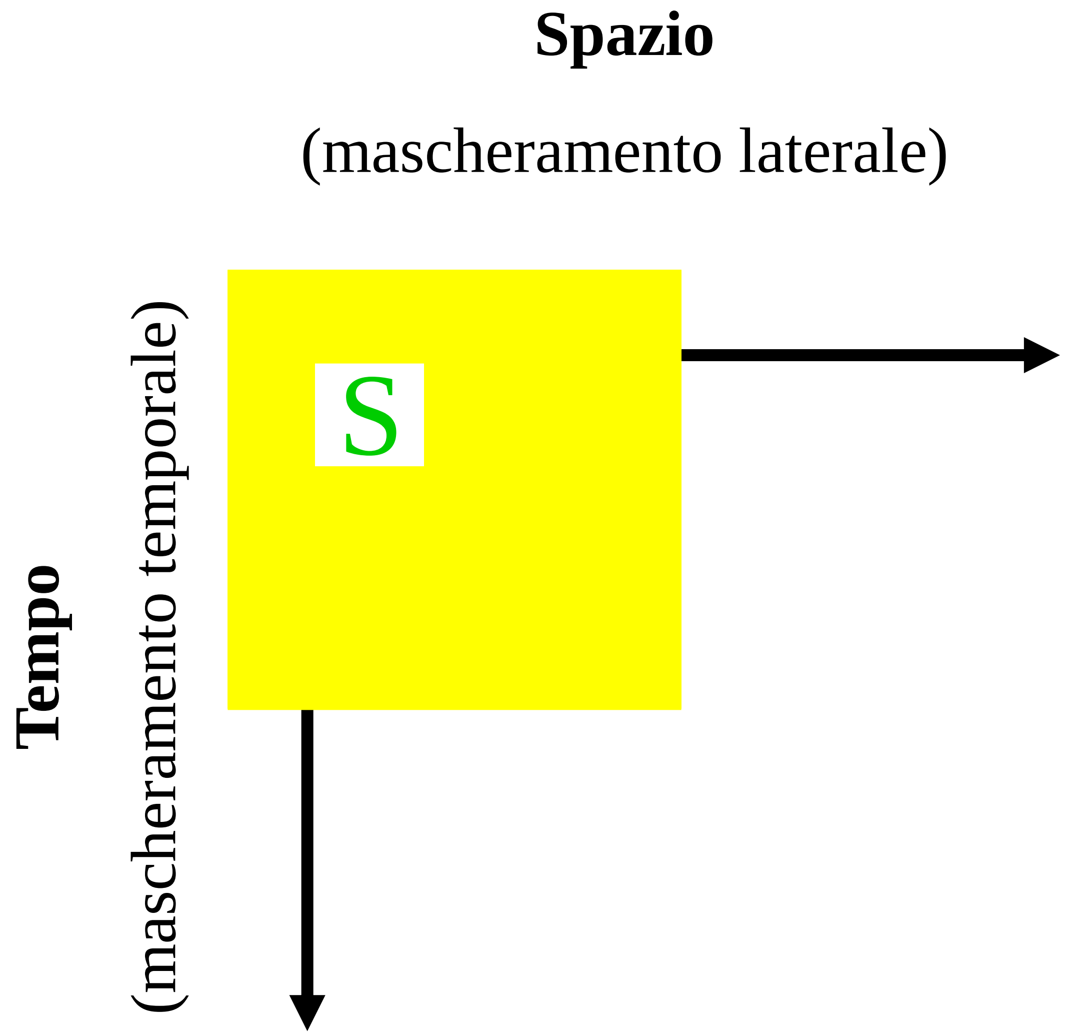
Inibizione



Meccanismi di esclusione del rumore e decorso temporale dell’ancoraggio dell’attenzione



Meccanismi di esclusione del rumore e decorso temporale dell'ancoraggio nell'AS spaziale



L’attenzione come meccanismo che “aumenta” l’elaborazione del segnale

Orientare l’attenzione produce:

- **diminuzione dei tempi** per il “**rilevamento**” (TR semplici) e per il **riconoscimento** (TR di scelta) dello stimolo bersaglio;
- **migliora le soglie percettive** di identificazione del bersaglio, **aumentando la risoluzione spaziale**;
- **riduce l’“affollamento”** (detto anche crowding, interazioni con gli stimoli irrilevanti laterali);
- **riduce il “mascheramento temporale”** (detto backward masking, interazione con gli stimoli che seguono temporalmente lo stimolo bersaglio).

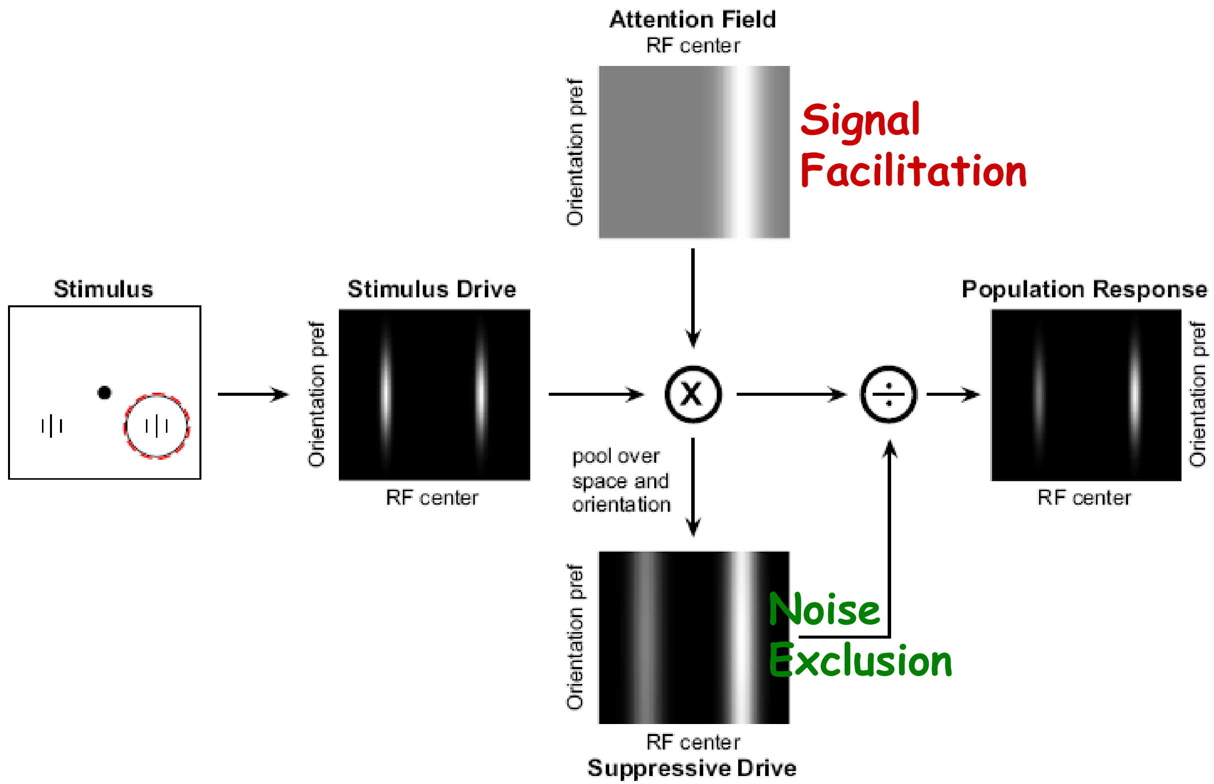
L’orientamento dell’attenzione agisce sia *aumentando il segnale del bersaglio* che *riducendo il rumore del distrattore*.

Cell PRESS

Neuron
Review

The Normalization Model of Attention

John H. Reynolds[1,*] and David J. Heeger[2]
[1]Salk Institute for Biological Studies, La Jolla, CA 92037-1099, USA
[2]Department of Psychology and Center for Neural Science, New York University, New York, NY 10003, USA
*Correspondence: reynolds@salk.edu
DOI 10.1016/j.neuron.2009.01.002



Vision Research xxx (2013) xxx–xxx

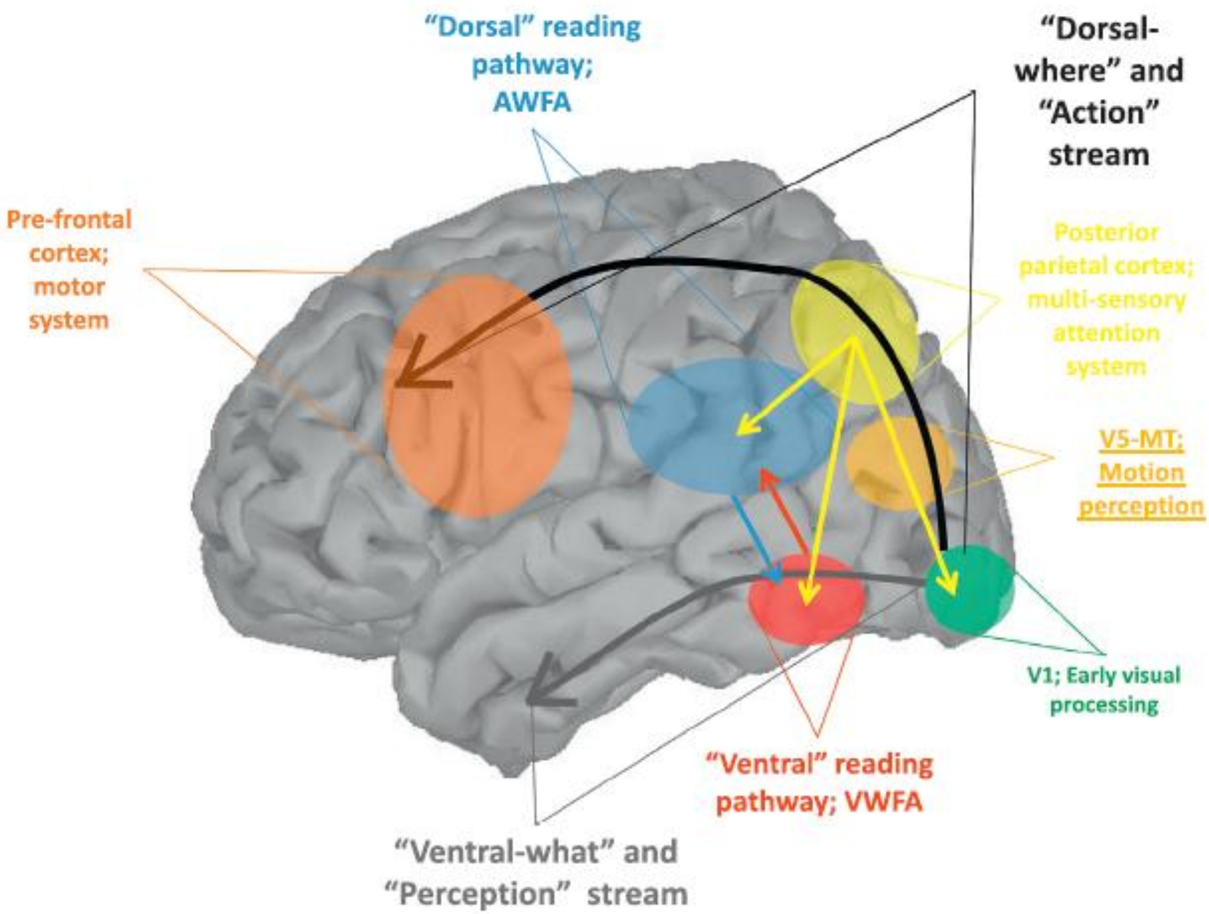
Contents lists available at ScienceDirect

Vision Research

journal homepage: www.elsevier.com/locate/visres

Perceptual learning as a possible new approach for remediation and prevention of developmental dyslexia

Simone Gori *, Andrea Facoetti *



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Object-based auditory and visual attention

Barbara G. Shinn-Cunningham

Hearing Research Center, Departments of Cognitive and Neural Systems and Biomedical Engineering, Boston University, Boston, MA 02215, USA
Speech and Hearing Bioscience and Technology Program, Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA 02139, USA

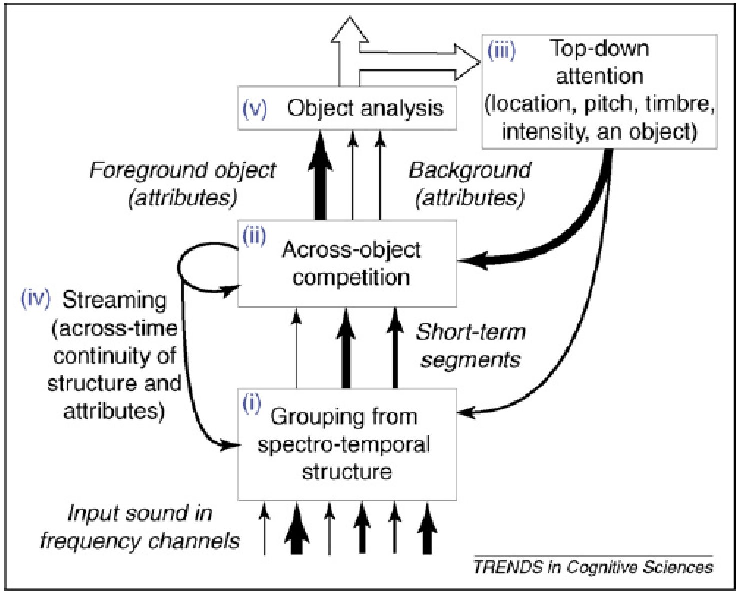

Figure 1. Conceptual model relating auditory object formation and its interactions with bottom-up salience and top-down attention, where arrow width denotes the strength of a signal or a connection. (**i**) Short-term segments initially form based on local spectro-temporal grouping cues [12,13]. (**ii**) Competition first arises between short-term segments. Some segments might be inherently more salient than others (e.g. because of their intensity or distinctiveness) [41,44], which biases the intersegment competition. (**iii**) Top-down attention and (**iv**) streaming (across-time linkage based on bottom-up object continuity) help modulate the competition, biasing it to favor objects with desirable features and to maintain attention on the object already in the foreground [23,45]. (**v**) As a result, one object is emphasized at the expense of others in the scene [46].

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Temporal coherence and attention in auditory scene analysis

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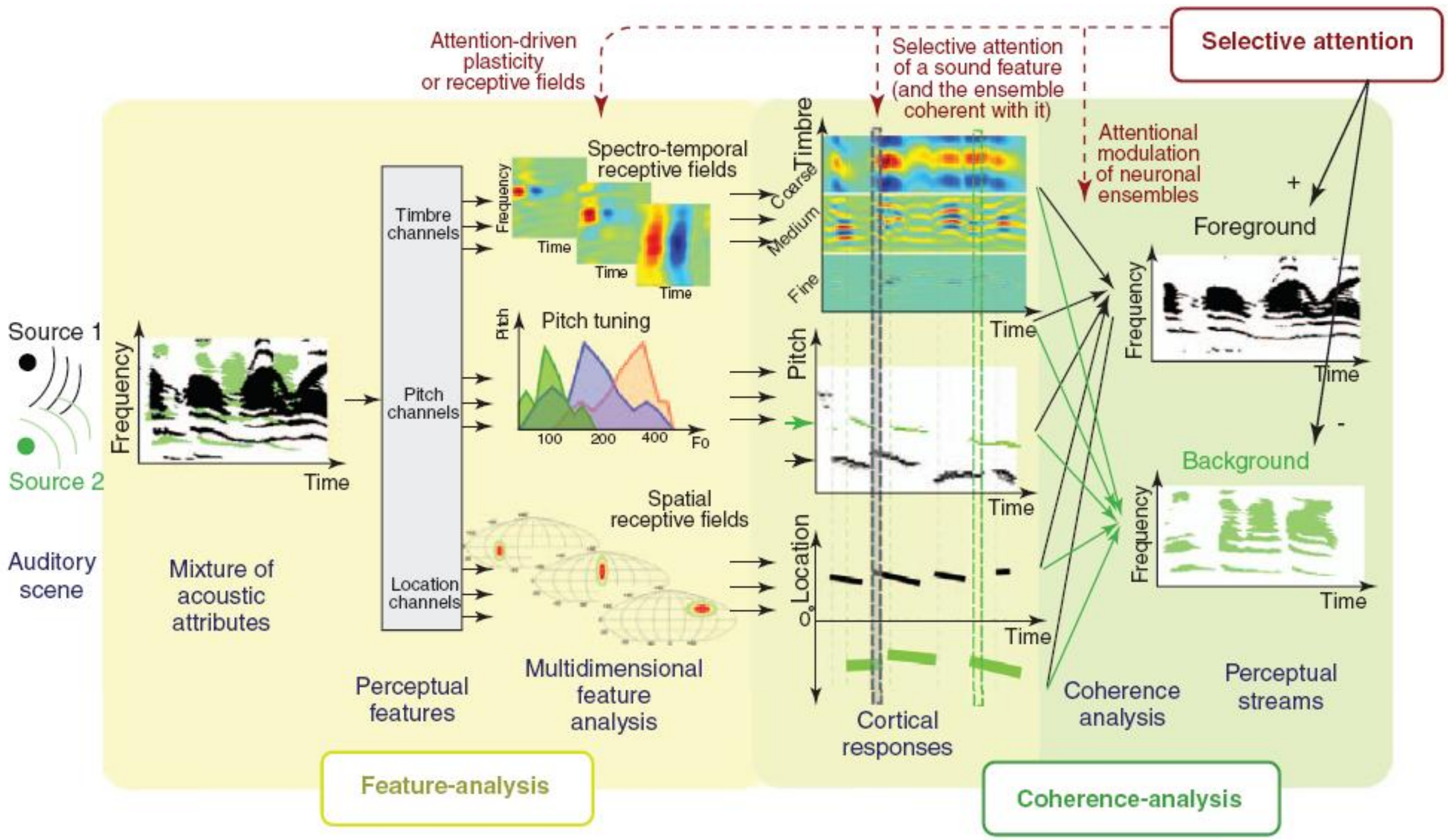

TRENDS in Neurosciences

La Percezione e l’Attenzione Uditiva nella Dislessia Evolutiva (DE) e nel Disturbo Specifico del Linguaggio (DSL)

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PERSPECTIVES

OPINION

Sensory theories of developmental dyslexia: three challenges for research

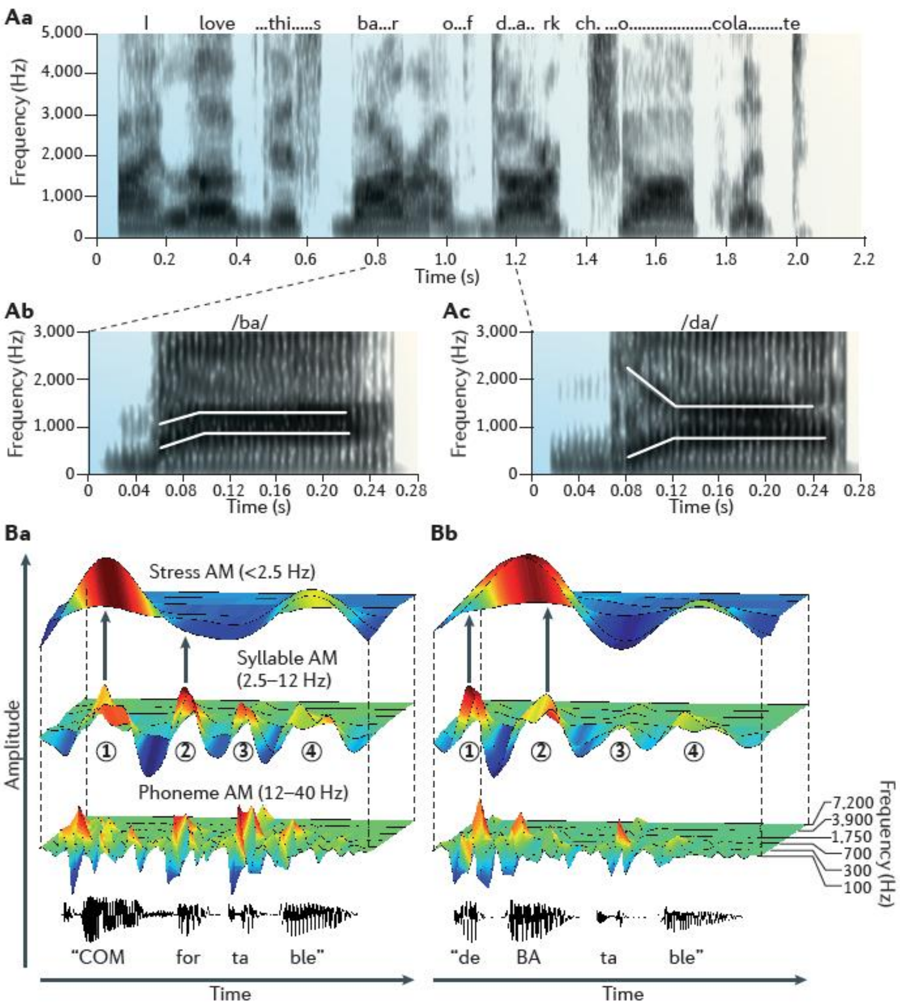
Usha Goswami

proposal of each theory have been presented, further studies testing these theories that did not use these research designs are omitted from this article (with the exception of chronological age (CA)-matched studies showing that dyslexic performance is unimpaired). Second, I consider the evidence for systematic and hypothesis-driven effects of the proposed sensory deficits on related cognitive skills. Last, when available, I discuss data from longitudinal and infant studies to assess evidence for the early fingerprints of sensory dysfunc-

Phonological level	Oscillatory frequency (EEG band)	Example(s)	Age at which reflective awareness develops
Intonational phrase	~1 Hz and lower	Who's a pretty boy then?	Not yet ascertained
Stressed syllable	~2 Hz (delta)	PE-ter PI-per PICKED a PECK of PICK-led PEPP-ers	Not yet ascertained
Syllable	~5 Hz (θ)	• an-i-mal • wig-wam	2–3 years
Onset-rime	~cued by rising θ-slope	• c-at • str-eam • cl-amp	3–4 years
Phoneme	~35 Hz (γ)	c-l-a-m-p	With alphabetic tuition

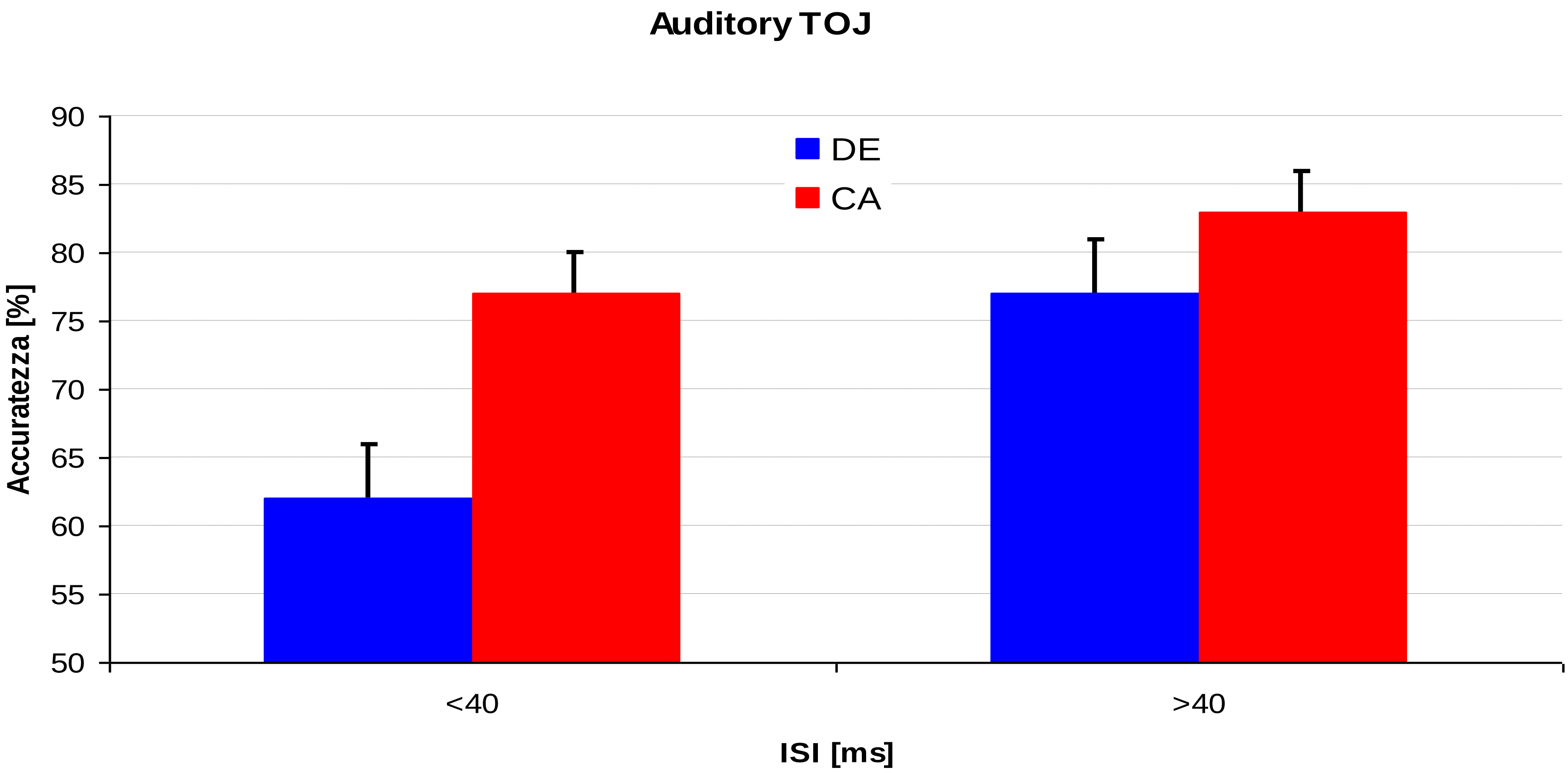
Impaired auditory processing

Because speech is an acoustic signal, auditory dysfunction offers a parsimonious developmental cause of the phonological deficits that characterize dyslexia. However, the speech signal is complex, and our understanding of the neural processing of speech is incomplete. Nevertheless,



TOJ Uditiva e discriminazione fonemica: Tallal (1980, 2004)

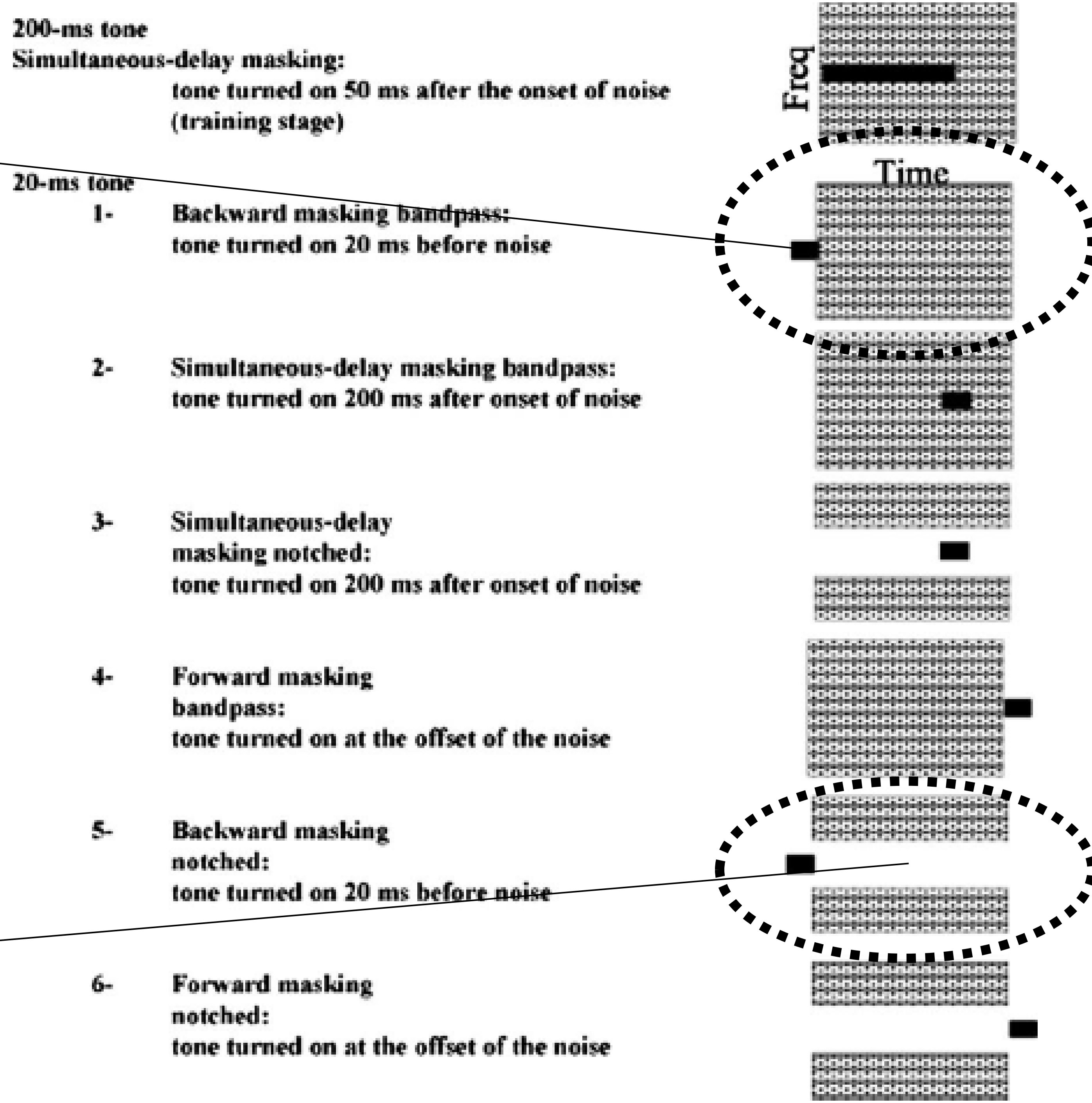
Risultati in un compito di giudizio di ordine temporale di suoni non-linguistici (quale dei due suoni presentati in rapida successione hai sentito x primo?) nei bambini dislessici (DE) e di controllo (CA) che evidenziano un disturbo selettivo quando l'intervallo è breve (<40ms=risoluzione temporale cruciale x discriminare fonemi simili: "pa-ba")

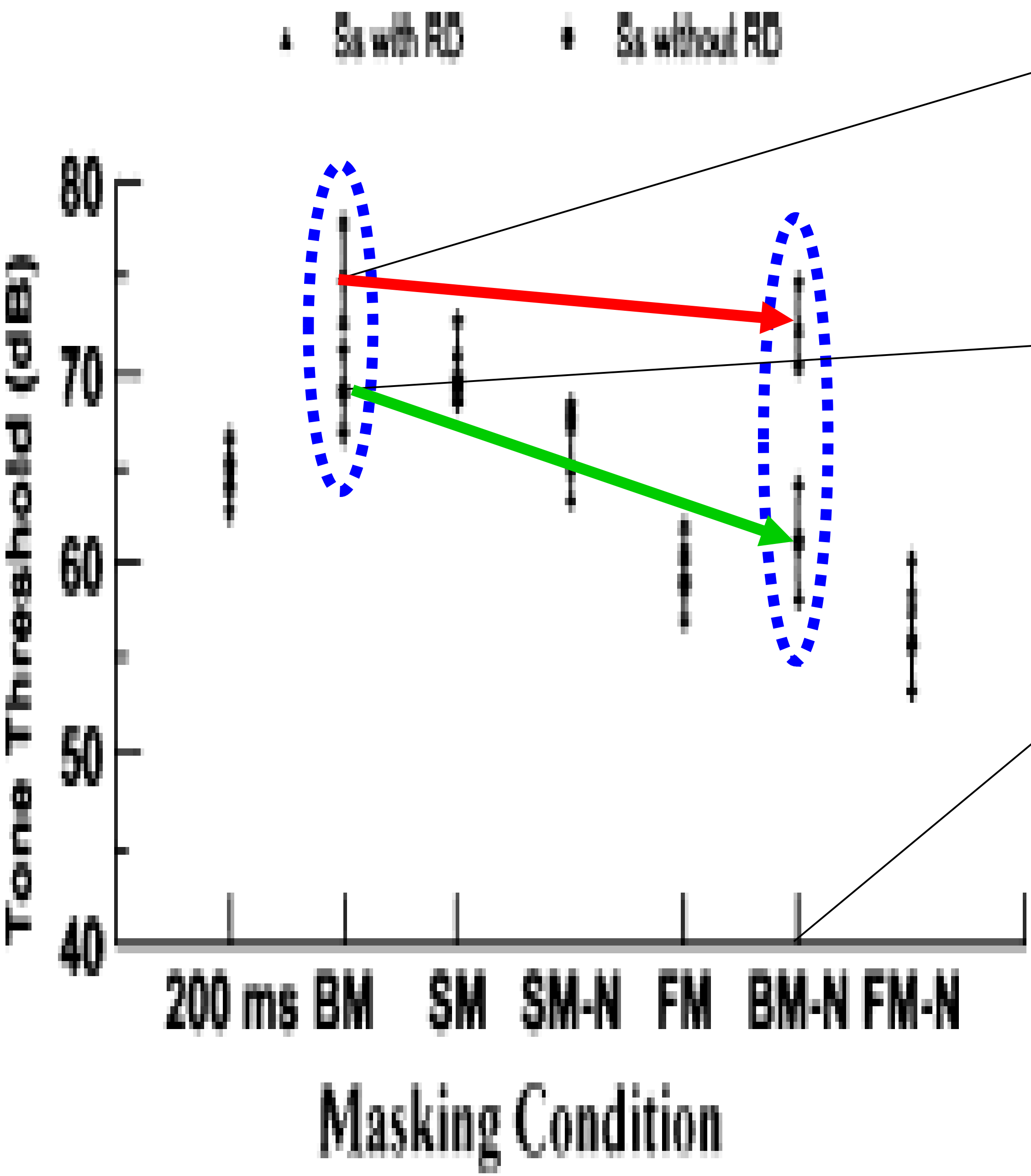


Qui la maschera contiene
le frequenze del bersaglio

Le 2 condizioni di mascheramento temporale uditivo all’indietro in cui i RD (DE) sono significativamente disturbati rispetto controlli.

Qui la maschera invece
non contiene le frequenze
del bersaglio





I RD=DE devono aumentare maggiormente l'intensità (volume, rispetto i controlli) del bersaglio x sentirlo

E diversamente dai controlli, i RD non usufruiscono di un vantaggio (riduzione del volume del bersaglio) quando la maschera non contiene la frequenza del bersaglio

Il disturbo temporale uditivo nei DE nell’estrazione del segnale in presenza di rumore percettivo! Ma tale abilità (orientale velocemente l’attenzione sul suono bersaglio senza farsi disturbare del rumore=maschera successiva) predice le abilità di lettura e fonologiche???

SI!!!

Soprattutto nella condizione in cui la maschera non contiene la frequenza bersaglio.

Precisamente, le abilità dei bambini in questa condizione predice: -3 e 6 lettura non-parole; -4 denominazione rapida e -9 elisione fonemica (consapevolezza fonologica)

Table 3

Correlations between reading disability status, backward masking thresholds, and phonemic measures

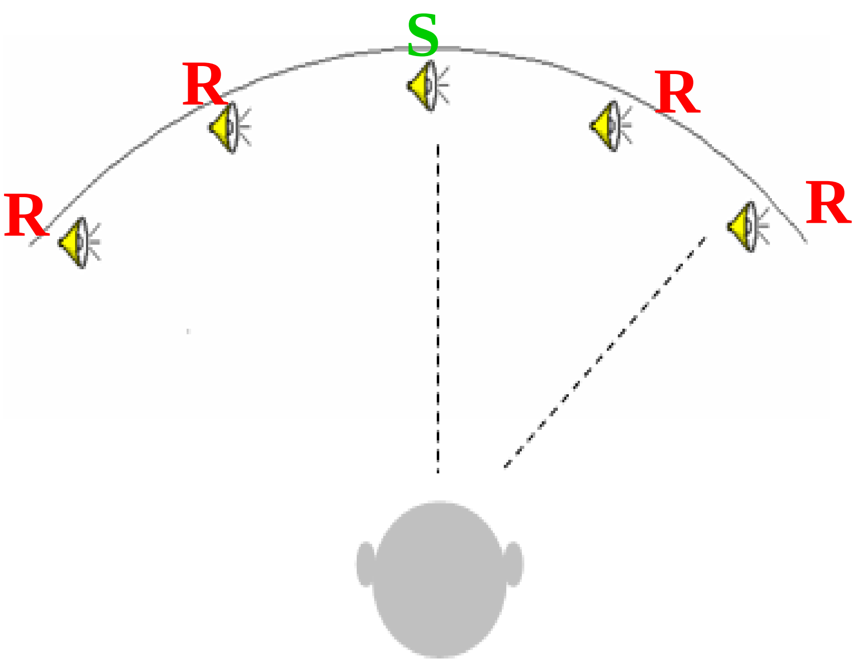
Variable	3	4	5	6	7	8	9
1. Backward masking	−.18	−.14	−.21	−.23	—[a]	−.16	−.25
2. Backward masking—notched-noise	−.42[b]	−.38[b]	−.39[b]	−.48[b]	−.27	−.24	−.53[b]
3. WJ-R Word Attack							
4. Rapid Automatized Naming—Letters							
5. Word Reading Efficiency							
6. Nonword Reading Efficiency							
7. Homophone/Pseudohomophone							
8. Letter String Choice							
9. Elision							

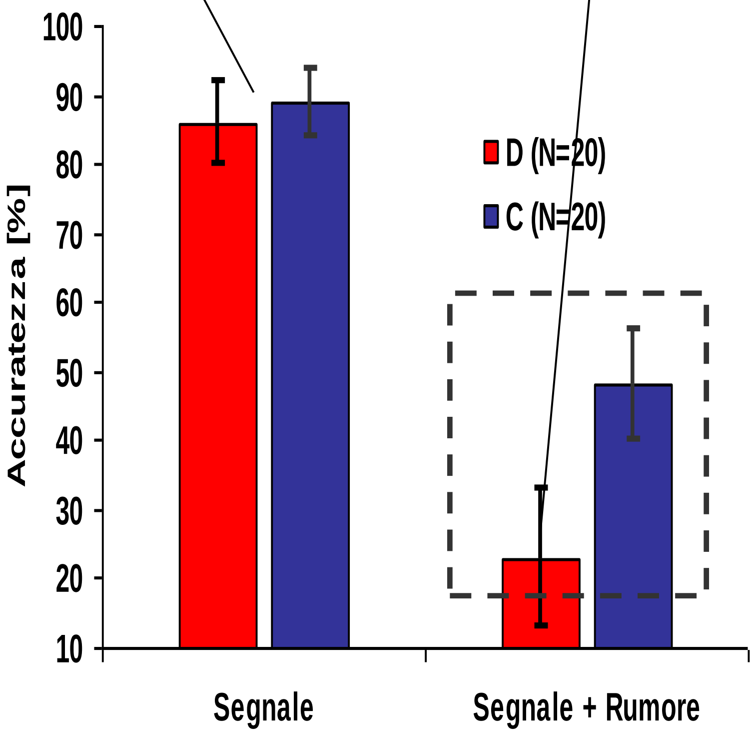
[a] Correlations less than .10 absolute are indicated with a dash.

[b] $p < .01$.

Test di Mascheramento Spaziale (affollamento) Uditivo e abilità di lettura: i DE sono identici ai Controlli nel discriminare un suono linguistico quando viene presentato da solo (segnale) ma sono disturbati vs. C quando questo suono viene presentato contemporaneamente a rumore laterale (suoni linguistici)

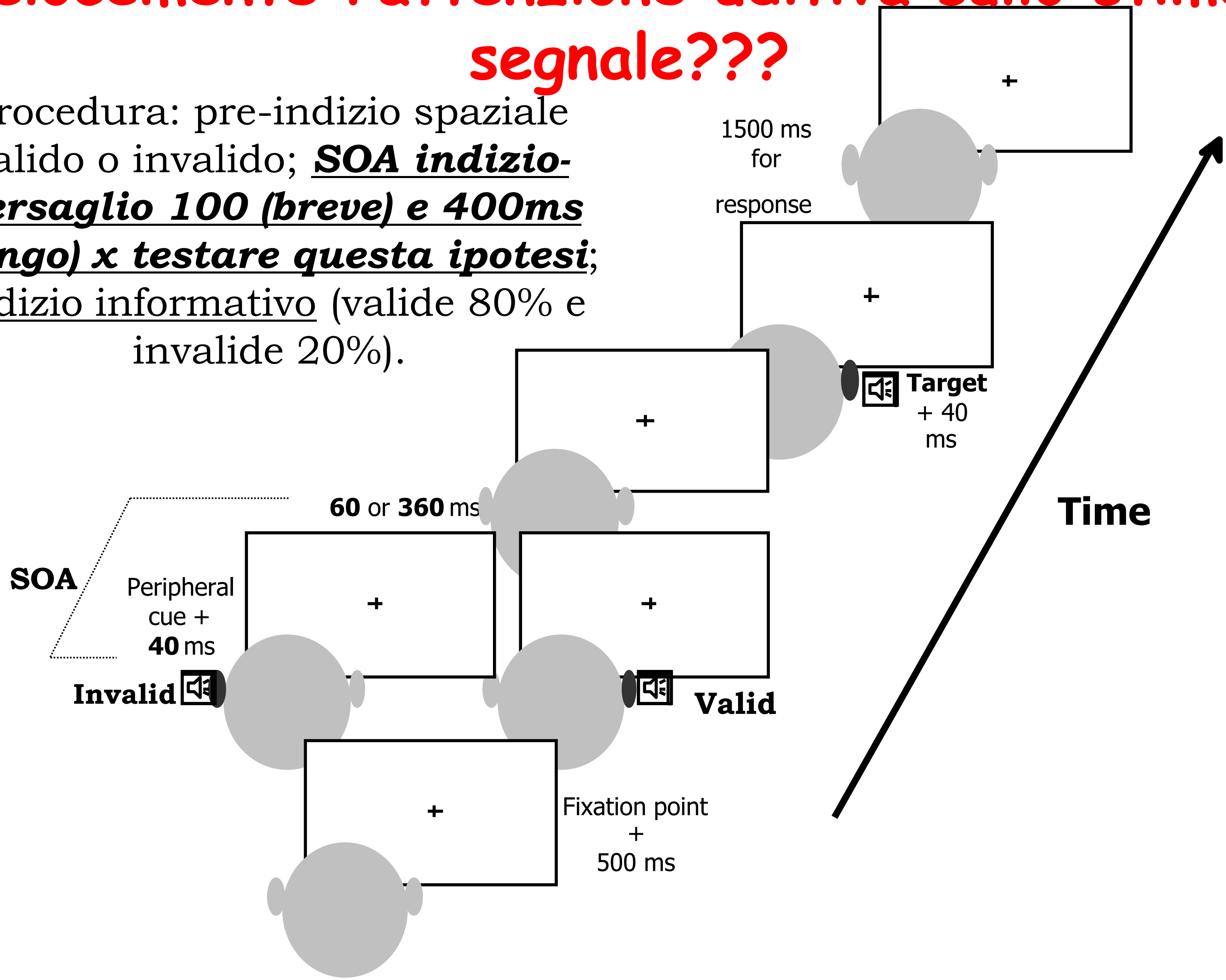
suggerendo che i DE hanno una generica difficoltà a filtrare i segnali in presenza di rumore (laterale e/o temporale)





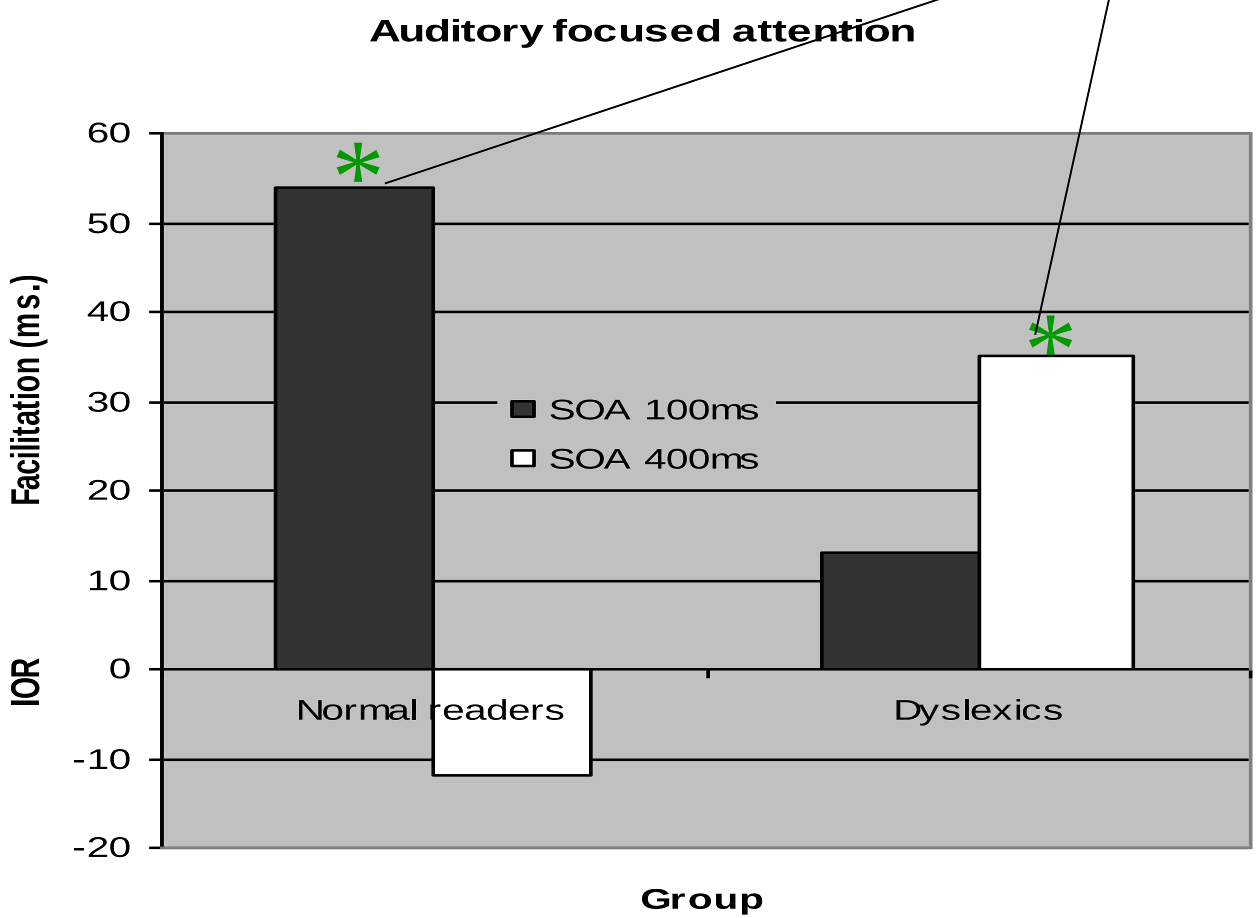
Questo generico disturbo percettivo nel filtrare il rumore è dovuto ad un deficit nell'orientare velocemente l'attenzione uditiva sullo stimolo segnale???

Procedura: pre-indizio spaziale valido o invalido; ***SOA indizio-bersaglio 100 (breve) e 400ms (lungo) x testare questa ipotesi***; Indizio informativo (valide 80% e invalide 20%).



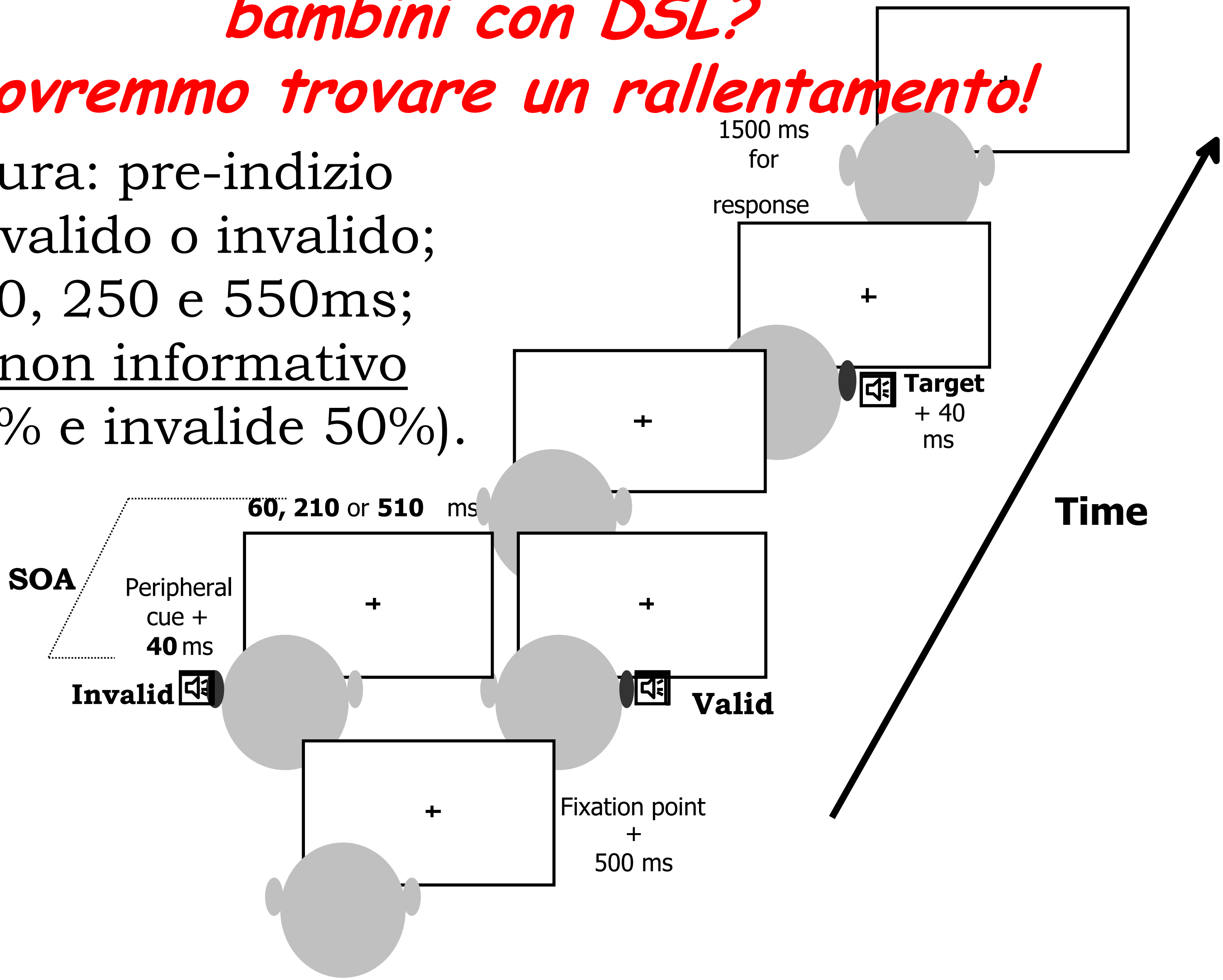
Soggetti: 22 bambini con DE e 12 bambini con normali abilità di lettura.

L'orientamento dell'attenzione uditiva è rallentata; *i DE manifestano facilitazione (valide + rapide delle invalide = avvenuto orientamento) ad un intervallo temporale indizio-bersaglio (SOA) maggiore (400ms) rispetto ai normali lettori (100ms)*

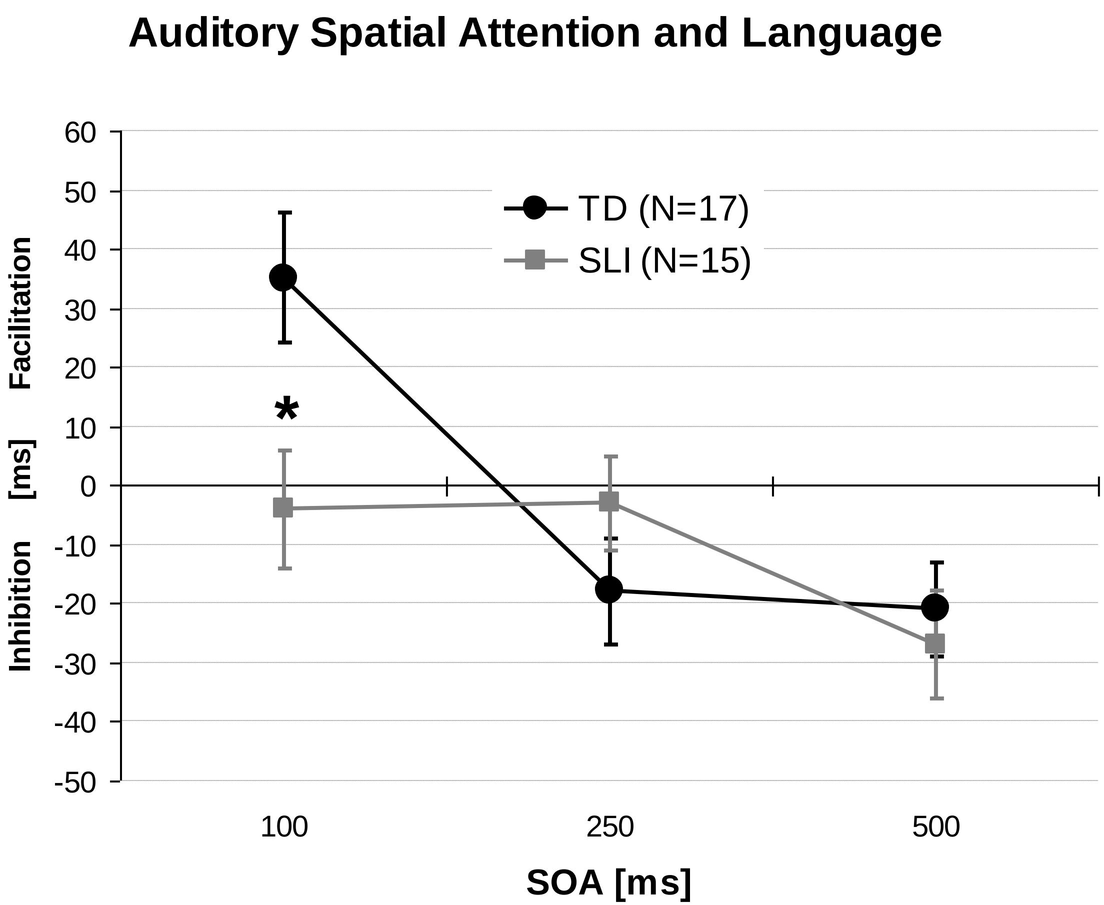


E se misuriamo l'attenzione uditiva nei bambini con DSL?
Dovremmo trovare un rallentamento!

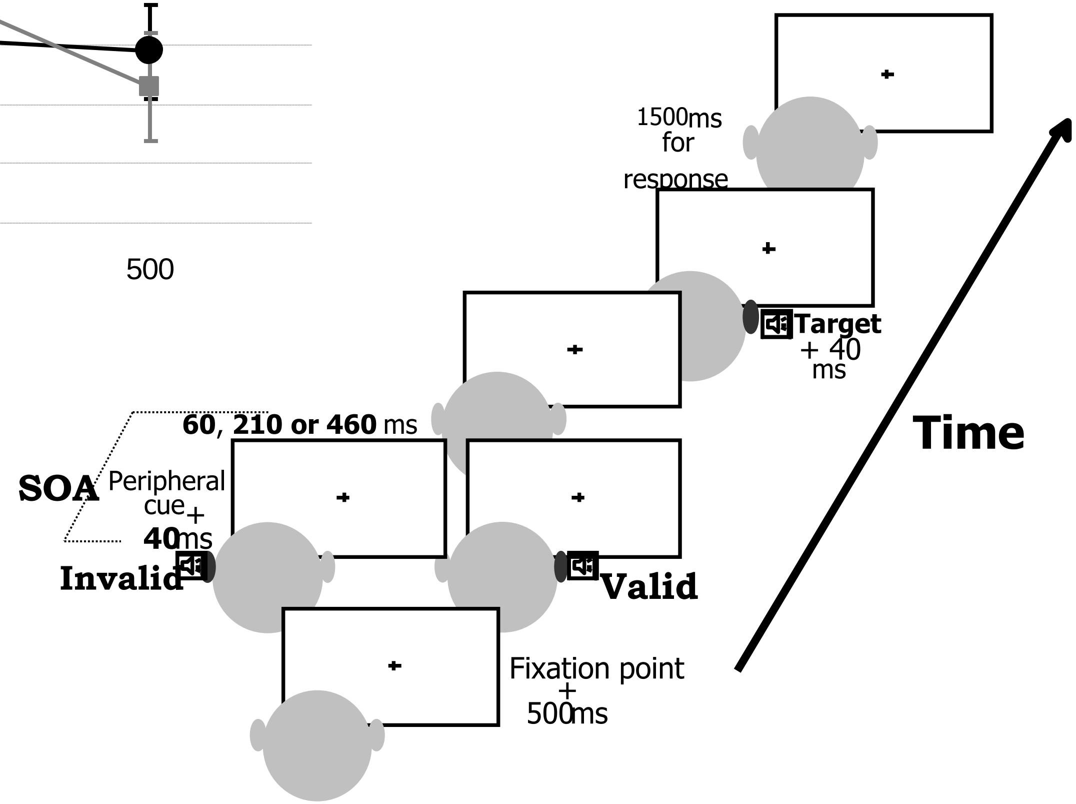
Procedura: pre-indizio spaziale valido o invalido; SOA 100, 250 e 550ms; <u>Indizio non informativo</u> (valide 50% e invalide 50%).



Un disturbo dell'attenzione uditiva nei DSL???

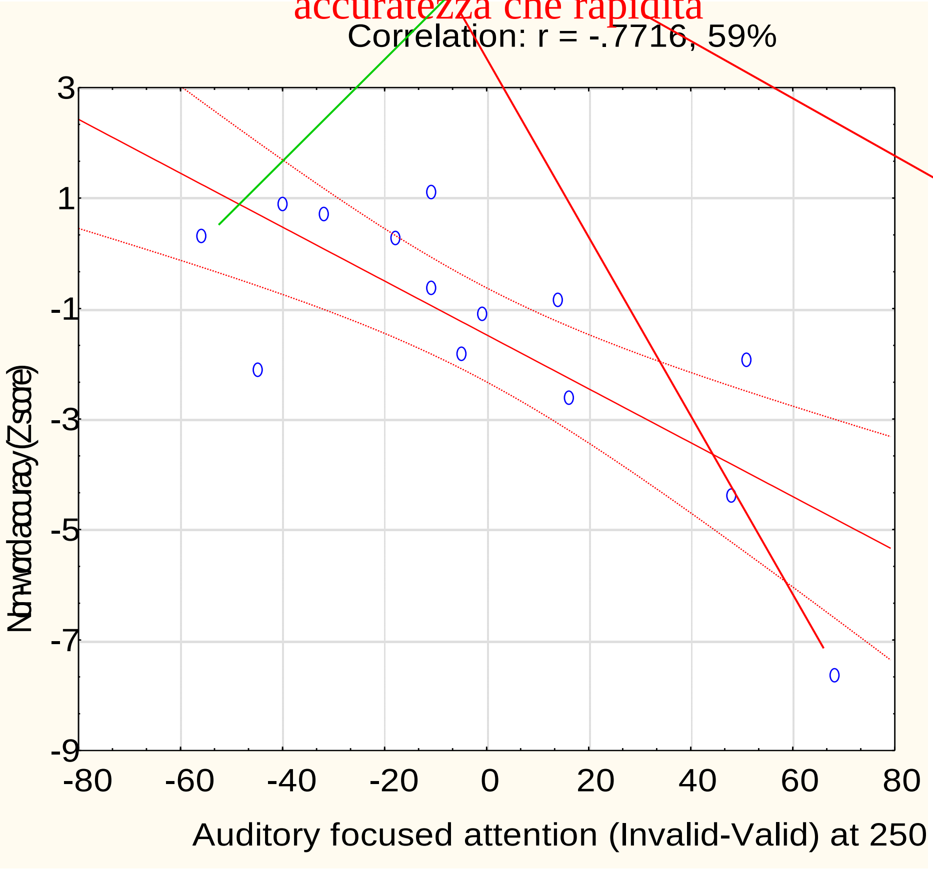


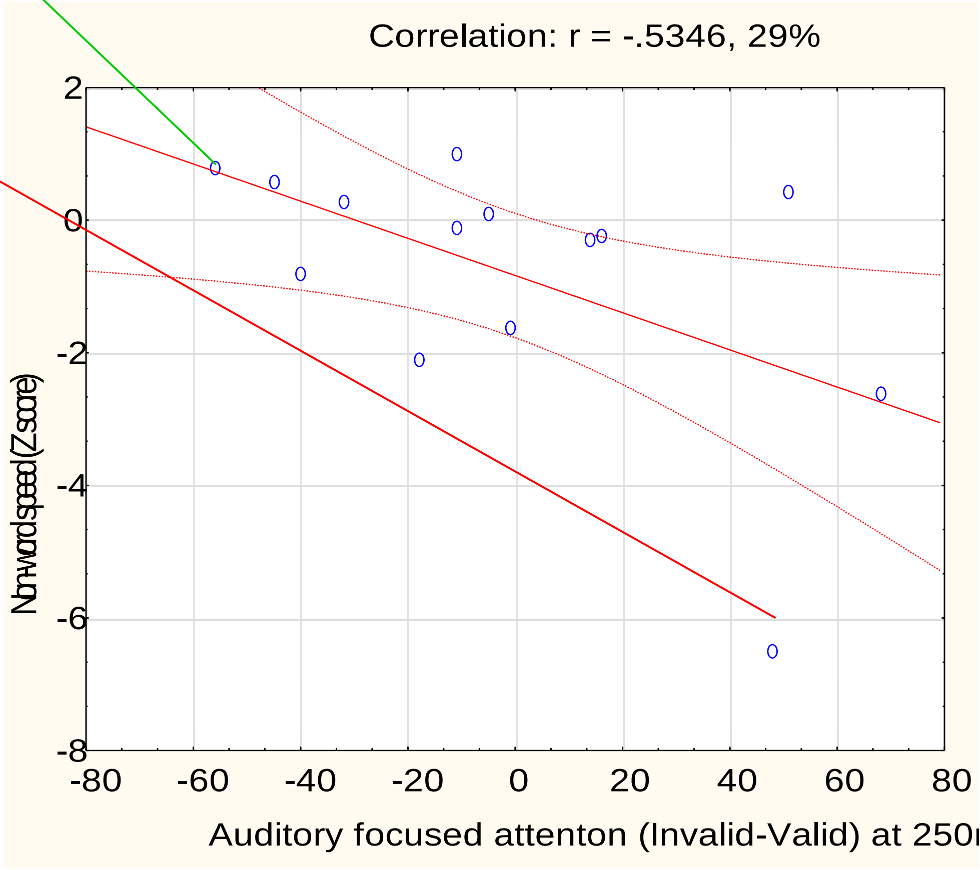
(Exp. 6 of my Ph.D thesis)



L’Attenzione Uditiva e la Decodifica Fonologica (lettura di nonparole

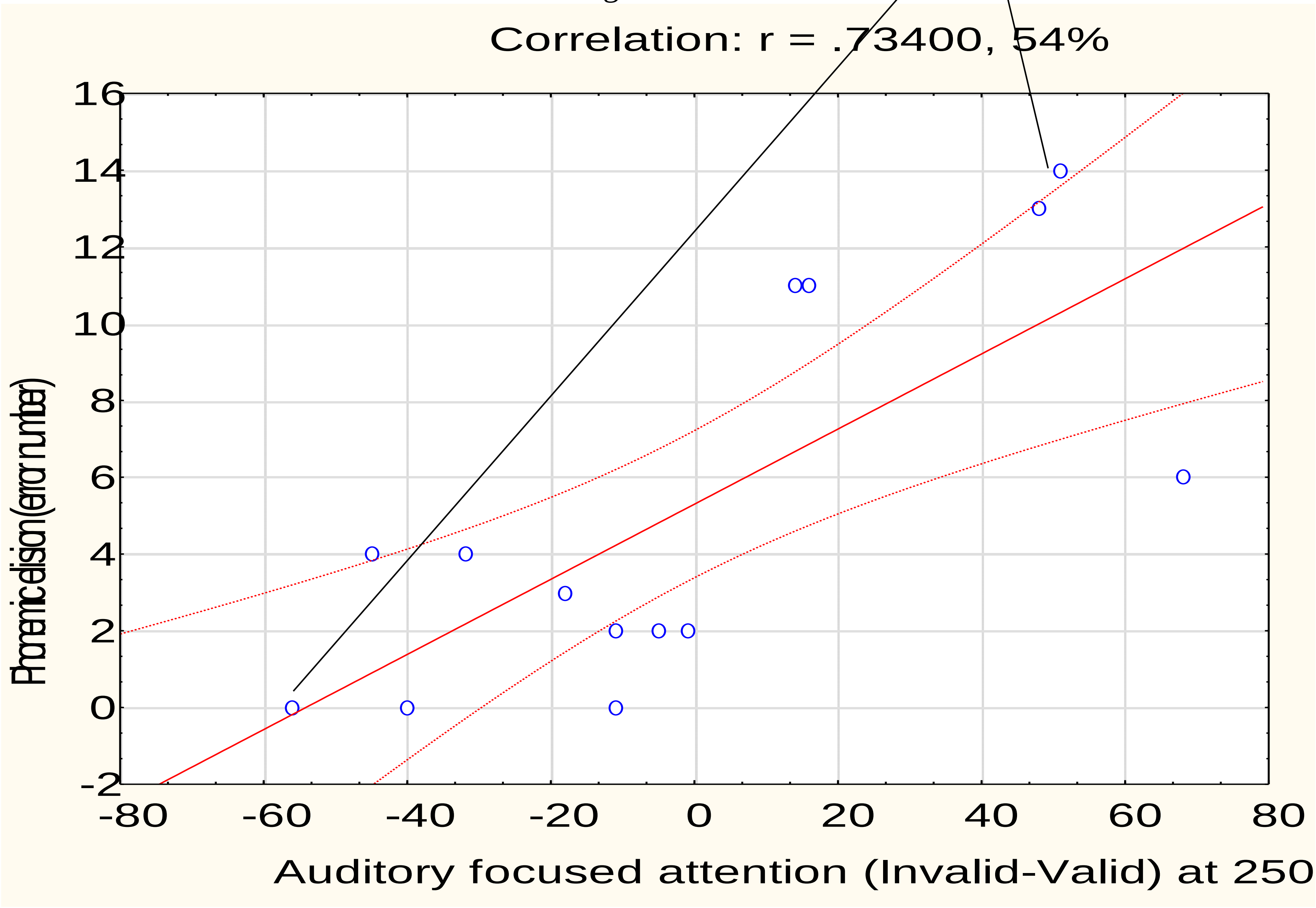
Chi presenta già IOR a 250ms non ha difficoltà di decodifica fonologica (accuratezza e rapidità). Invece, chi presenta facilitazione a questo SOA (lento ad orientare l’attenzione) ha grosse difficoltà nella decodifica (sia accuratezza che rapidità





L'Attenzione Uditiva e la Segmentazione Fonemica

I bambini con DSL con lento orientamento dell'attenzione uditiva (facilitazione al SOA 250ms) manifestano anche un disturbo nella segmentazione fonemica. Chi orienta velocemente (IOR) non ha problemi di segmentazione.



Assistive listening devices drive neuroplasticity in children with dyslexia

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Children with dyslexia often exhibit increased variability in sensory and cognitive aspects of hearing relative to typically developing peers. Assistive listening devices (classroom FM systems) may reduce auditory processing variability by enhancing acoustic clarity and attention. We assessed the impact of classroom FM system use for 1 year on auditory neurophysiology and reading skills in children with dyslexia. FM system use reduced the variability of subcortical responses to sound, and this improvement was linked to concomitant increases in reading and phonological awareness. Moreover, response consistency before FM system use predicted gains in phonological awareness. A matched control group of children with dyslexia attending the same schools who did not use the FM system did not show these effects. Assistive listening devices can improve the neural representation of speech and impact reading-related skills by enhancing acoustic clarity and attention, reducing variability in auditory processing.