IV Parte: 3 Dicembre 2015

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

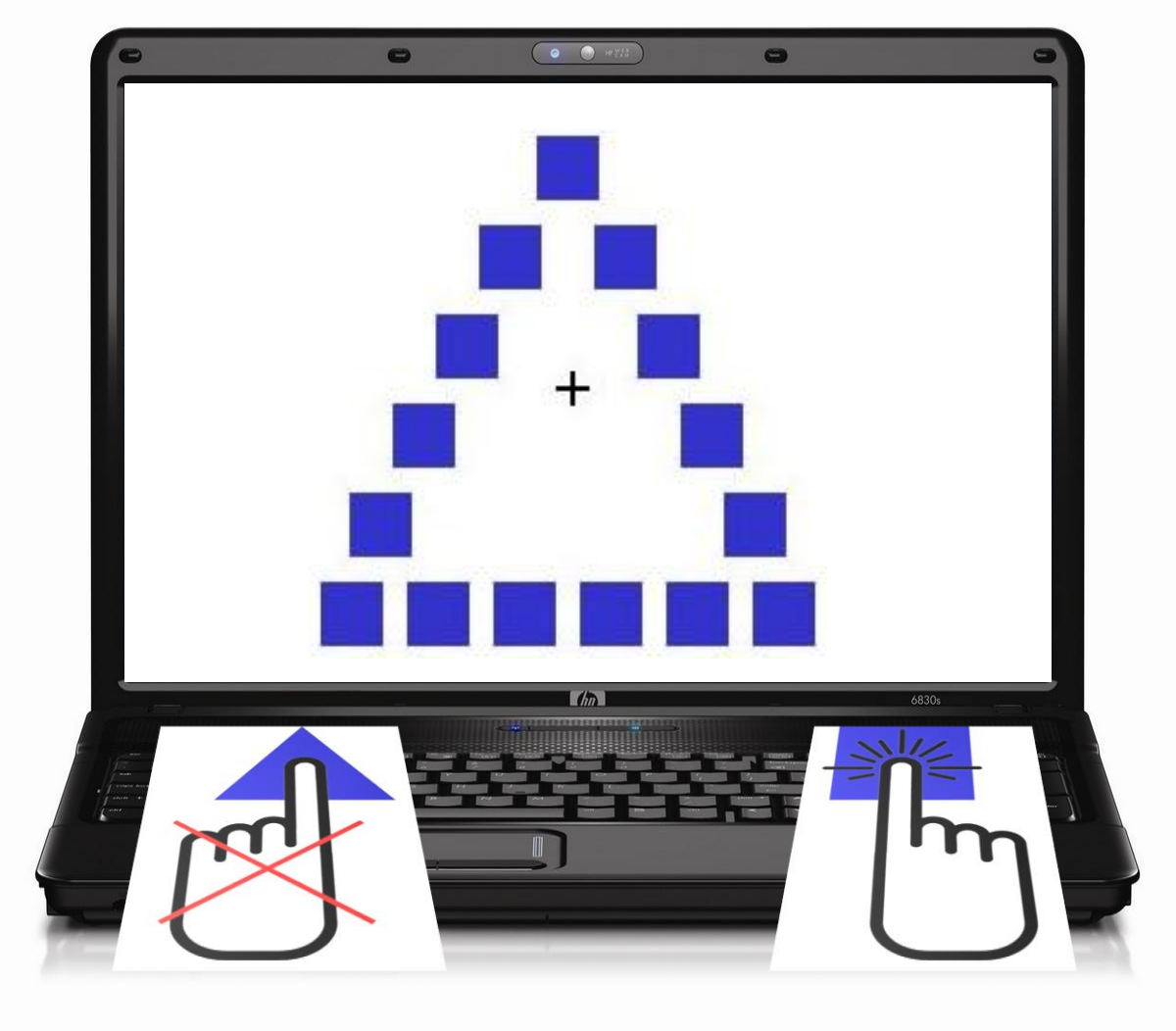
3 Dicembre 2015 ore 16:30 – 19:30	**STUDI RIABILITATIVI** ▪ Alla ricerca delle cause dei DSA 2 Relatore: **Andrea Facoetti** *Assistant Professor - Department of General Psychology - University of Padova*

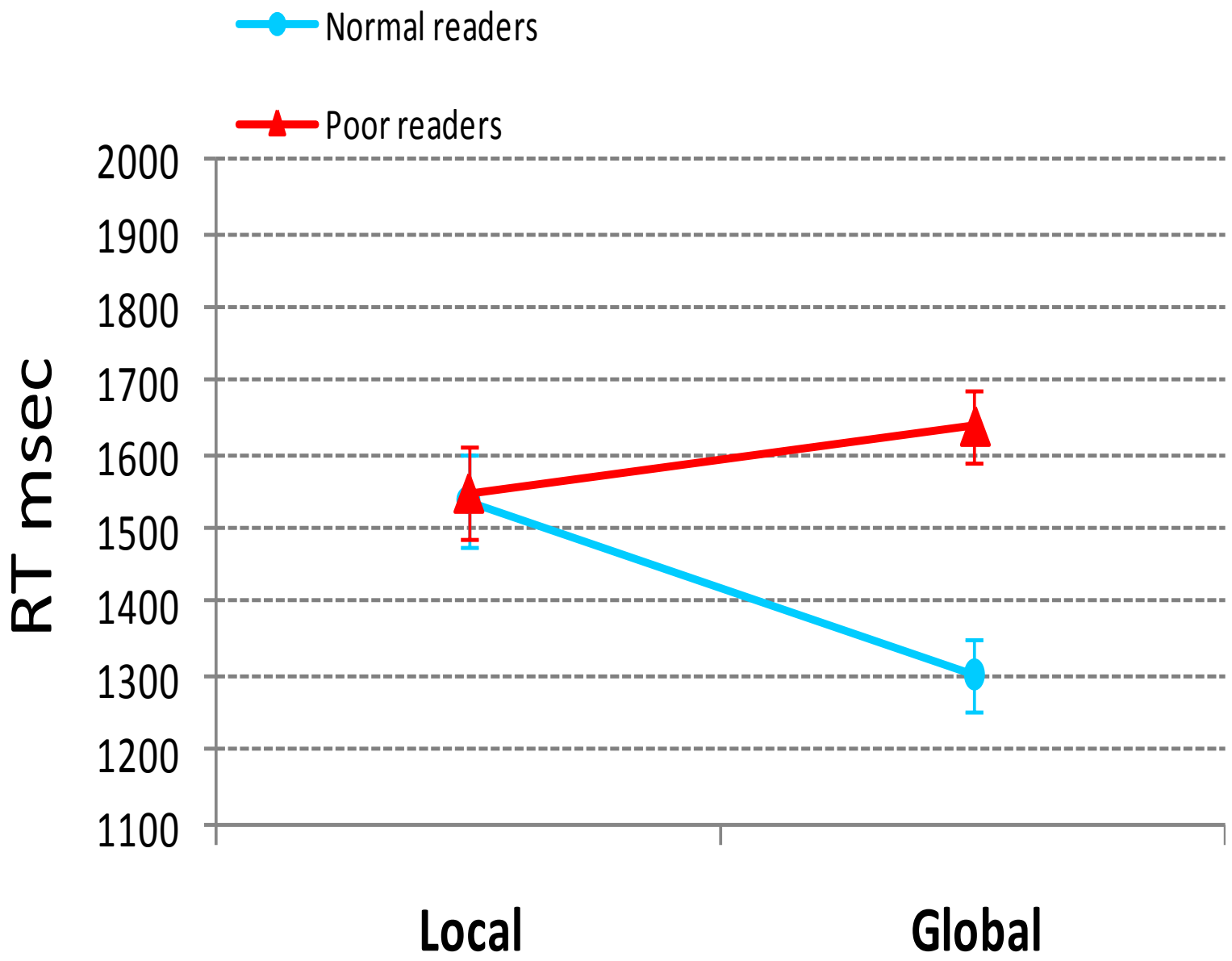
SEGRETERIA (PROGETTAZIONE, ORGANIZZAZIONE E GESTIONE)

AURELIO MICELLI

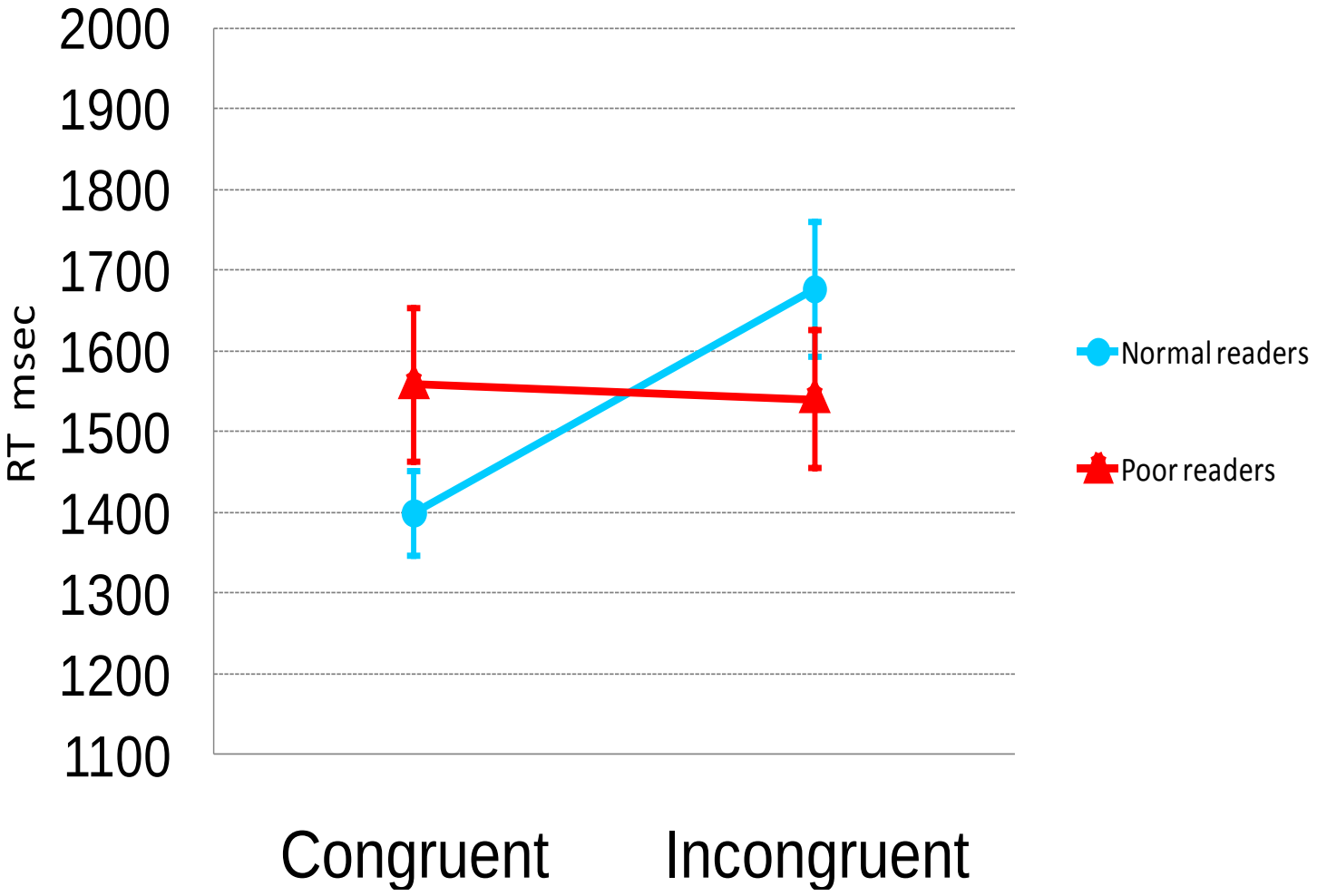
CENTRO TERRITORIALE DI SUPPORTO PER LE TECNOLOGIE E LA DISABILITÀ
Referente CTS.centroDARI di Padova
Tel.: 049.8073100
Email: cts.padova@gmail.com

Navon task:
e.g., Local task




Normal readers
Poor readers
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
RT msec
Local
Global

Local task


2000
1900
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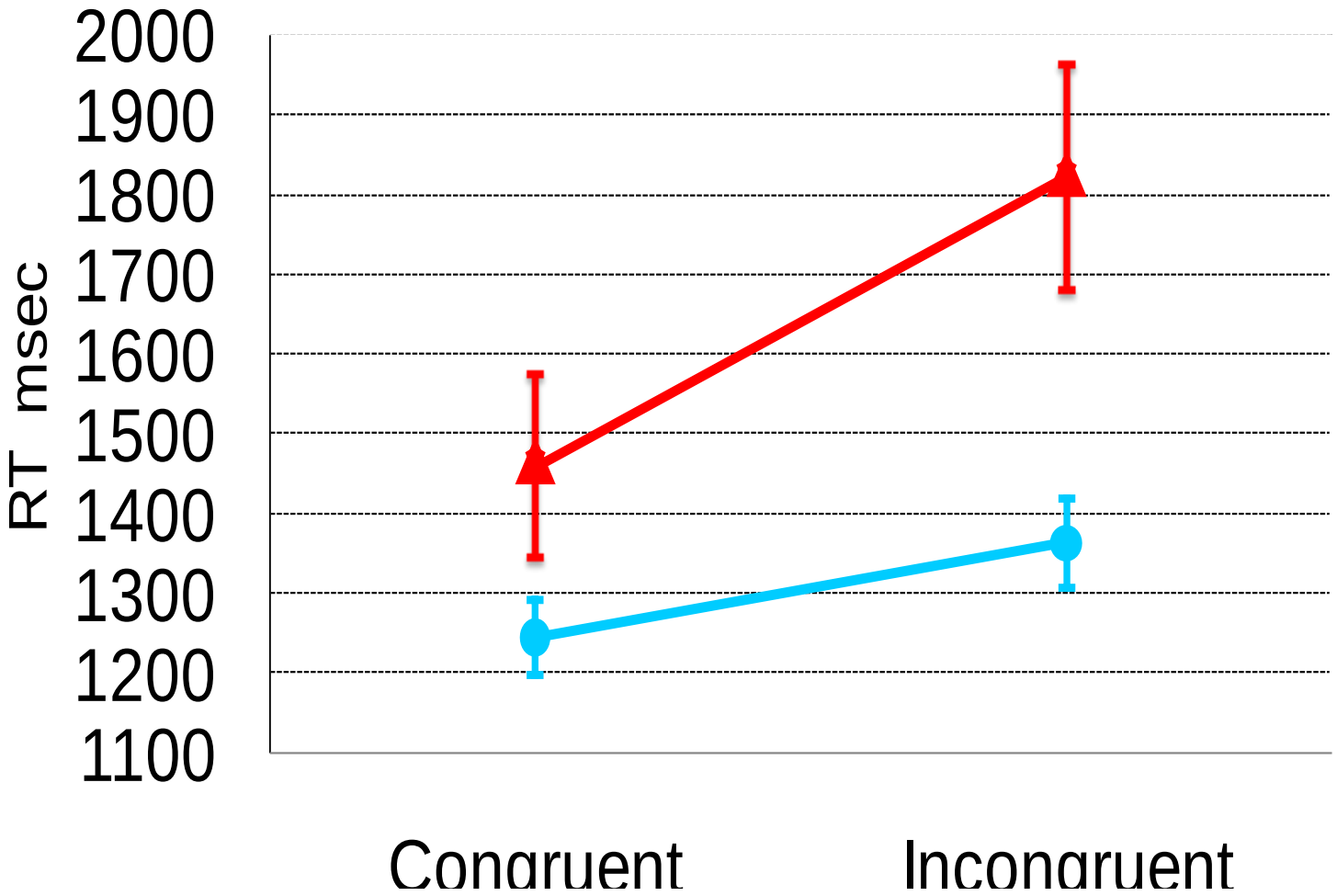
1400
1300
1200
1100
RT msec
Congruent
Incongruent
Normal readers
Poor readers

Global task


2000
1900
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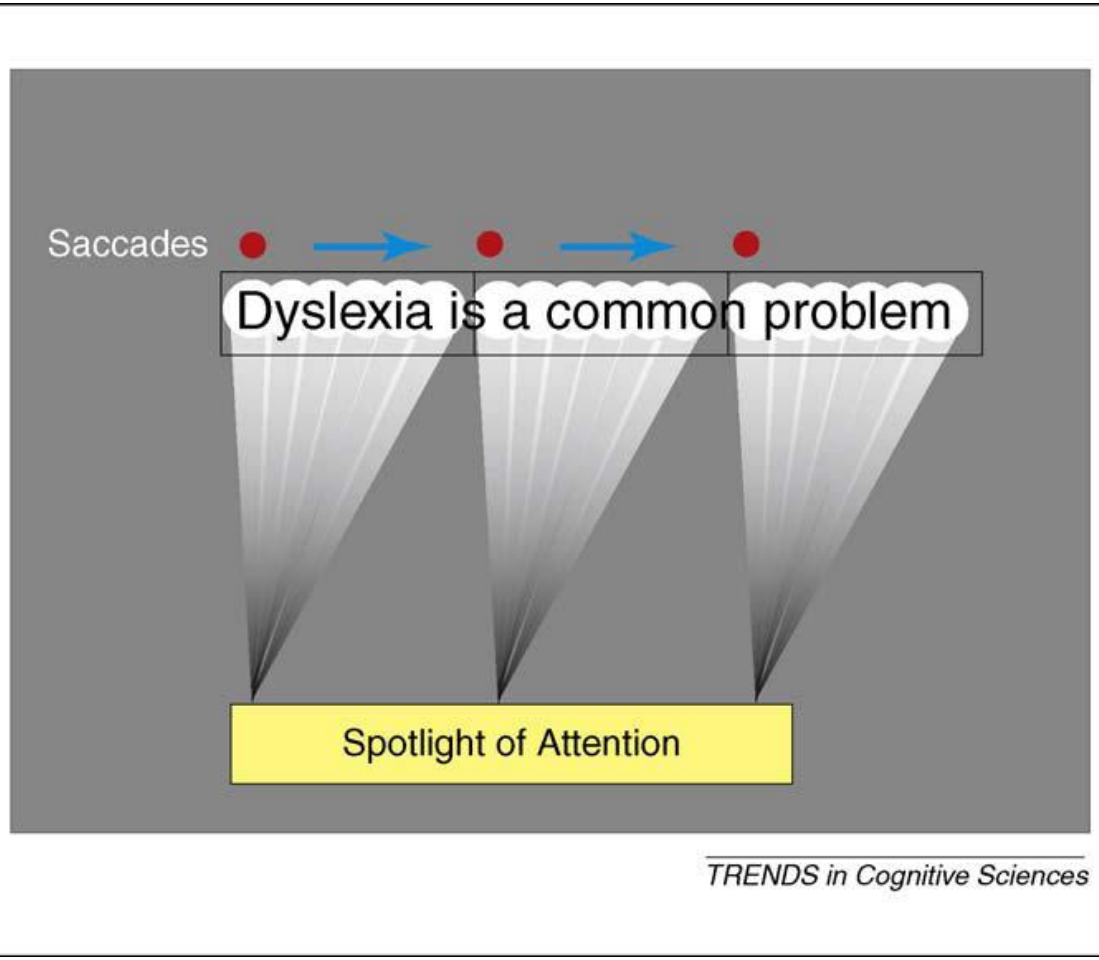
1600
1500
1400
1300
1200
1100
RT msec
Congruent
Incongruent

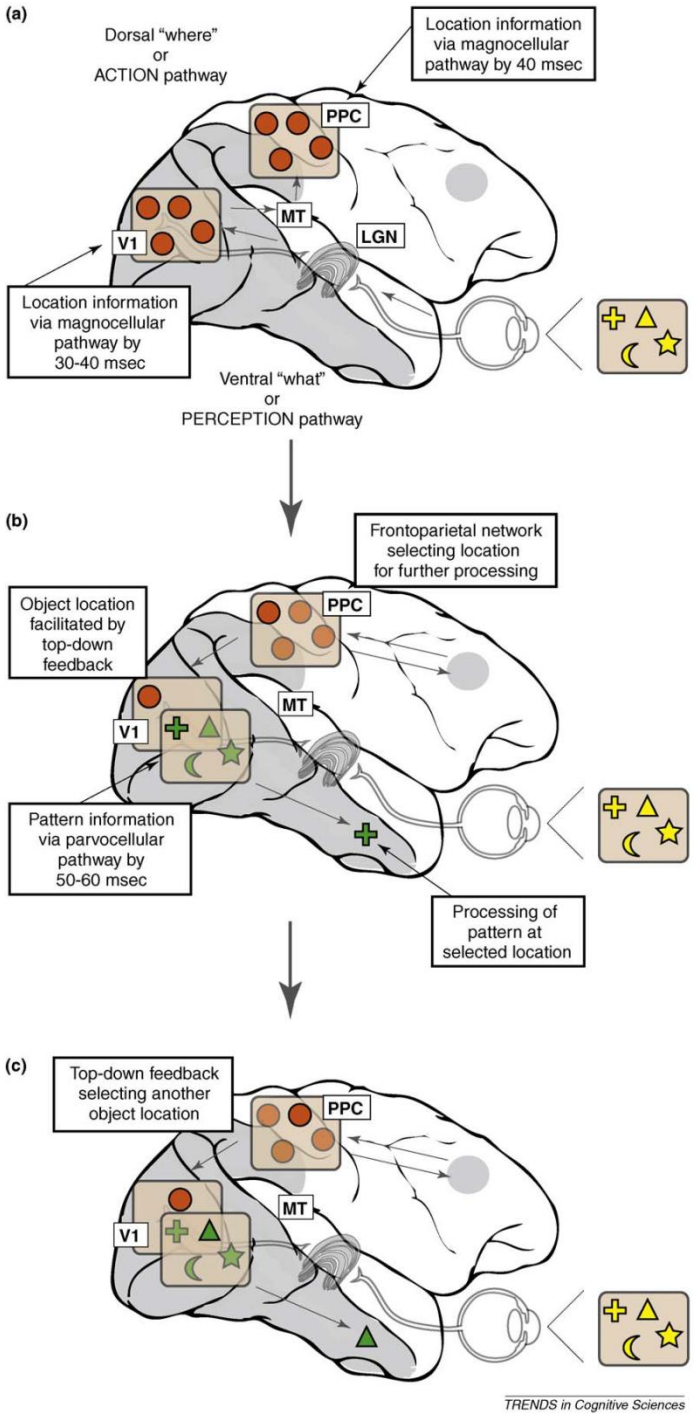
Opinion

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





Vision Research xxx (2013) xxx–xxx

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Vision Research

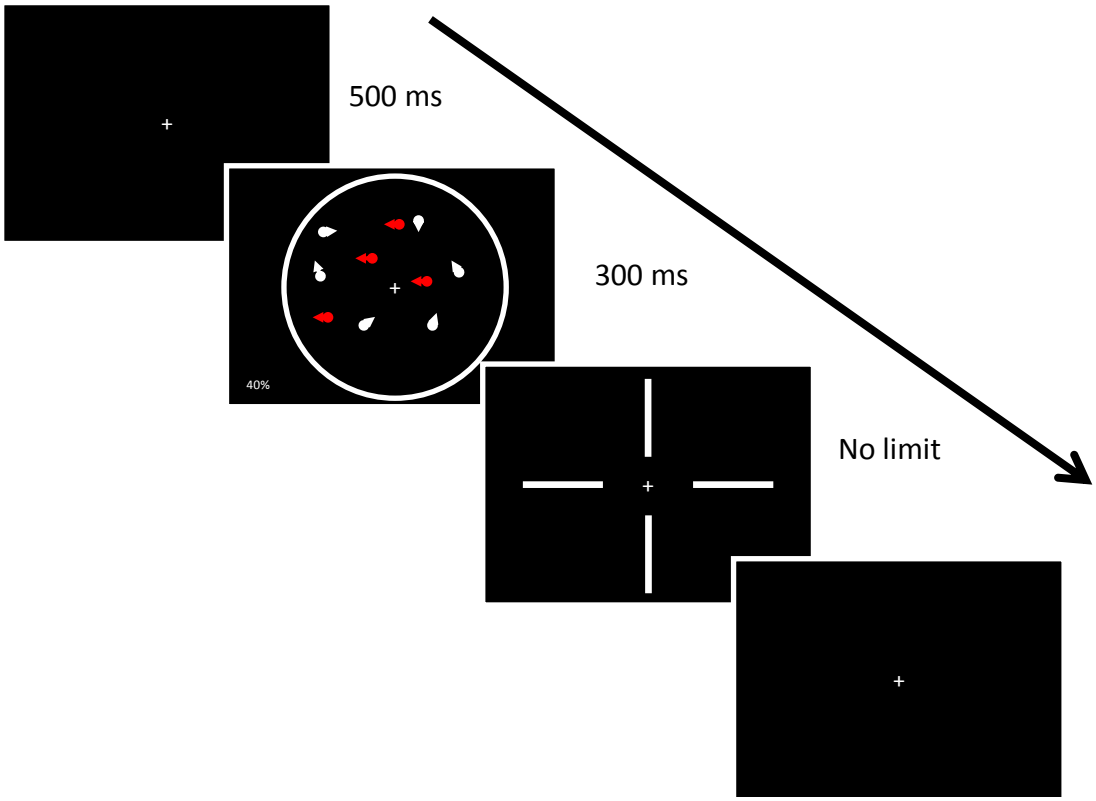
journal homepage: www.elsevier.com/locate/visres

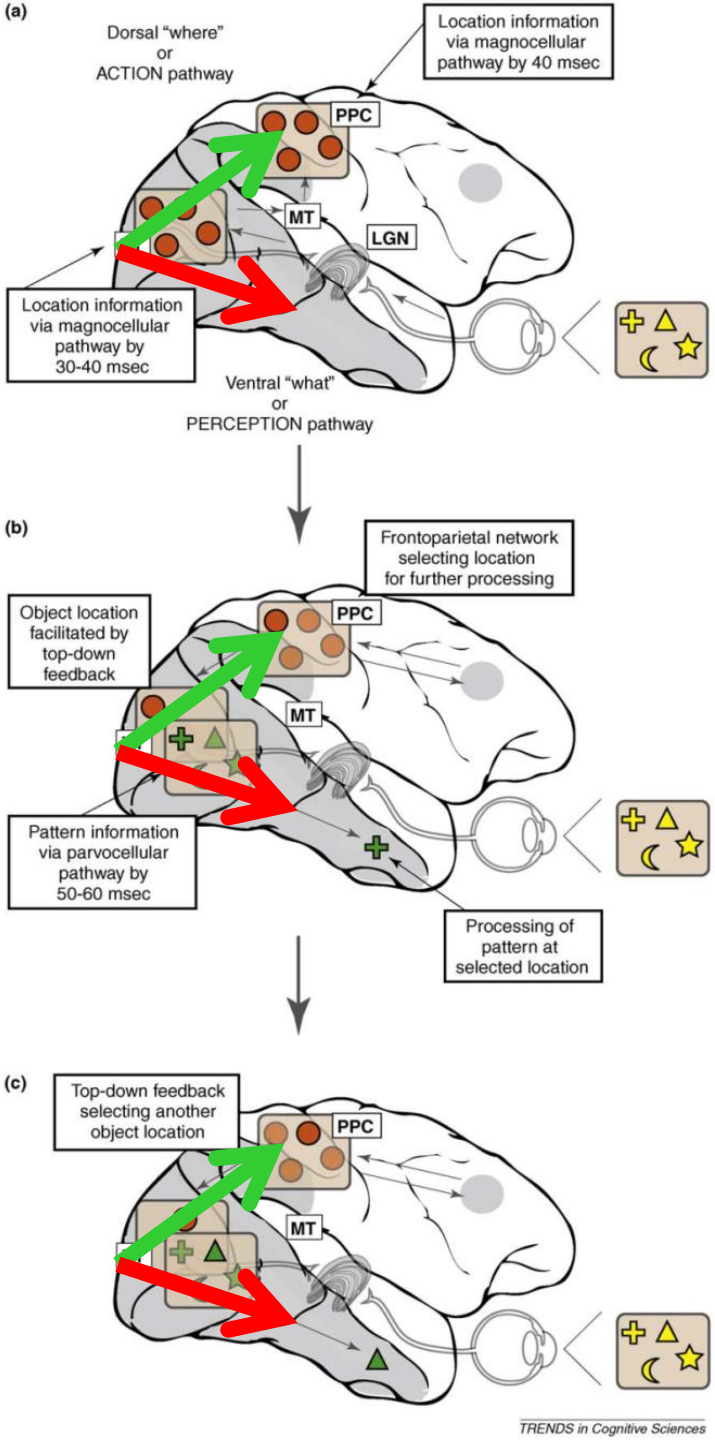
Perceptual learning as a possible new approach for remediation and prevention of developmental dyslexia

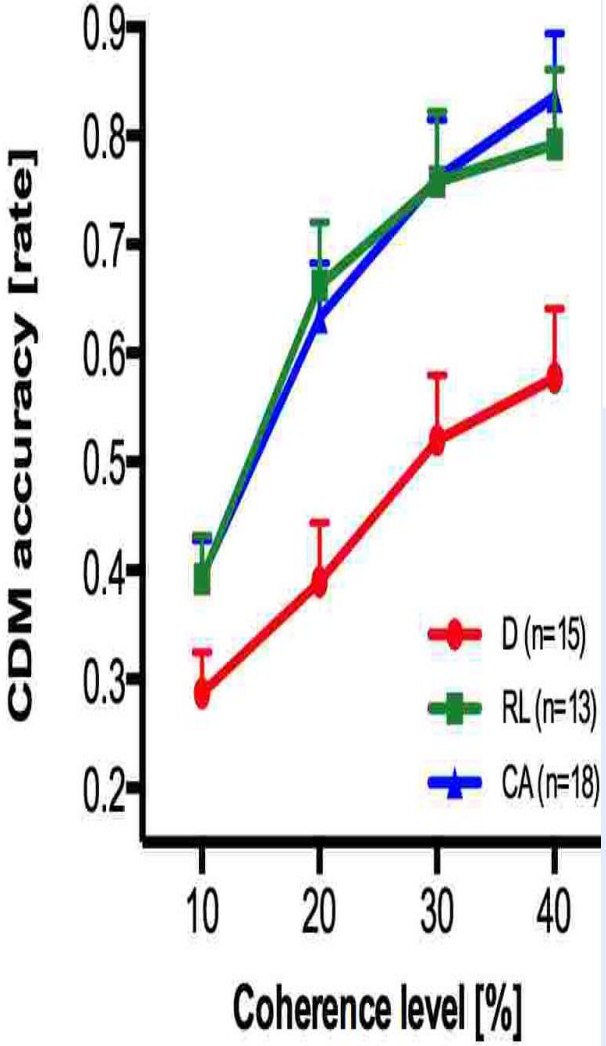
Simone Gori *, Andrea Facoetti *

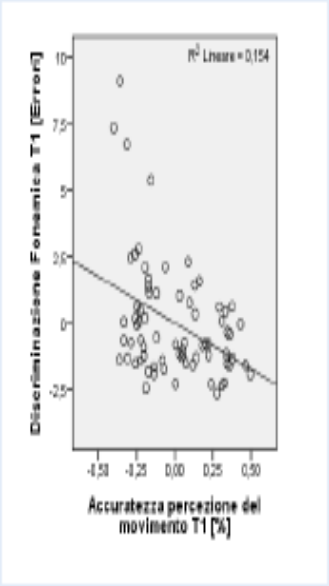
Developmental and Cognitive Neuroscience Lab, Department of General Psychology, University of Padua, Padua 35131, Italy
Developmental Neuropsychology Unit, Scientific Institute "E. Medea", Bosisio Parini, Lecco 23842, Italy

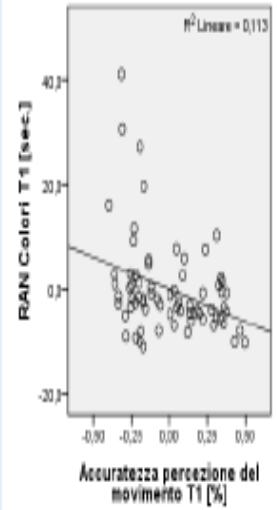
Coherent dot motion task

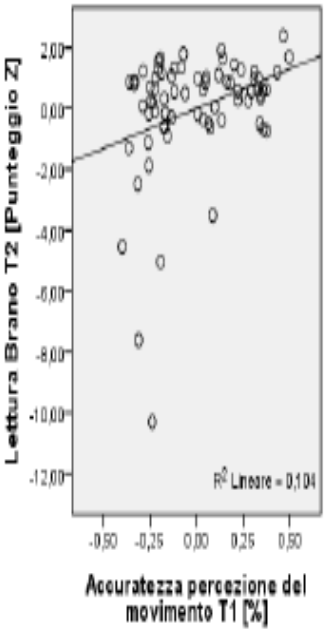




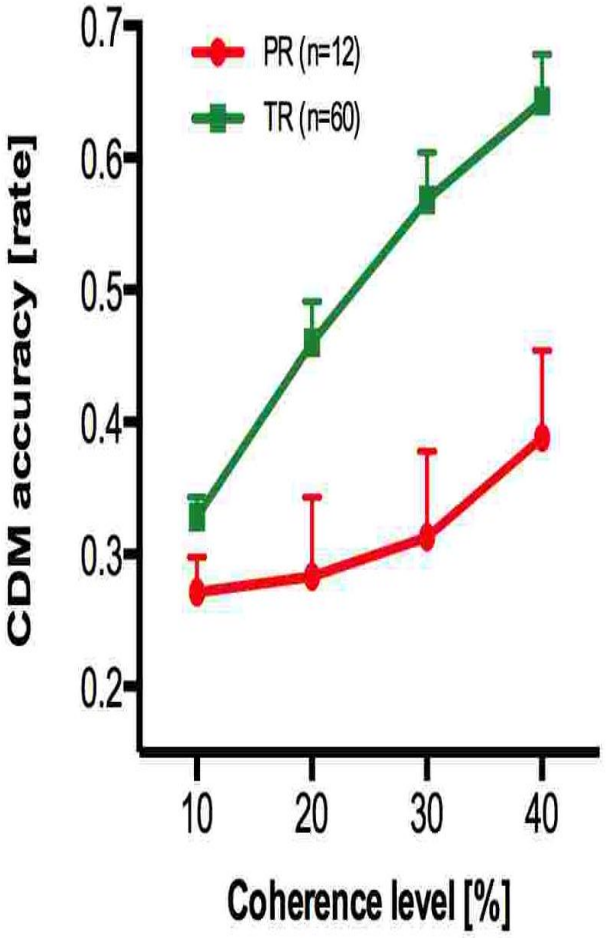

CDM accuracy [rate]
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
D (n=15)
RL (n=13)
CA (n=18)
10
20
30
40
Coherence level [%]


Discriminazione Fonemica T1 [Errori]
R² Lineare = 0,154
Accuratezza percezione del movimento T1 [%]


RAN Colori T1 [sec.]
R² Lineare = 0,113
Accuratezza percezione del movimento T1 [%]


Lettura Brano T2 [Punteggio Z]
R² Lineare = 0,104
Accuratezza percezione del movimento T1 [%]

B.


CDM accuracy [rate]
0.7
0.6
0.5
0.4
0.3
0.2
PR (n=12)
TR (n=60)
10
20
30
40
Coherence level [%]

Available online at www.sciencedirect.com
ScienceDirect
Brain and Language 106 (2008) 29–40
Brain and Language
www.elsevier.com/locate/b&l

Modelling relations between sensory processing, speech perception, orthographic and phonological ability, and literacy achievement

Bart Boets [a,b,*], Jan Wouters [b], Astrid van Wieringen [b], Bert De Smedt [a], Pol Ghesquière [a]

[a] *Centre for Disability, Special Needs Education and Child Care, Faculty of Psychology and Educational Sciences, Katholieke Universiteit Leuven, Belgium*
[b] *Laboratory for Experimental ORL, Department of Neurosciences, Katholieke Universiteit Leuven, Belgium*

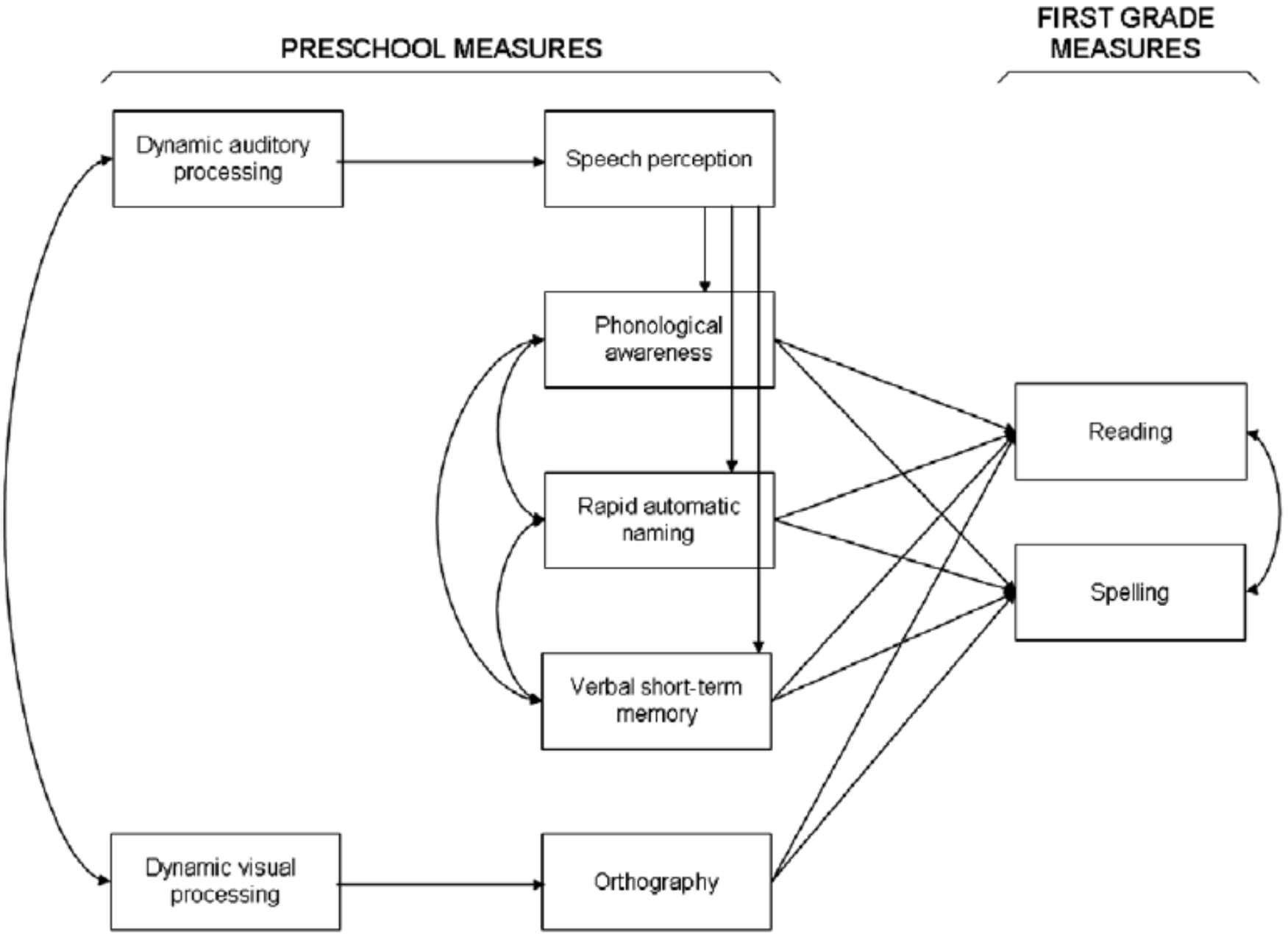


Fig. 1. The original structural model tested in the path analysis.

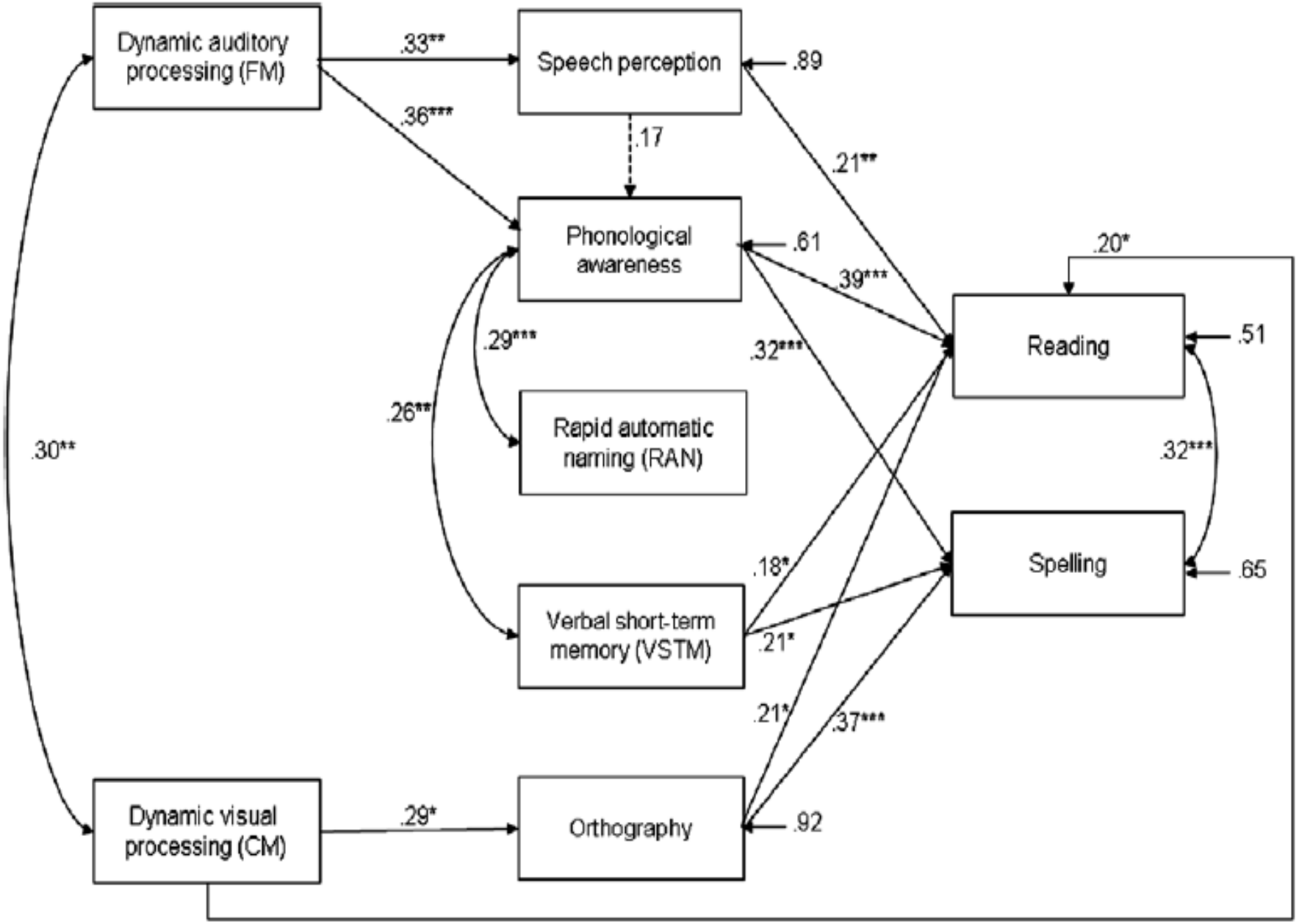


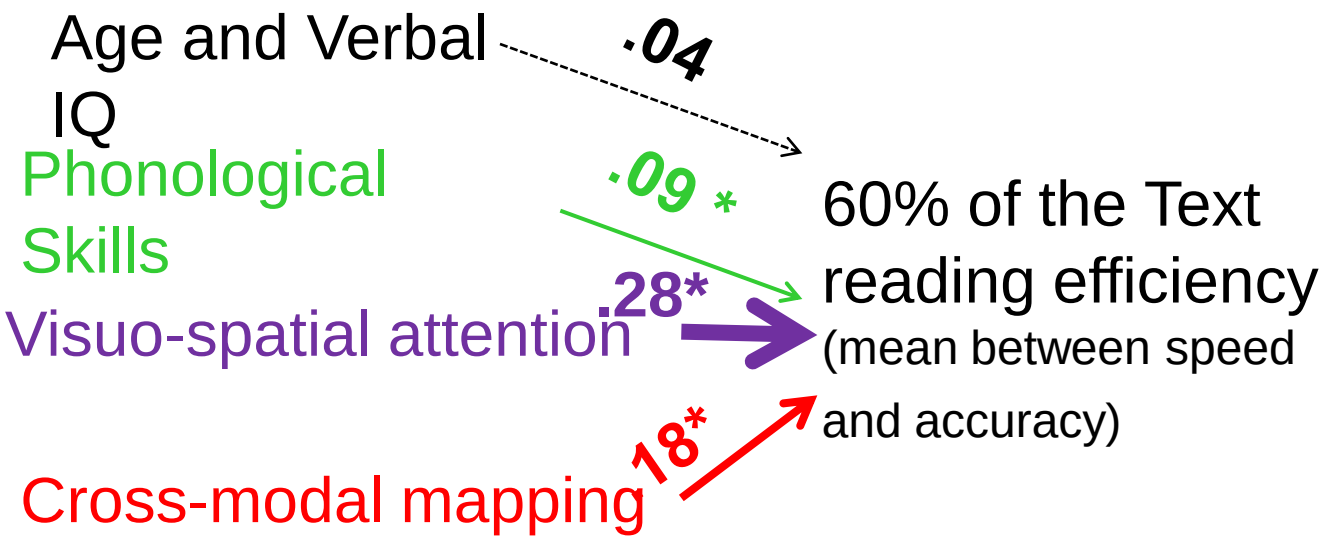
Fig. 2. Path analysis predicting first grade reading and spelling achievement. $p < .05$, $^{**}p < .01$ and $^{***}p < .001$.

The second longitudinal study: N=105

Predicting the 60% of text reading variance in first grade (T2) by using pre-reading (T1) phonological, attention and cross-modal integration.

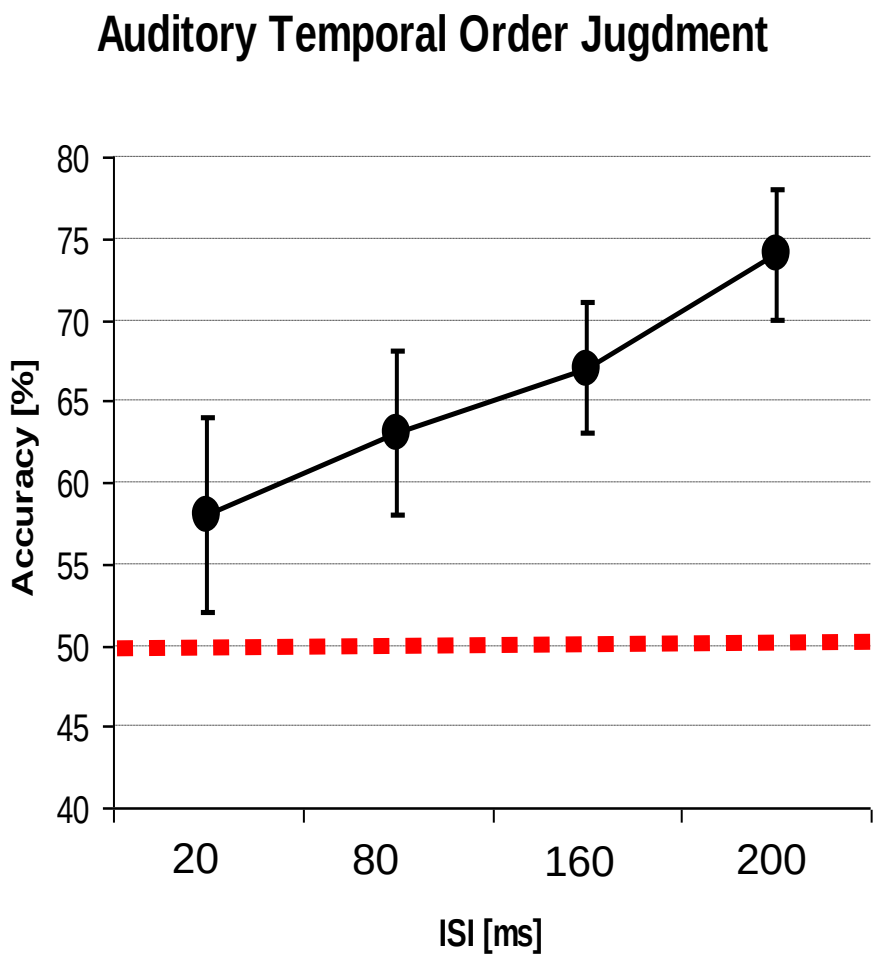
T1=pre-reading stage

T2=first grade



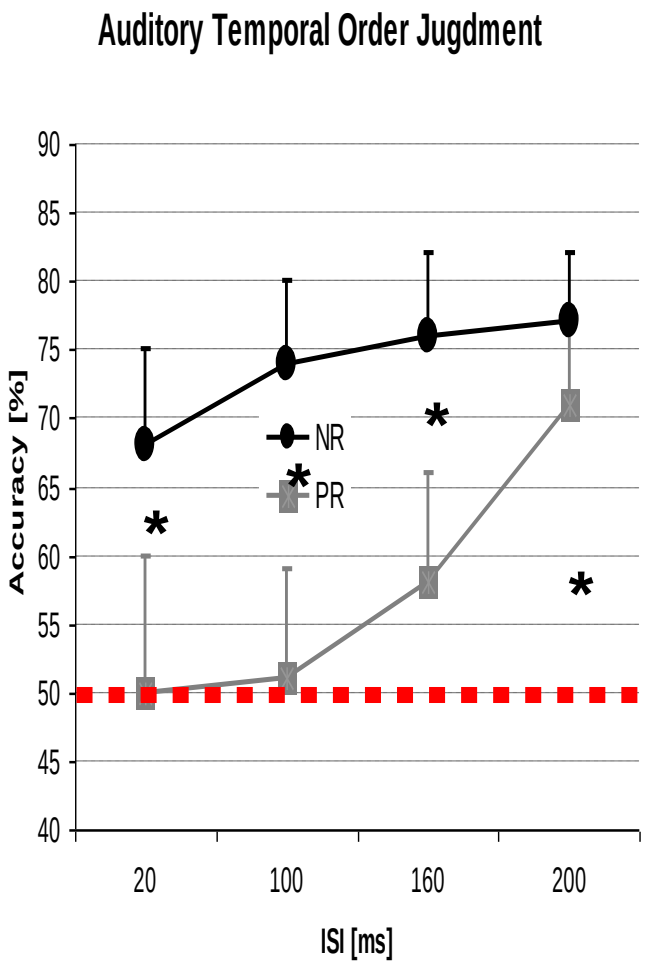
Attention & Dyslexia

Un studio longitudinale dell'attenzione uditiva: Giudizio dell'ordine temporale



Task	Mean	SD	P-value
Syllabic Segmentation (errors)	**NR 1.07 PR 3.22**	2.56 5.47	**0.038***
Syllabic Perception (errors)	*NR 1.44 PR 2.78*	2.05 2.86	*0.053*

Un studio longitudinale dell'attenzione uditiva: Giudizio dell'ordine temporale



Trattamento Bakker

(riduttivamente “tachistoscopio”) e attenzione visuo-spaziale

ELSEVIER

Cognitive Brain Research 15 (2003) 154–164

COGNITIVE BRAIN RESEARCH

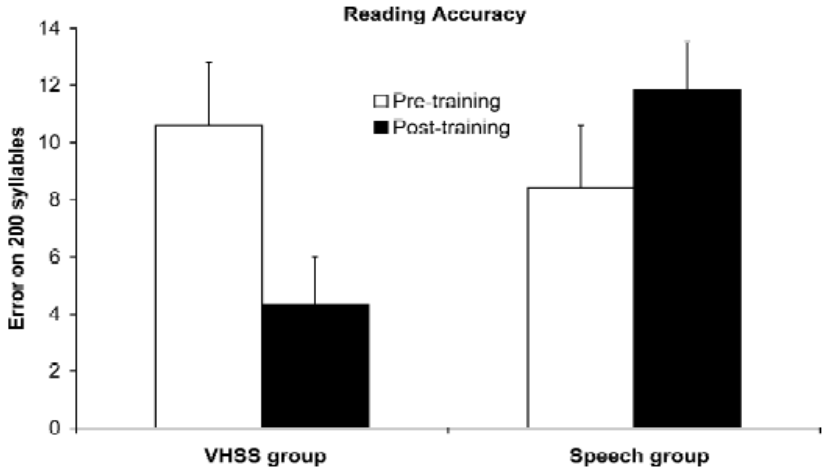
www.elsevier.com/locate/cogbrainres

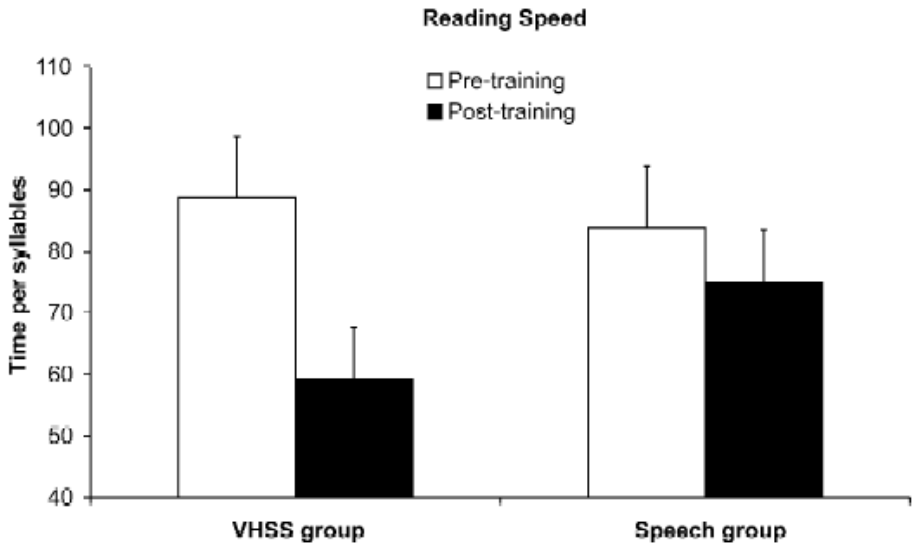
Research report

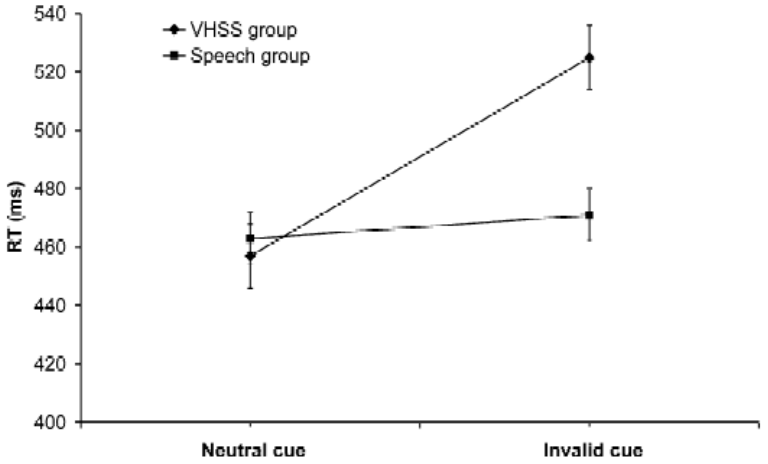
The role of visuospatial attention in developmental dyslexia: evidence from a rehabilitation study

Andrea Facoetti[a,*], Maria Luisa Lorusso[b], Pierluigi Paganoni[c], Carlo Umiltà[a], Gian Gastone Mascetti[a]

	VHSS training $n=12$	Speech program $n=12$	P
Age	9.85	9.83	>0.05
Full IQ	104	105	>0.05
Reading accuracy (errors on 200 syllables)	10.6	8.4	>0.05
Reading speed (time per syllable)	88.71	83.83	>0.05
Attentional inhibition (ms)	0	−6	>0.05







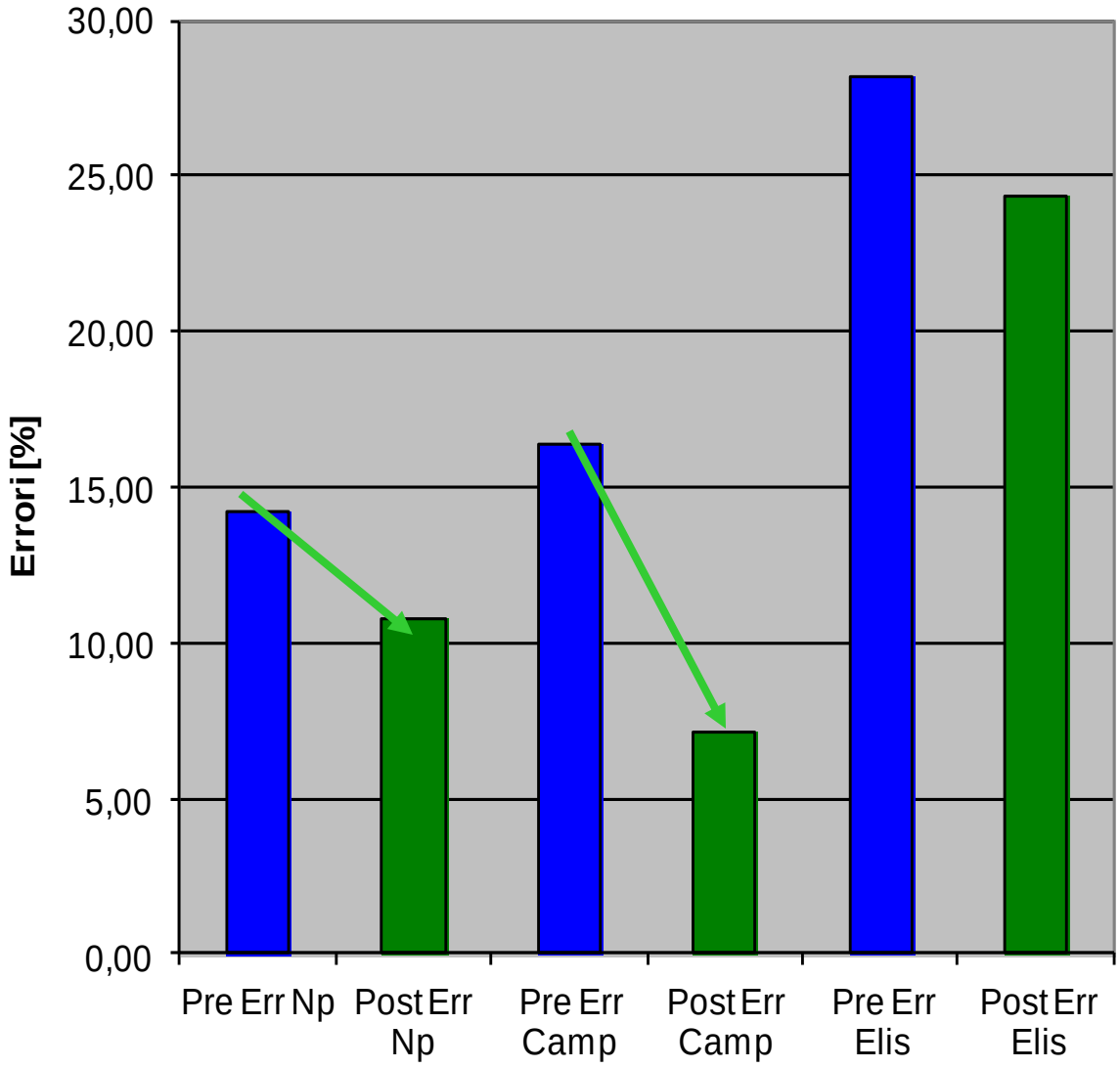
L'Approccio Riabilitativo:

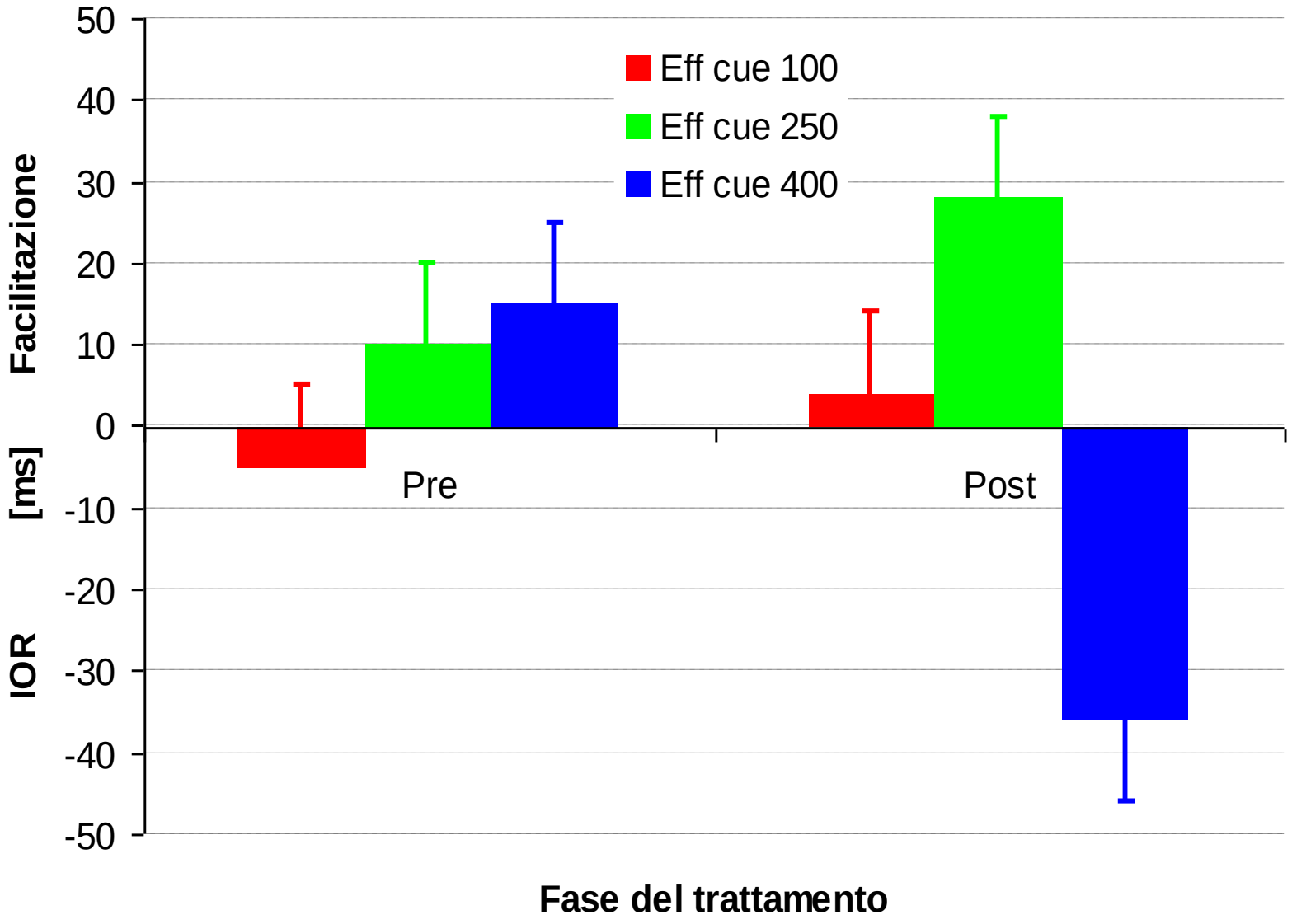
Tachistoscopio "Centrale"

di 14 Dislessici

(tratt. Insensivo: 6 sedute settimanali x 4 settimane)

Effetti del Trattamento Tachistoscopico "Centrale" (N=14)




50
40
30
20
10
0
-10
-20
-30
-40
-50
Facilitazione
[ms]
IOR
Eff cue 100
Eff cue 250
Eff cue 400
Pre
Post
Fase del trattamento

Rapid Sequential Processing Training

Sandro Franceschini, Simone Gori, Luca Ronconi

Andrea Facoetti

nature COMMUNICATIONS

ARTICLE

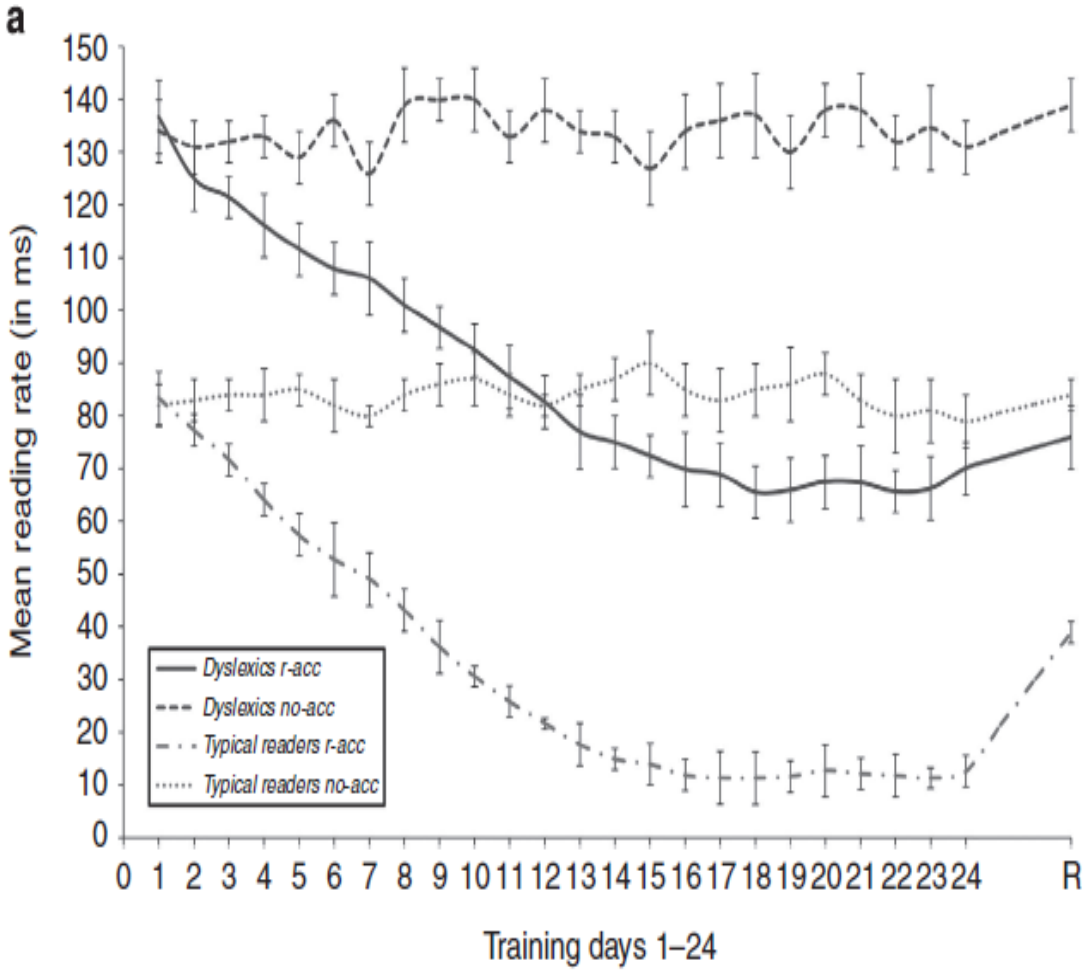
Received 16 May 2012 | Accepted 15 Jan 2013 | Published 12 Feb 2013

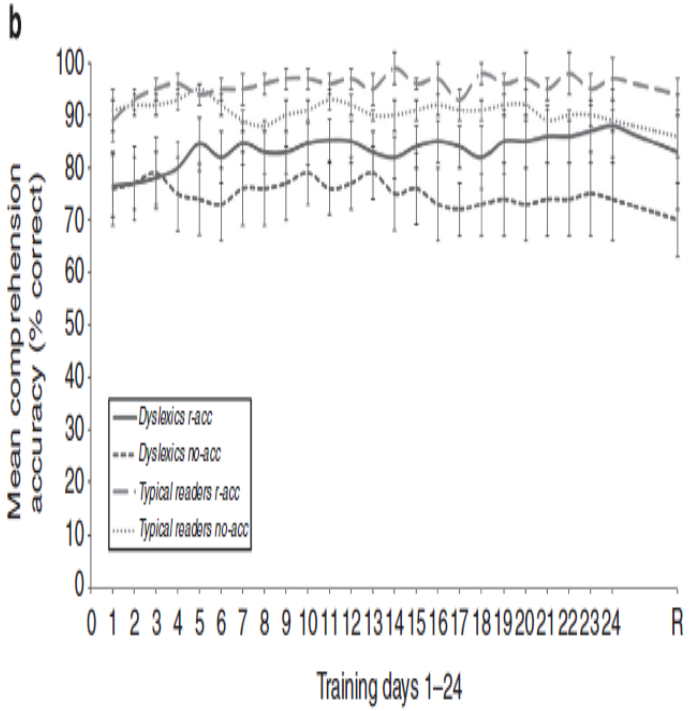
DOI: 10.1038/ncomms2488

Enhanced reading by training with imposed time constraint in typical and dyslexic adults

Zvia Breznitz[1], Shelley Shaul[1], Tzipi Horowitz-Kraus[1], Itamar Sela[1,2], Michael Nevat[1] & Avi Karni[1,2]

read faster. Here we show that this improvement can be enhanced by training. Training follows a multi-session procedure adapted to silent sentence reading, with individually set, increasingly more demanding, time constraints (letter-by-letter masking). In both typical and dyslexic adult readers, reading times are shortened and comprehension improves. After





constraints proves ineffective. Our results suggest that fluent reading depends in part on rapid information processing, which then might affect perception, cognitive processing and possibly eye movements. These processes remain malleable in adulthood, even in individuals with developmental dyslexia.

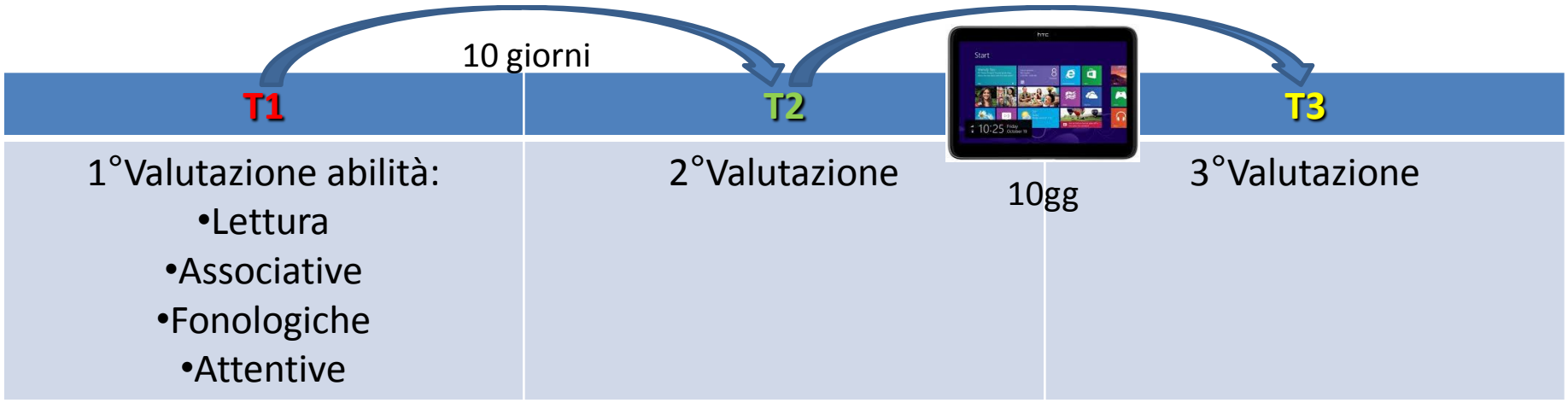
Partecipanti alla ricerca

13 Bambini (6 maschi, 7 femmine) frequentanti classi dalla 3° elementare, alla 3° media. Età media= 121,8, DS= 23

Tutti i bambini del campione erano di madre lingua italiana.

	tempo Z score (DS)	errori Z score (DS)
Lettura Liste parole	-4,2 (5,3)	-3,9 (4,56)
Lettura Liste non parole	-2,35 (2,81)	-2,33 (2,37)
Brano MT	-1,99 (0,84)	-0,47 (1,35)

Struttura della ricerca



Test utilizzati

T1 T2 T3

Compiti Lettura

+1 testo +1 testo

• **Lettura di un testo** MT
(MT test, Cornoldi & Colpo, 1998)

Vecchi proverbi

— Di notte — sentenziava un Vecchio Proverbio — tutti i gatti sono bigi. — E io sono nero — disse un gatto

• **Liste di Non Parole DDE**
(Sartori,Job e Tressoldi, 2007)

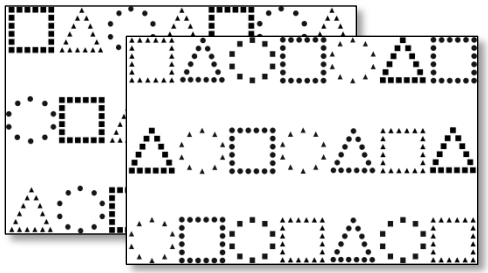
• **Liste di parole DDE**
(Carriero et al, 2001)

ALÌ SALVA LA LUNA

Una volta, verso sera, Alì andò a prendere acqua. Curvandosi sul pozzo, vide *14* *27*

Associazione suono-simbolo

• **RAN di figure geometriche**



Abilità fonologiche

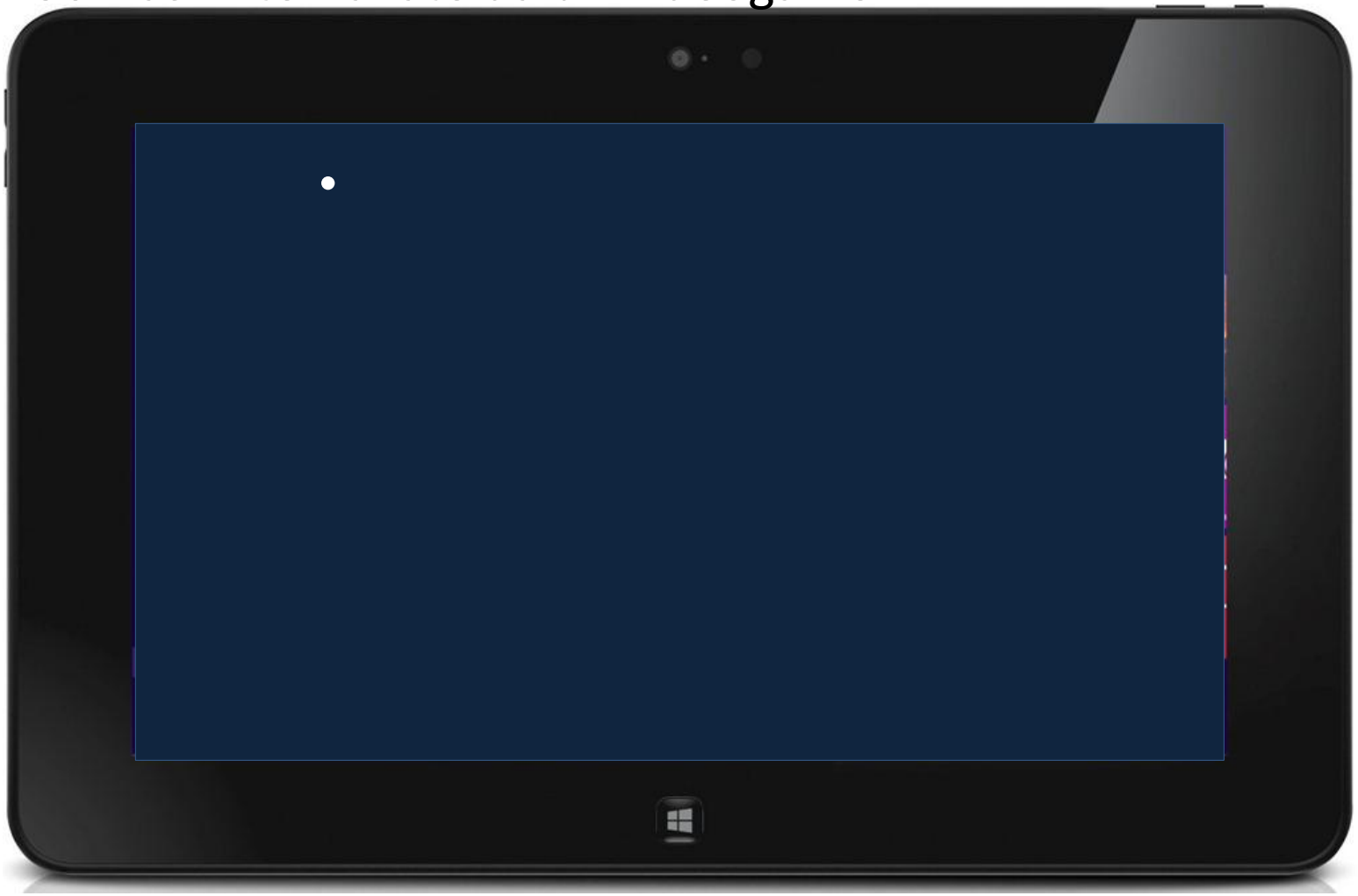
•**Ripetizione di non parole VAUMeLF**
(Bertelli e Bilancia, 2006)

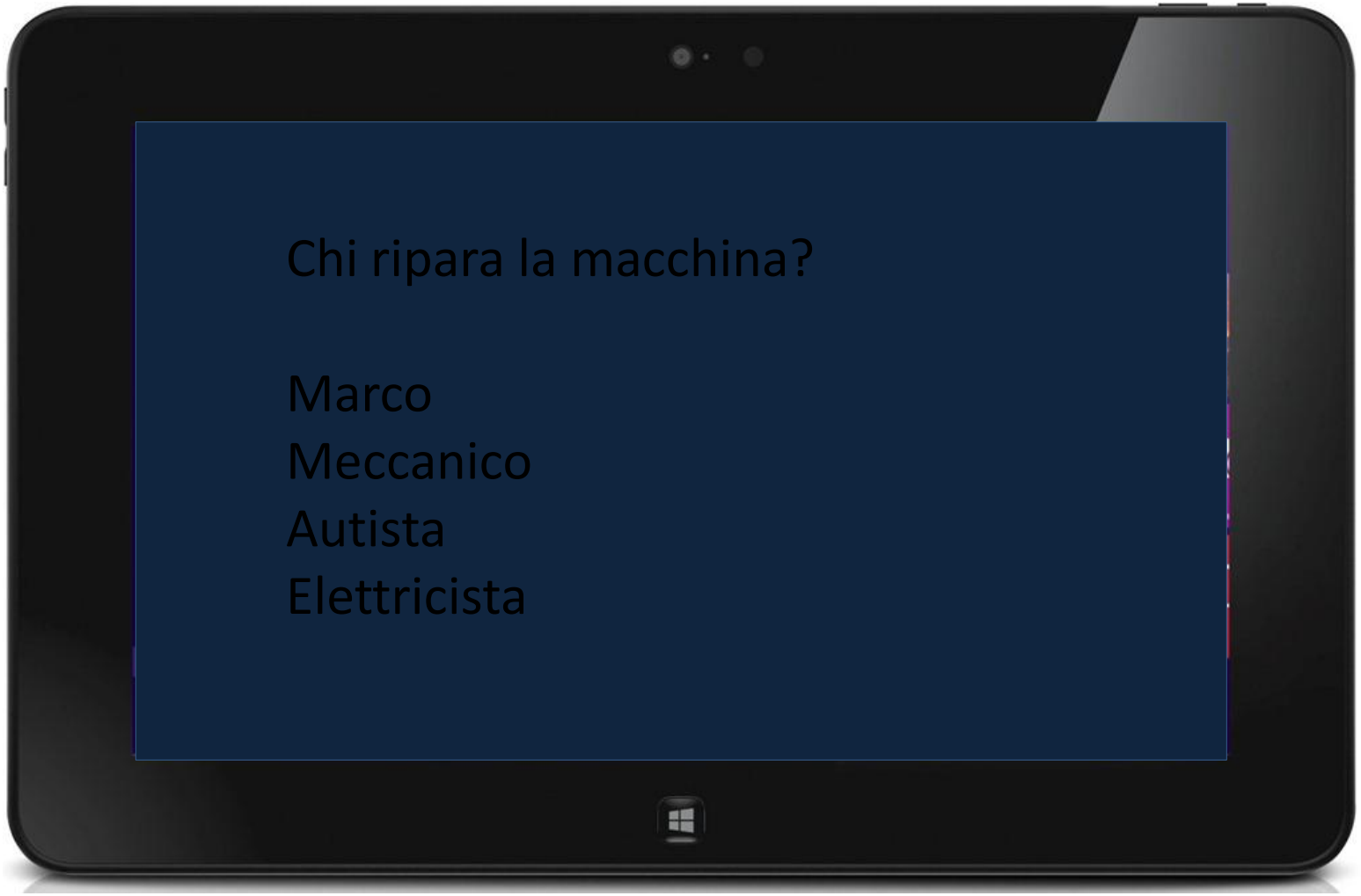
Abilità Visuo-attentive

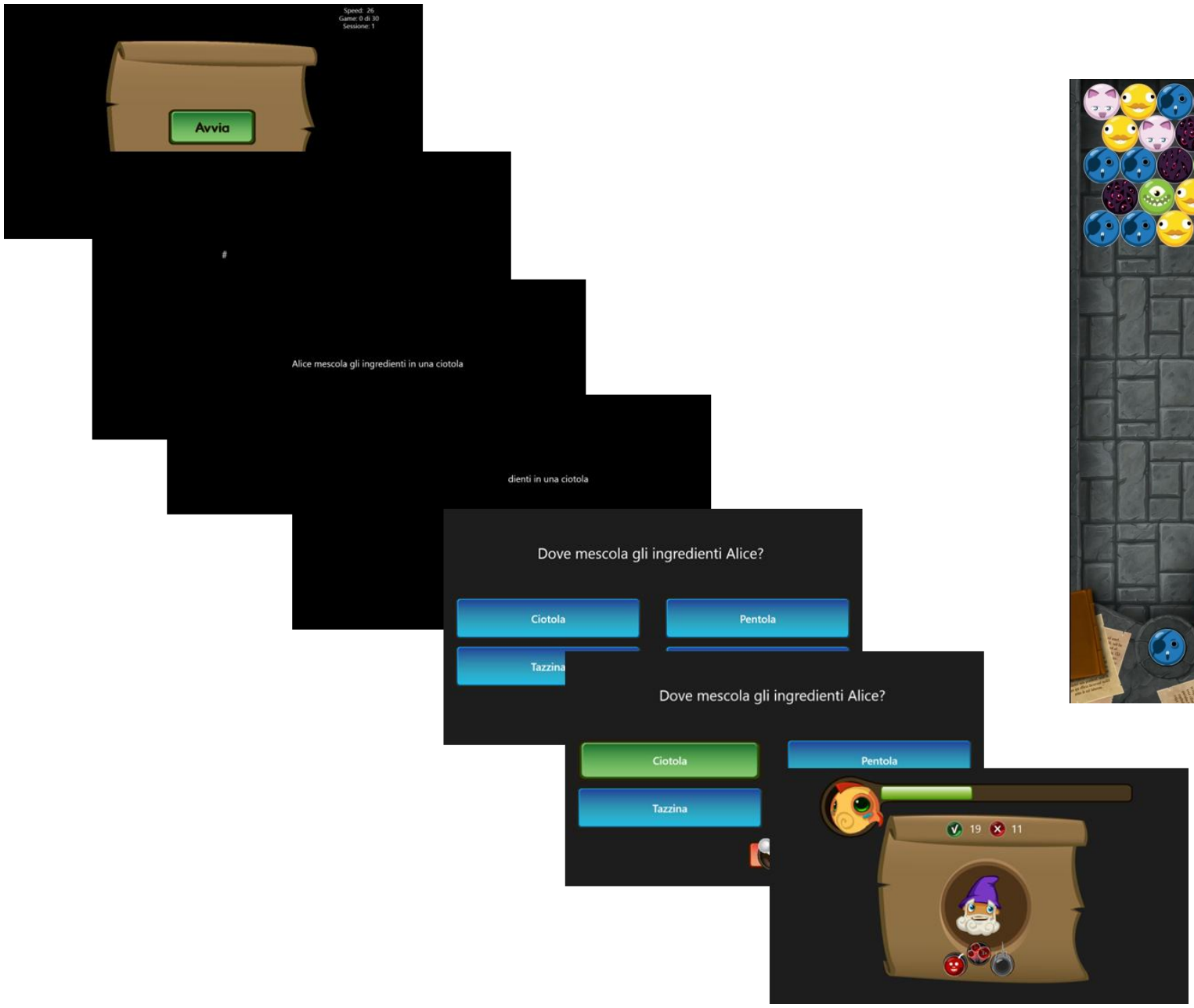
•**Attentional Masking**

Trattamento

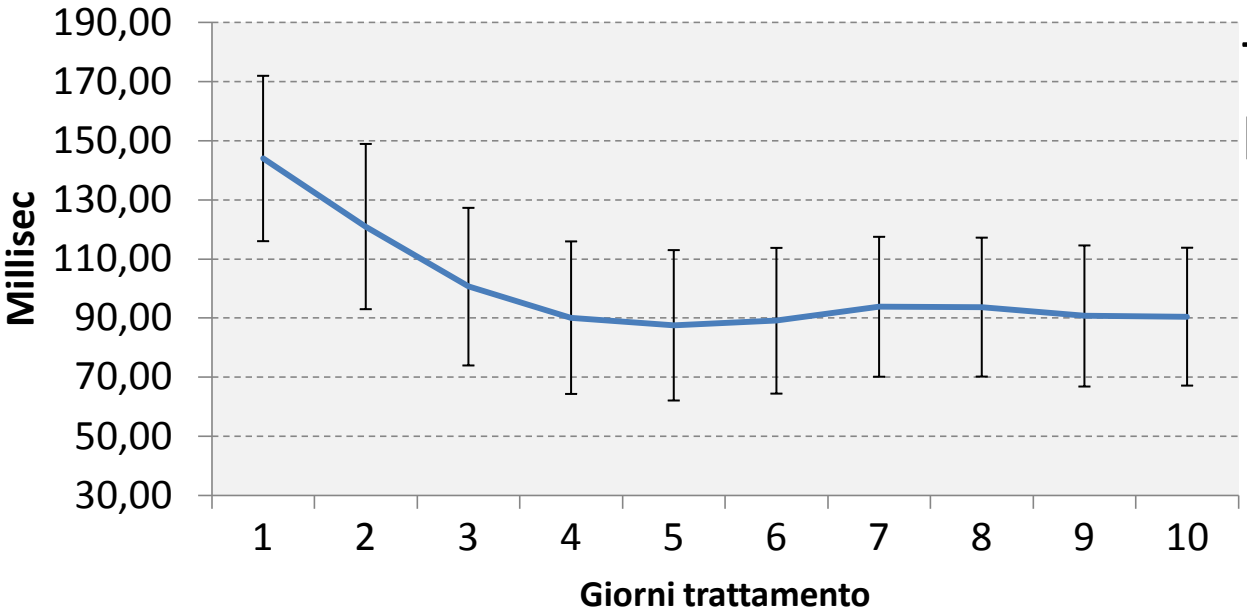
10 giorni complessivi, circa 45 minuti al giorno, 3 blocchi da 30 frasi intervallate da un videogame



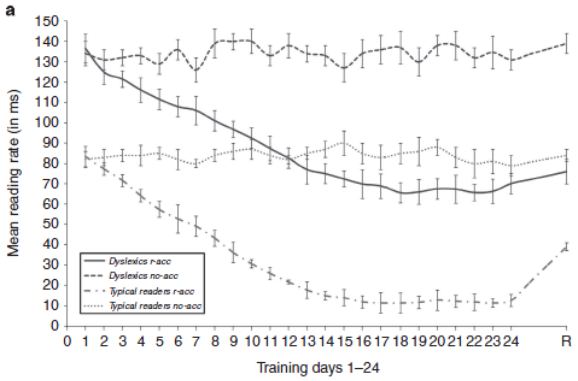

Chi ripara la macchina?
Marco
Meccanico
Autista
Elettricista

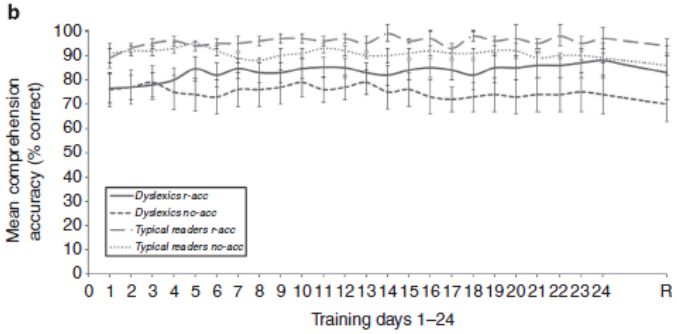

Speed: 26
Game: 0 di 30
Sessione: 1
Avvia
#
Alice mescola gli ingredienti in una ciotola
dienti in una ciotola
Dove mescola gli ingredienti Alice?
Ciotola
Pentola
Tazzina
Dove mescola gli ingredienti Alice?
Ciotola
Pentola
Tazzina
19
11

Risultati

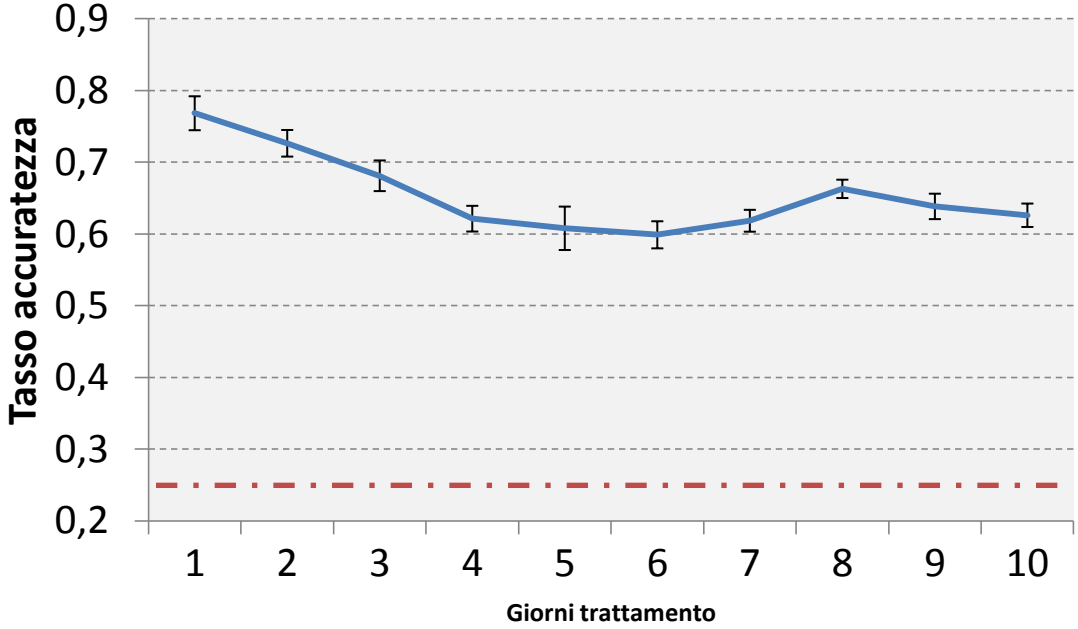


Tempo medio per l





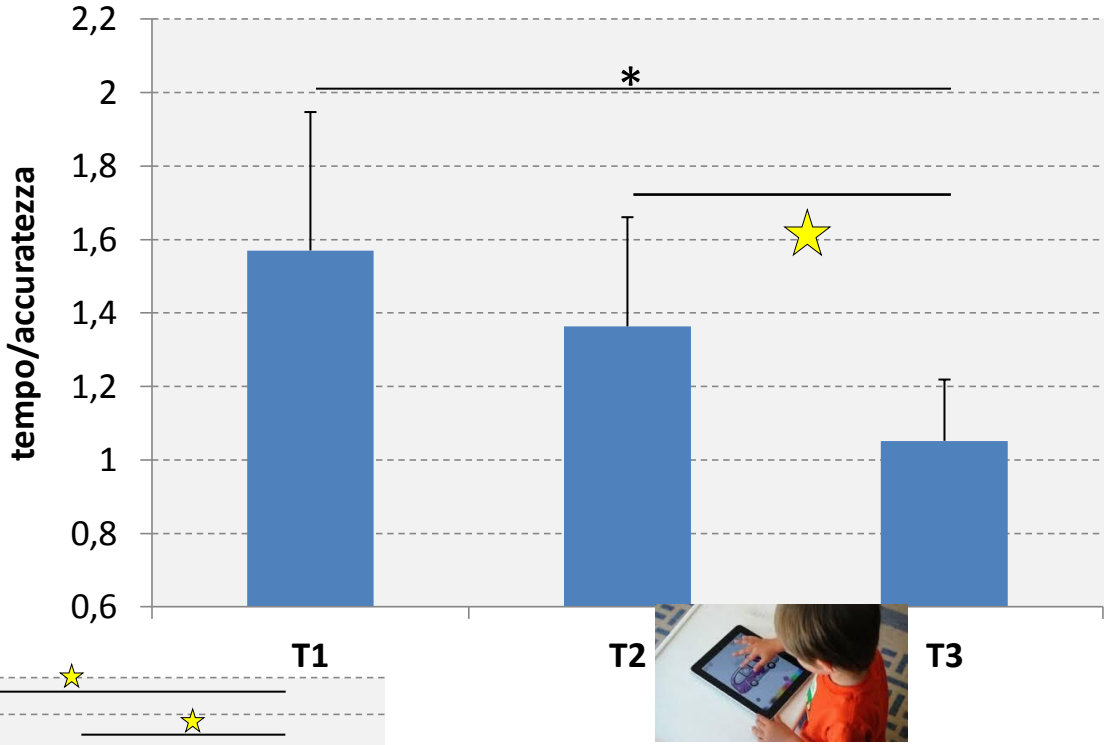
Risposte corrette

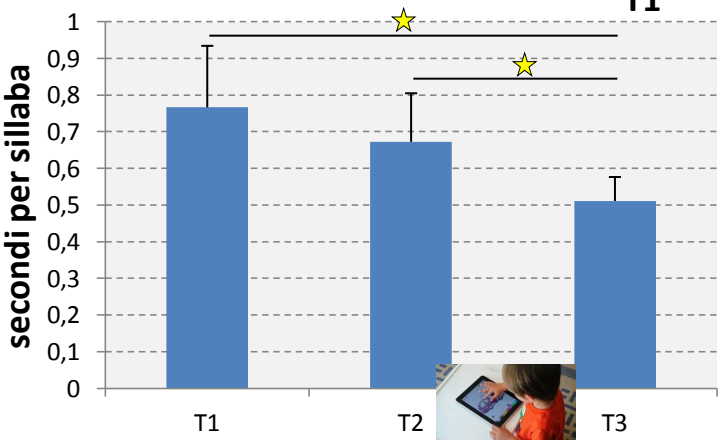


Risultati

Lettura ripetuta dello stesso brano:

Valutata la prestazione utilizzando l'indice di inefficienza (tempo/accuratezza) il trattamento (T3) migliora significativamente le prestazioni di lettura rispetto alla valutazione precedente (T2)





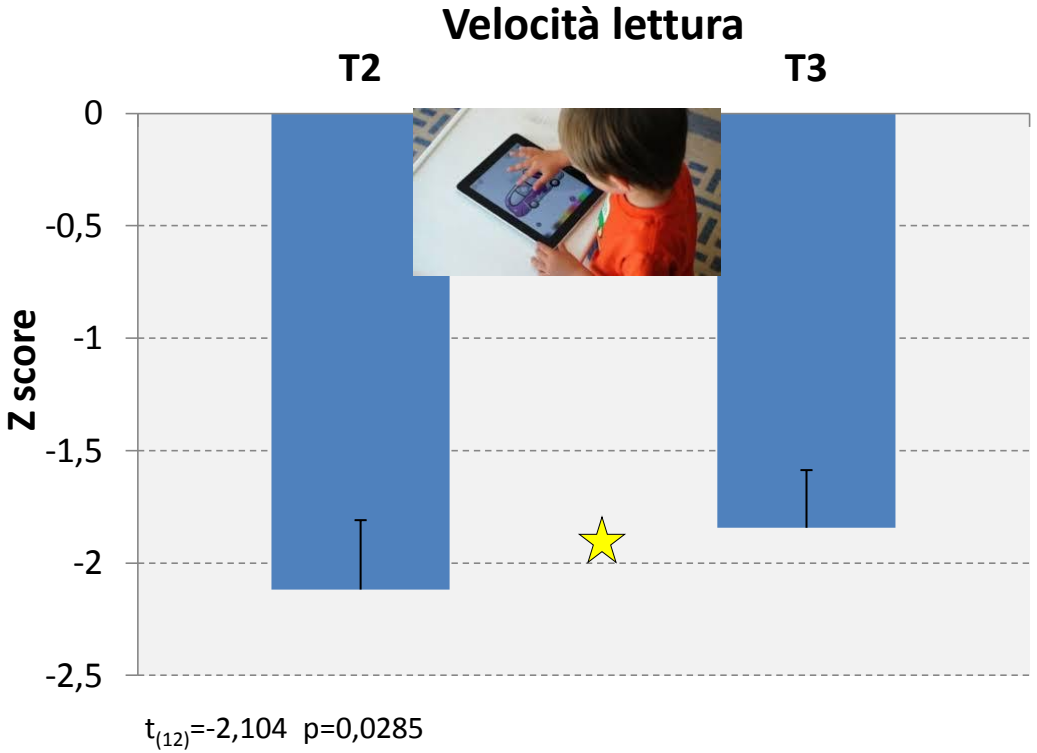
M=0,16 (DS=0,26) Incremento medio (T2-T3) in secondi per sillaba

* p=0,054

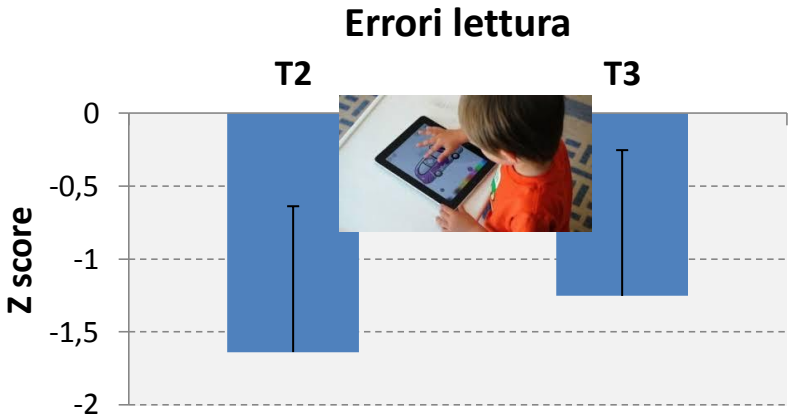
☆ p<0,05

Lettura brani diversi T2-T3

Somministrando due brani diversi, si osserva un significativo aumento della velocità di lettura, ed una accuratezza invariata



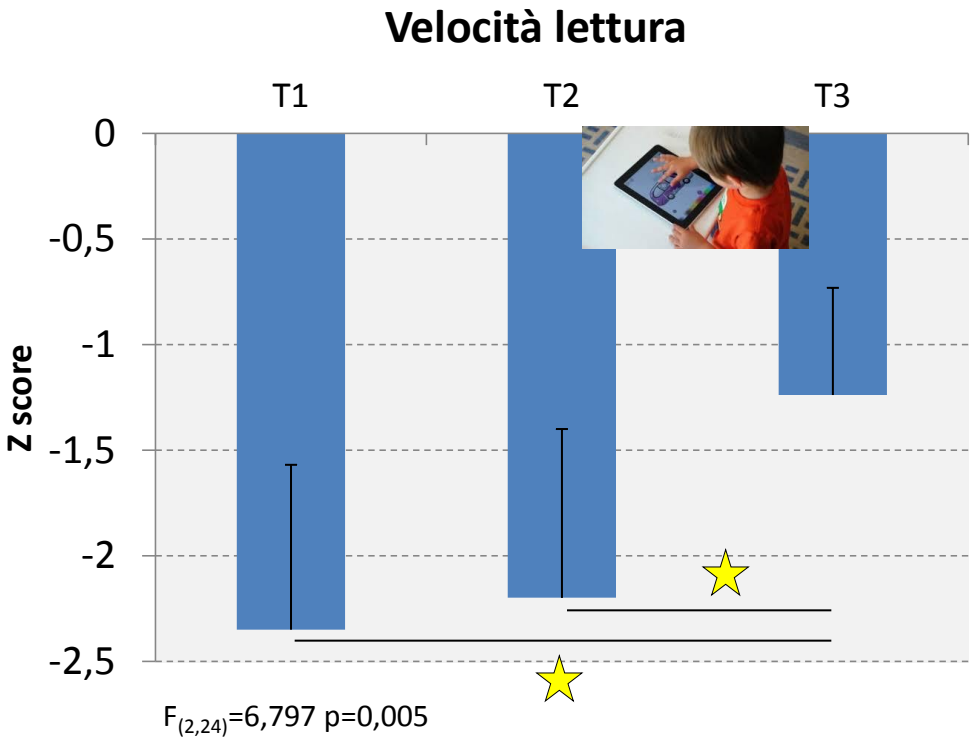
$t_{(12)}$=-2,104 p=0,0285

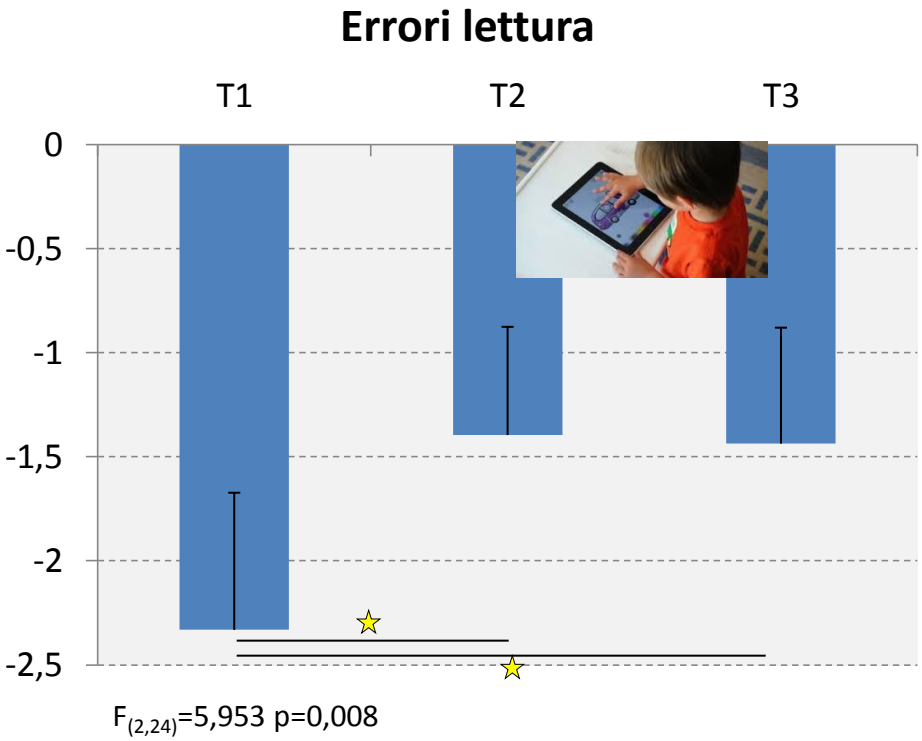


$t_{(12)}$=- 0,57 p=0,579

Lettura liste non parole T1-T2-T3

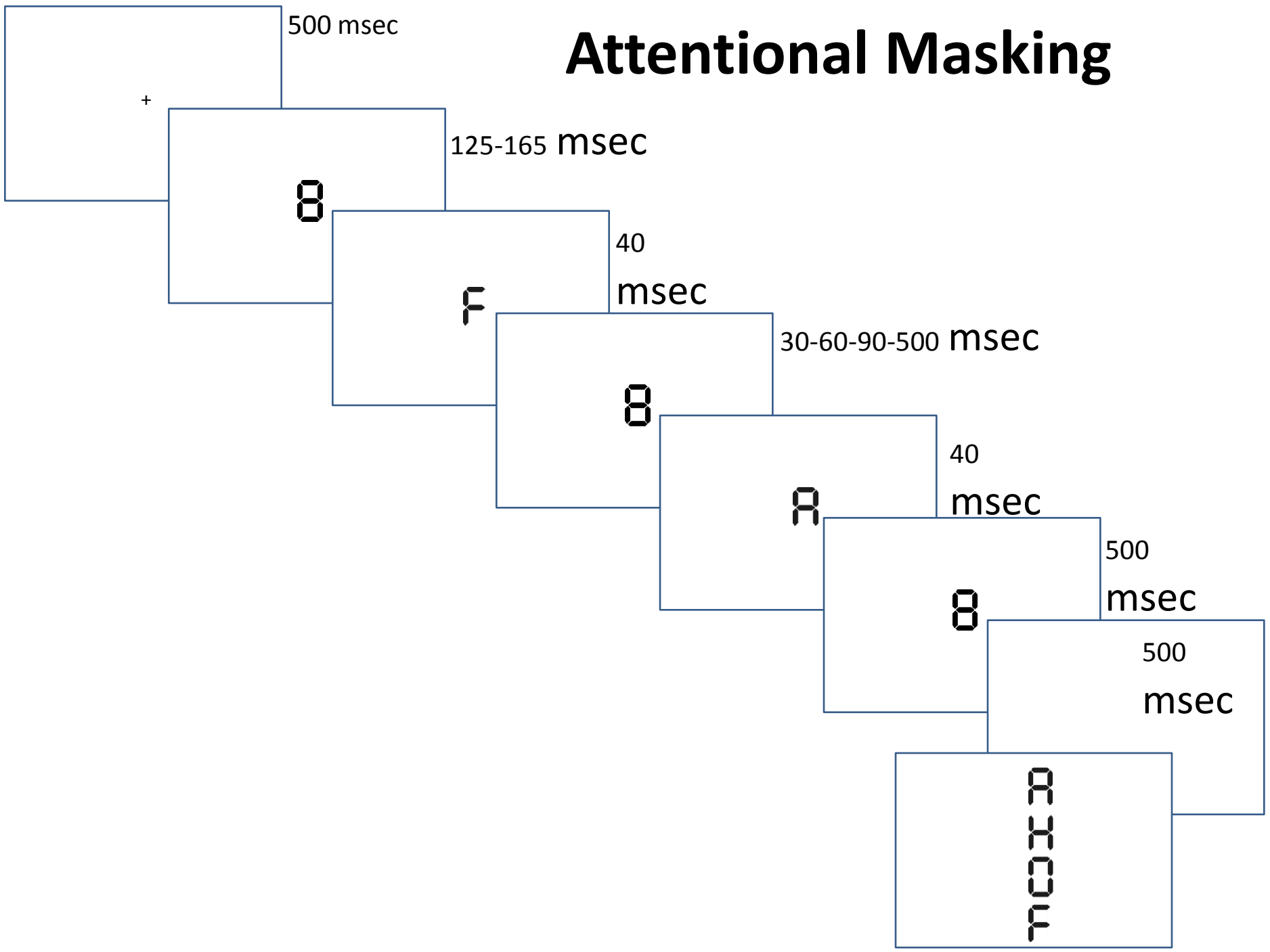
Si ottiene un effetto significativo nella velocità di lettura, ed un effetto sugli errori dovuto alla ripetizione del test





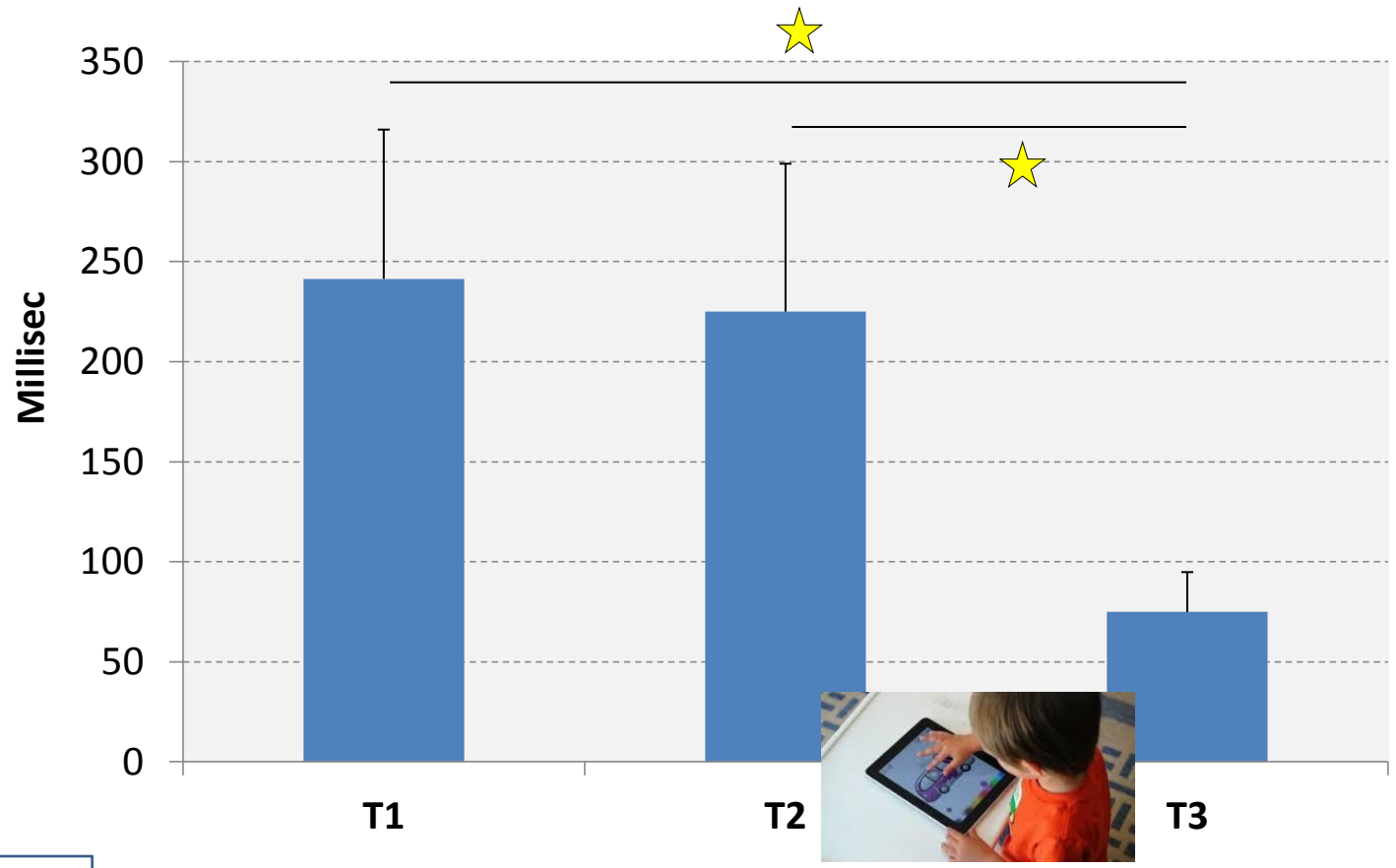
Il miglioramento fra T2 e T3 in termini di secondi per sillaba è pari a 0,16

Attentional Masking



Risultati prova Attentional Masking

I tempi necessari per identificare la lettera presentata, diminuiscono significativamente a seguito del trattamento

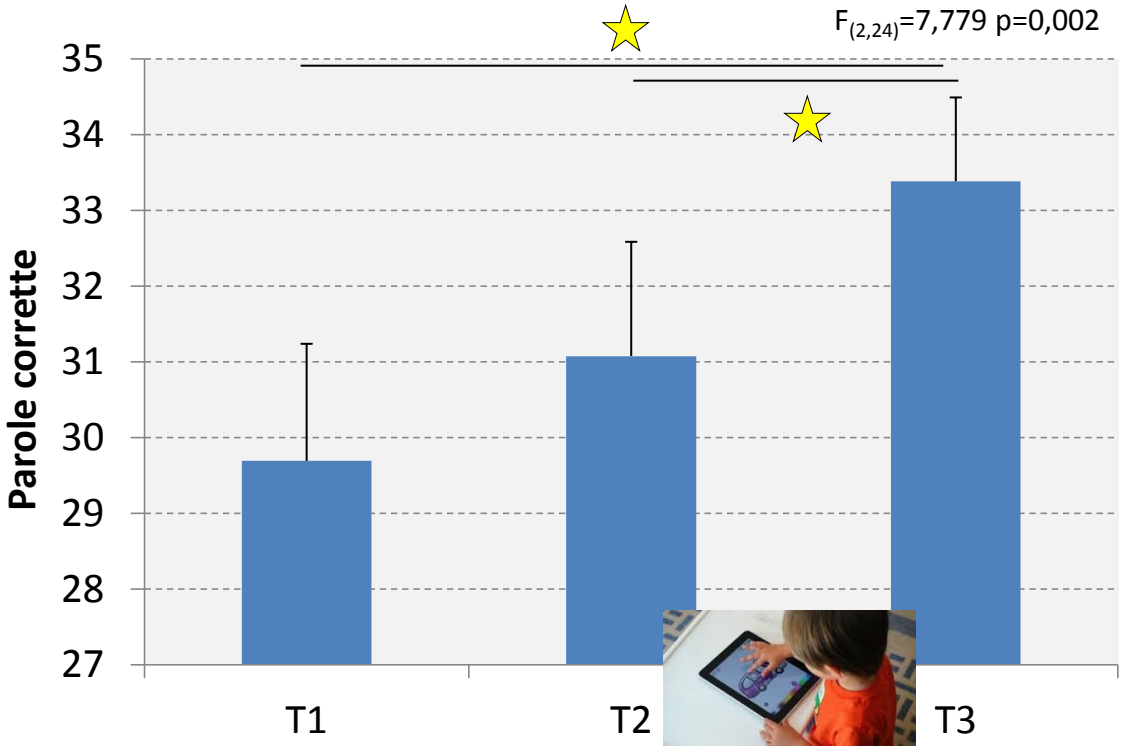


$F_{(2,24)}$=4,352 p=0,024

F

Risultati ripetizione non parole VAUMeLF

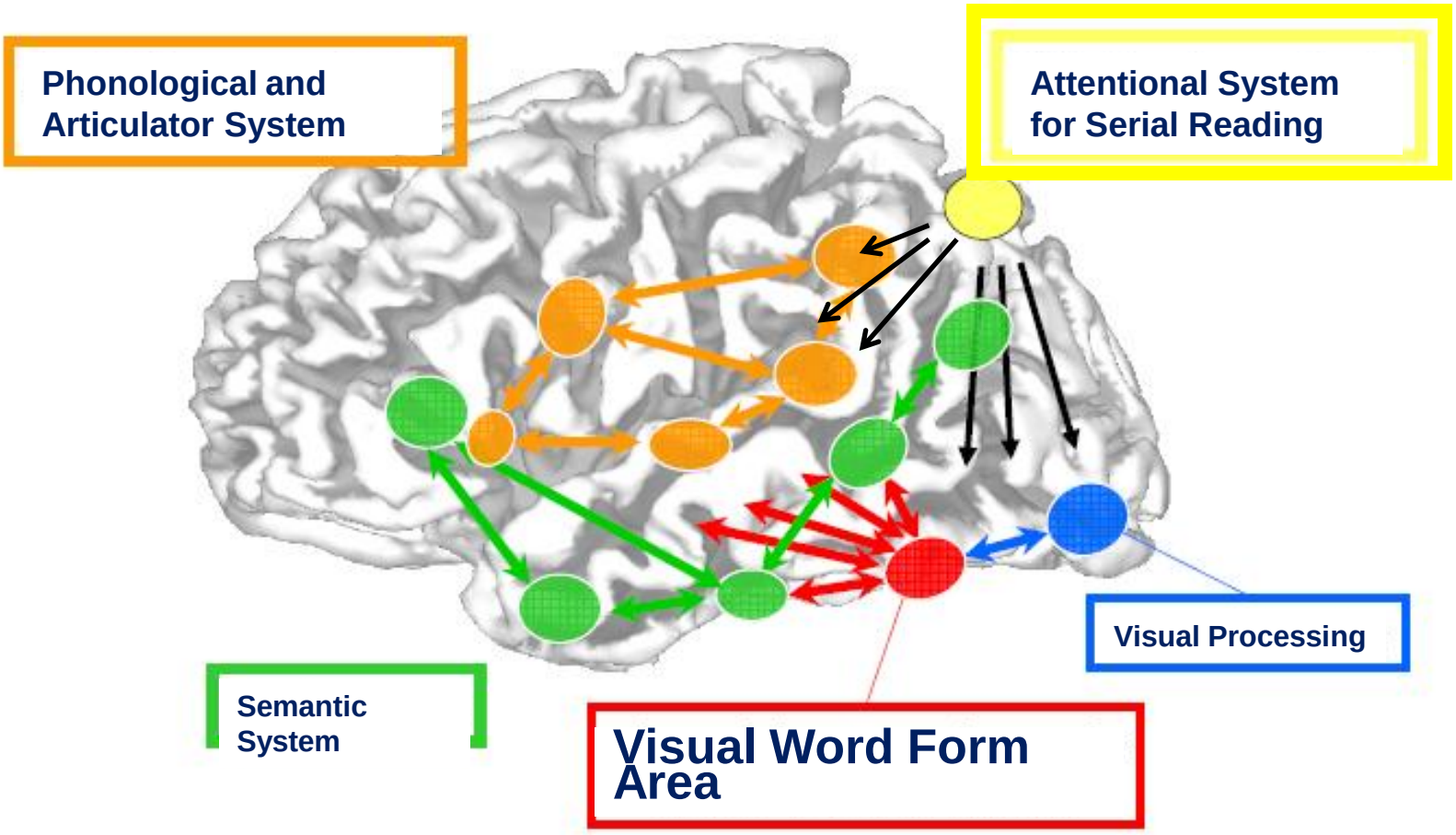
Dopo il trattamento, nella prova fonologica di ripetizione di non parole, si ha un incremento significativo delle performance



1. Attenzione e lettura

Innovativa anotomia funzionale della lettura

Il modello modificato di Stanislas Dehaene



Come migliorare l'attenzione visiva (e non solo)???

letters to nature

Action video game modifies visual selective attention

C. Shawn Green & Daphne Bavelier

Department of Brain and Cognitive Sciences, Center for Visual Science, University of Rochester, New

Focus Article

Stretching the limits of visual attention: the case of action video games

Current Biology 20, 1573–1579, September 14, 2010 ©2010 Elsevier Ltd All rights reserved DOI 10.1016/j.cub.2010.07.040

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Acta Psychologica 119 (2005) 217–230
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The effects of action video game experience on the time course of inhibition of return and the efficiency of visual search

Attention, Perception, & Psychophysics
2010, 72 (4), 1120-1129
doi:10.3758/APP.72.4.1120

Report

Video game players show more precise multisensory temporal processing abilities

SARAH E. DONOHUE, MARTY G. WOLDORFF, AND STEPHEN R. MITROFF
Duke University, Durham, North Carolina

Copyright 2006 by the American Psychological Association
0096-1523/06/$12.00 DOI: 10.1037/0096-1523.32.6.1465

Improved Probabilistic Inference as a General Learning Mechanism with Action Video Games

Journal of Experimental Psychology:
Human Perception and Performance
2006, Vol. 32, No. 6, 1465–1478

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Acta Psychologica
journal homepage: www.elsevier.com/locate/actpsy

Effect of Action Video Games on the Spatial Distribution of Visuospatial Attention

CURRENT DIRECTIONS IN PSYCHOLOGICAL SCIENCE

C. Shawn

The effects of video game playing on attention, memory, and executive contro

Walter R. Boot *, Arthur F. Kramer, Dani

Vision Research 61 (2012) 132–143

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Contents lists available at SciVerse ScienceDirect
Vision Research
journal homepage: www.elsevier.com/locate/visres

VISION RESEARCH

Increasing Speed of Processing With Action Video Games

Matthew W.G. Dye, C. Shawn Green, and Daphne Bavelier
Department of Brain and Cognitive Sciences, University of Rochester

Neural bases of selective attention in action video game players

COMMENT

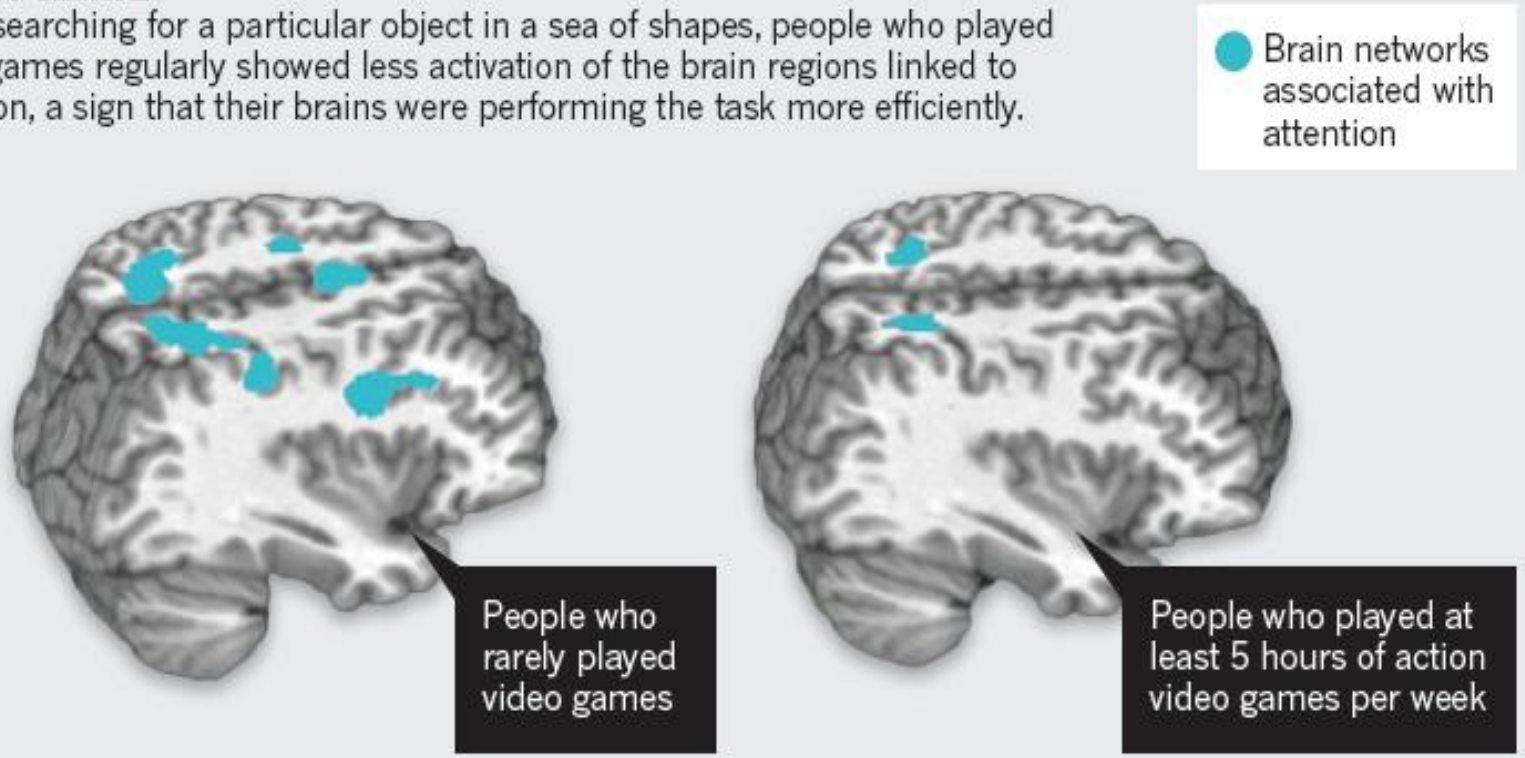
ILLUSTRATION BY ANDY MARTIN

Games to do you good

Neuroscientists should help to develop compelling video games that boost brain function and improve well-being, say **Daphne Bavelier** and **Richard J. Davidson**.

BRAIN GAME

When searching for a particular object in a sea of shapes, people who played video games regularly showed less activation of the brain regions linked to attention, a sign that their brains were performing the task more efficiently.



ADAPTED FROM D. BAVELIER *ET AL.* *VIS. RES.* **61**, 132–143 (2012)/ELSEVIER.

Molecular Psychiatry (2013), 1–7
© 2013 Macmillan Publishers Limited All rights reserved 1359-4184/13
www.nature.com/mp

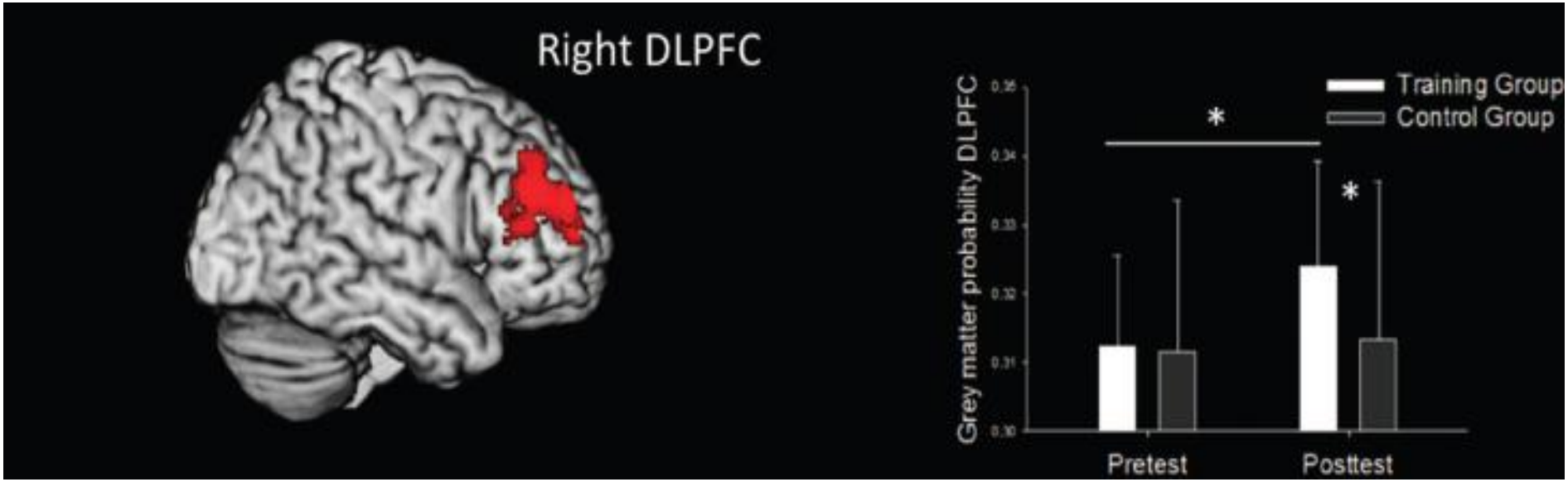
ORIGINAL ARTICLE

Playing Super Mario induces structural brain plasticity: gray matter changes resulting from training with a commercial video game

S Kühn[1], T Gleich[2], RC Lorenz[2,3], U Lindenberger[1] and J Gallinat[2]

Video gaming is a highly pervasive activity, providing a multitude of complex cognitive and motor demands. Gaming can be seen as an intense training of several skills. Associated cerebral structural plasticity induced has not been investigated so far. Comparing a control with a video gaming training group that was trained for 2 months for at least 30 min per day with a platformer game, we found significant gray matter (GM) increase in right hippocampal formation (HC), right dorsolateral prefrontal cortex (DLPFC) and bilateral cerebellum in the training group. The HC increase correlated with changes from egocentric to allocentric navigation

Figure 1. Screenshot from the platformer video game trained (Super Mario 64).



Atten Percept Psychophys
DOI 10.3758/s13414-011-0194-7

Changes in search rate but not in the dynamics of exogenous attention in action videogame players

Bjorn Hubert-Wallander · C. Shawn Green · Michael Sugarman · Daphne Bavelier

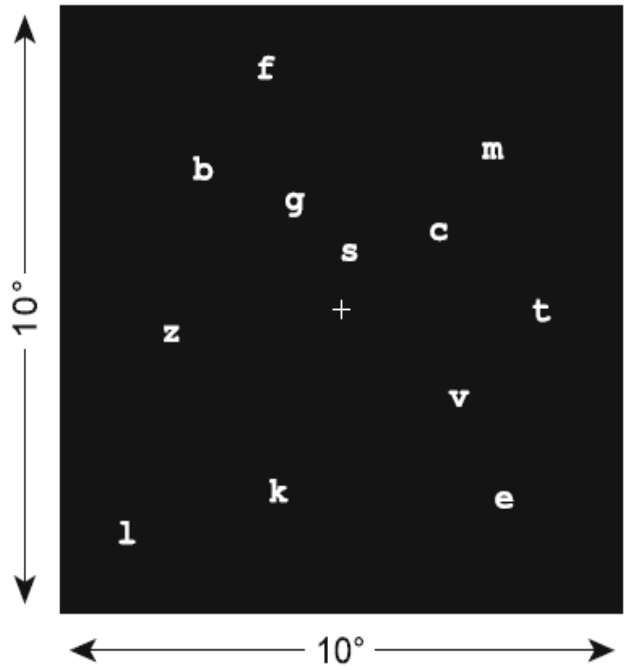


Fig. 1 An example of the search stimuli presented to subjects. The subjects' task on each trial was to decide whether a letter "b" or "d" was present among a set of unique distractor letters. Exactly one target letter was present on each trial. The search array remained on the screen until the subject made a response via a keypress

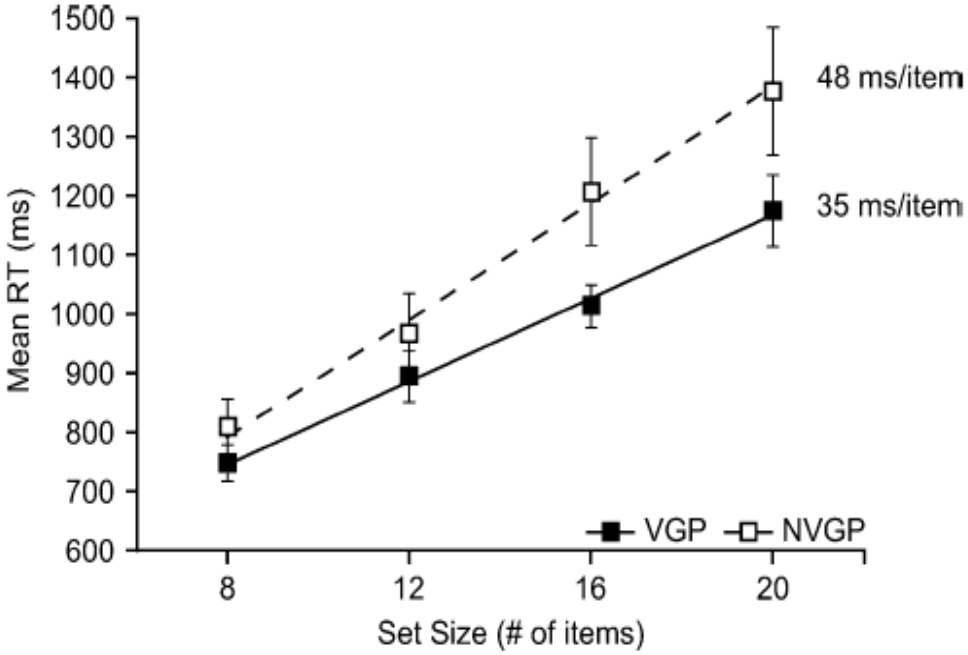


Fig. 2 Mean reaction time data from Experiment 1A, along with best-fit lines for each group. RTs increased linearly with the addition of distractor letters to the display across groups, but the VGP group appeared to suffer a smaller RT cost for each additional distractor than did the NVGP group. This manifests here as a shallower slope in the VGP best-fit line as compared to the NVGP line. Error bars represent standard errors. One NVGP subject is not included (see the Experiment 1B analysis)

Current Biology 22, R197–R206, March 20, 2012 ©2012 Elsevier Ltd All rights reserved DOI 10.1016/j.cub.2012.02.012

Learning, Attentional Control, and Action Video Games

Review

C.S. Green[1,*] and D. Bavelier[2,3,*]

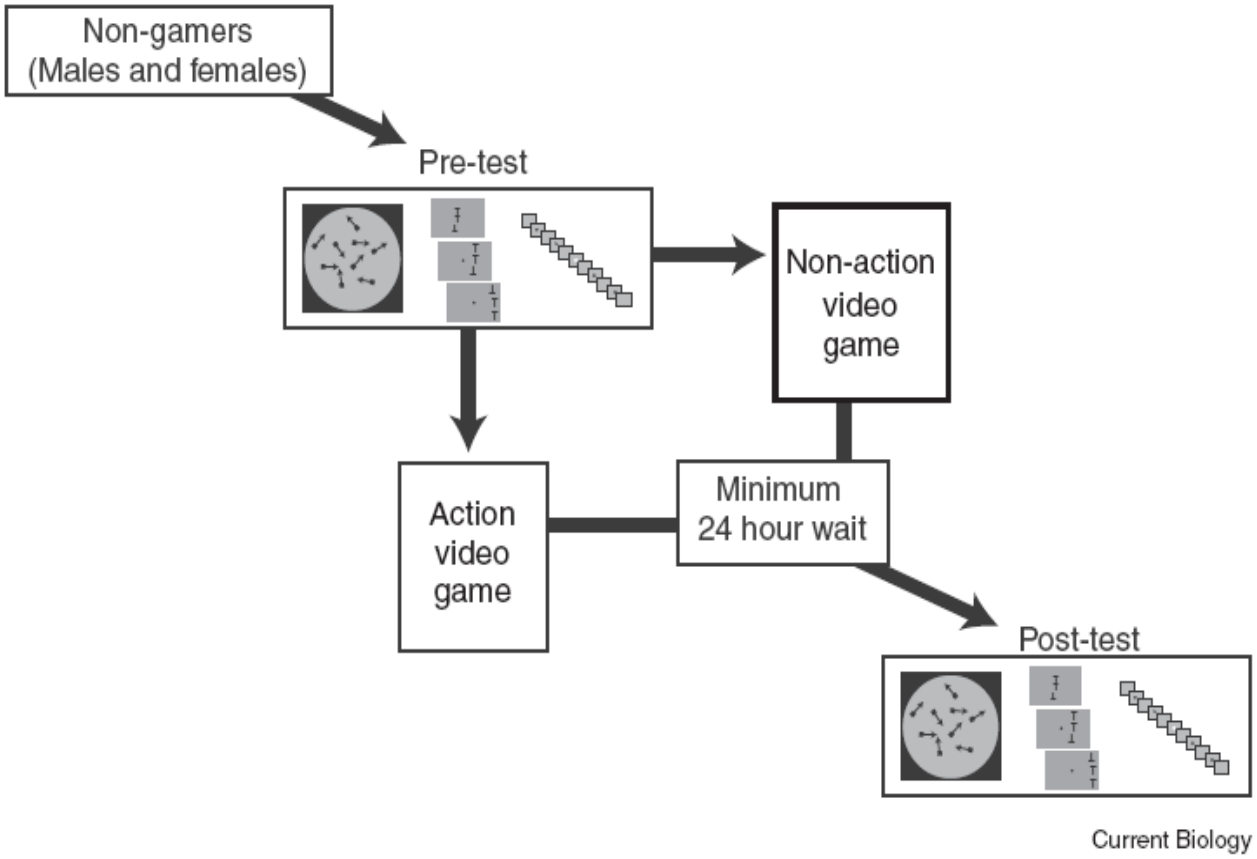
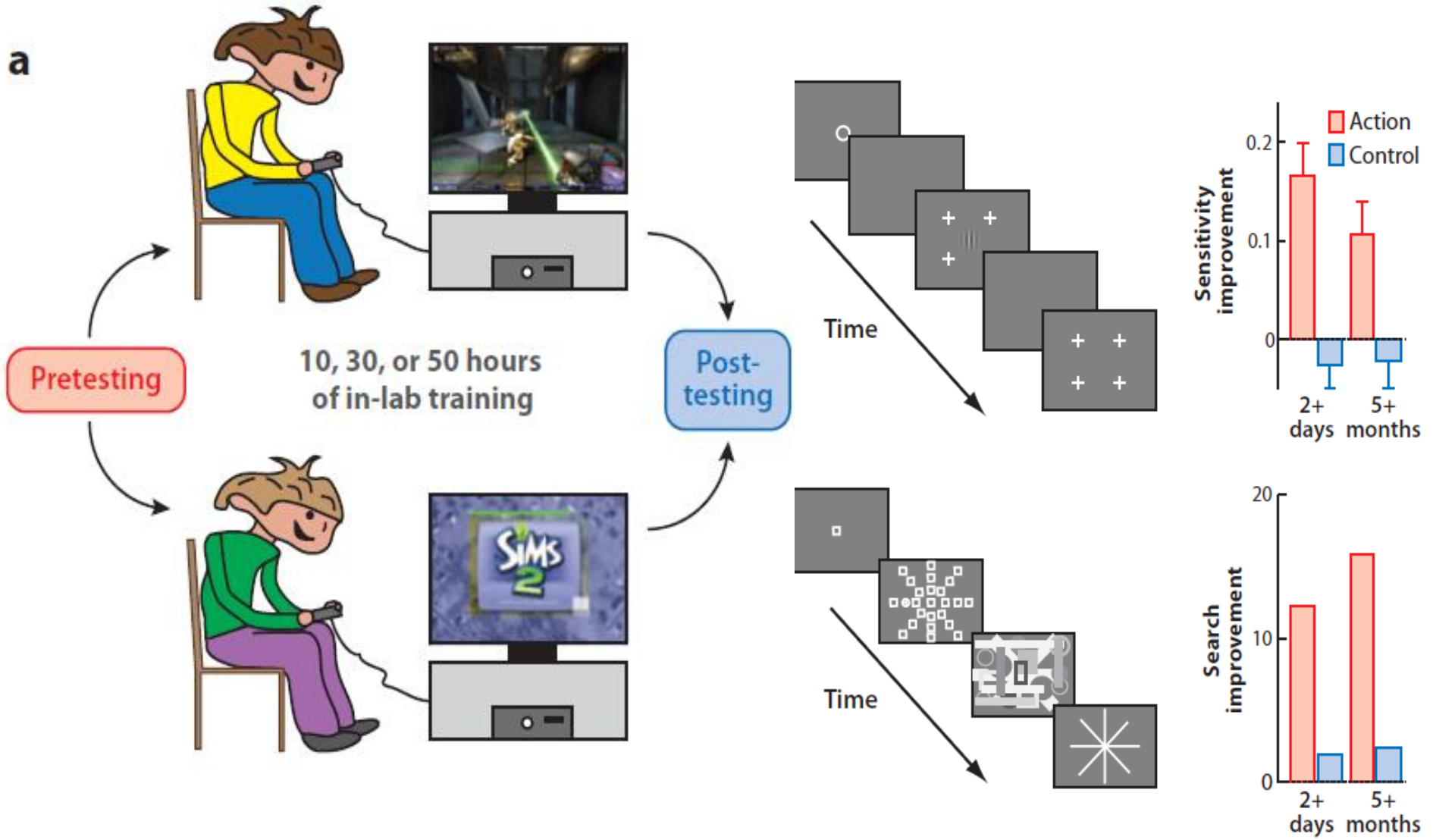


Figure 3. Training study design.

Individuals who report playing little to no video games (both males and females) are recruited and pre-tested on measures of interest. The pre-test measures are specifically designed to minimize task specific learning (for example, small numbers of trials, no feedback). Following pre-test, the groups are randomly assigned to play either an action game or a non-action, control game. The games are matched as closely as possible for as many aspects of game play as possible (identification with character, fun, 'flow', and so on) while leaving attentional and action demands different. Subjects come to the lab to play the game one to two hours a day (maximum of 10 hours a week) for anywhere from 10 to 50 hours depending on the study. Once the training is completed (and at least 24 hours after the last training session ends to ensure that any observed effects are not due to transient changes in physiology/arousal), subjects complete similar tasks as during pre-test. A causal role of action game playing is indicated by a larger change from pre- to post-test in the action trained group than in the non-action trained group.


a
Pretesting
10, 30, or 50 hours
of in-lab training
Post-
testing
SIMS 2
Time
Time
Action
Control
Sensitivity
improvement
0.2
0.1
0
2+
days
5+
months
Search
improvement
20
10
0
2+
days
5+
months

Published in final edited form as:
Psychol Sci. 2007 January ; 18(1): 88–94. doi:10.1111/j.1467-9280.2007.01853.x.

Action-Video-Game Experience Alters the Spatial Resolution of Vision

C.S. Green and **D. Bavelier**
Department of Brain and Cognitive Sciences, University of Rochester

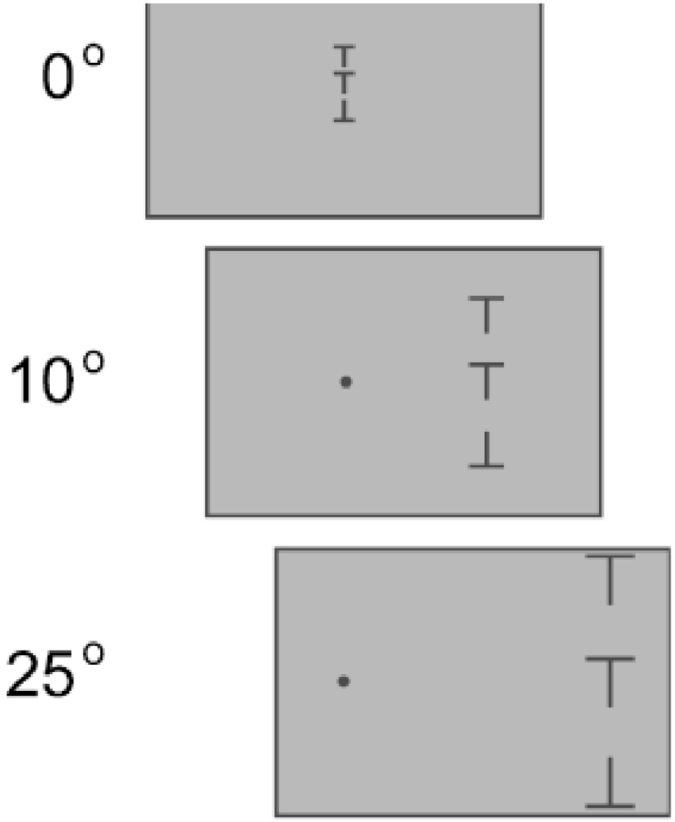
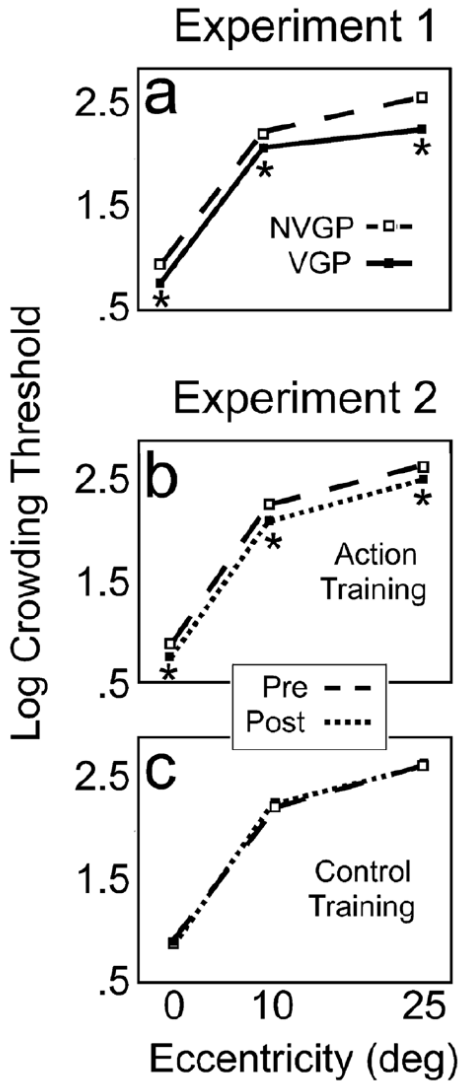


Fig. 1.
Illustration of the test stimuli. The stimuli consisted of three T shapes randomly oriented either right side up or upside down. The subject's task was to indicate the orientation of the center T. In separate blocks, three eccentricities were tested—0°, 10°, and 25°. The size of the Ts was set to be 1.5 times each individual subject's T-alone threshold at each eccentricity.



Crowding thresholds in Experiments 1 and 2. In Experiment 1 (a), thresholds of action-video-game players (VGPs) and non-action-video-game players (NVGPs) were compared. In Experiment 2, NVGPs were trained on an action video game (b) or a control game (c), and their crowding thresholds were measured before ("Pre") and after ("Post") training. Standard errors of the means for all data points were less than the size of the squares denoting the values. Significant differences between thresholds at the same eccentricity are indicated by asterisks,

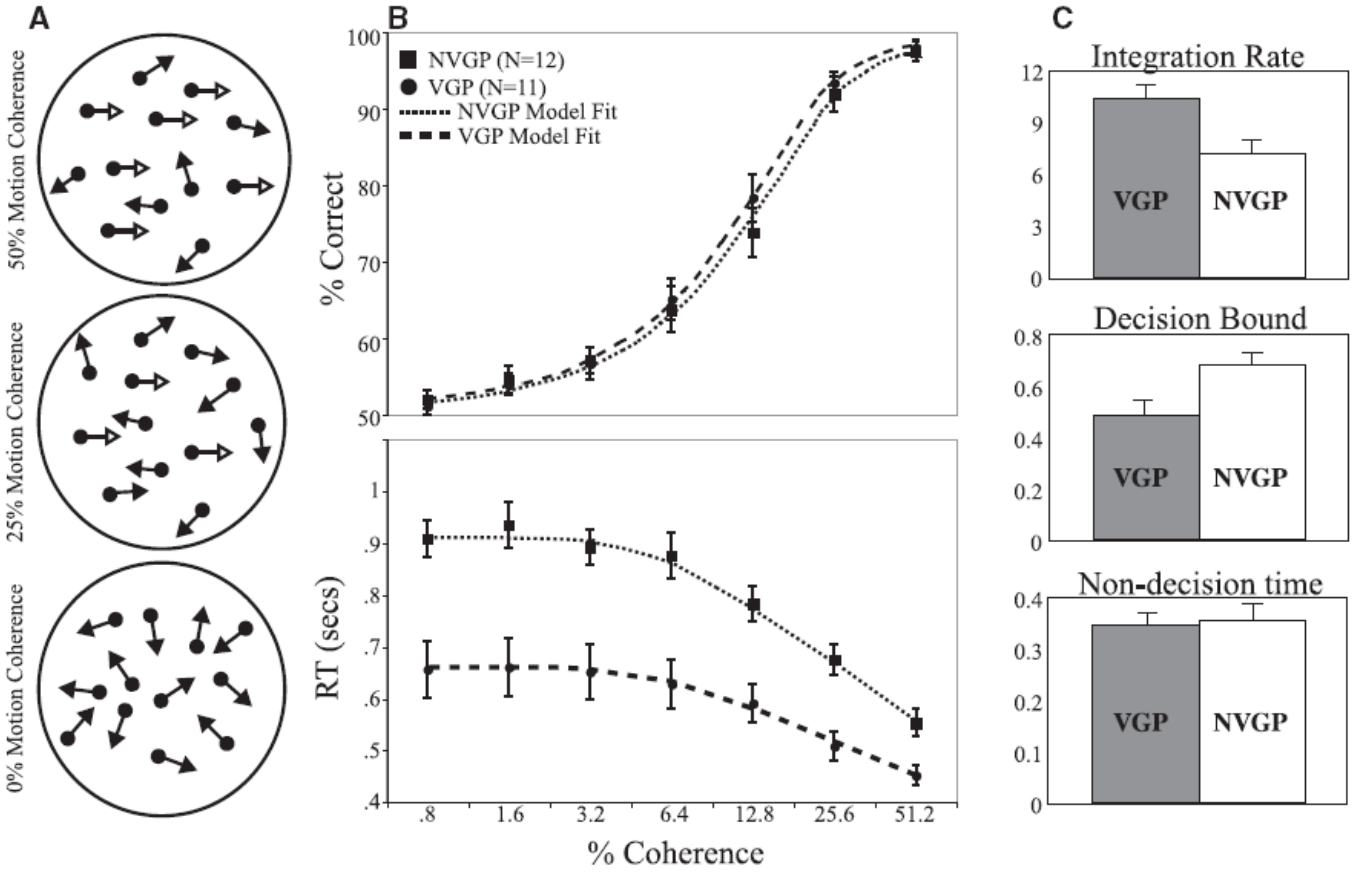
Current Biology 20, 1573–1579, September 14, 2010 ©2010 Elsevier Ltd All rights reserved DOI 10.1016/j.cub.2010.07.040

Report

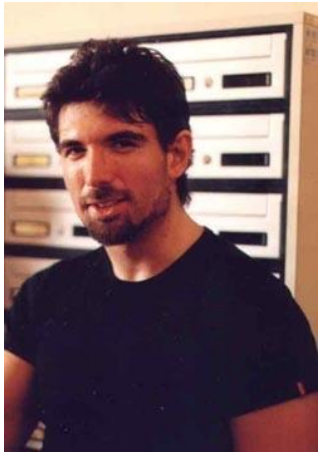
Improved Probabilistic Inference as a General Learning Mechanism with Action Video Games

C. Shawn Green,[1,2] Alexandre Pouget,[1] and Daphne Bavelier[1,*]
[1]Department of Brain and Cognitive Sciences, University of Rochester, Rochester, NY 14627, USA

meet our standards for improved probabilistic inference. These can be defined rigorously in the task we chose by considering decision making from a probabilistic perspective. Before committing to a choice, the best a subject can do is to



“Action Video-game” and Reading Treatment in Dyslexia???



letters to nature

Action video game modifies visual selective attention

C. Shawn Green & Daphne Bavelier

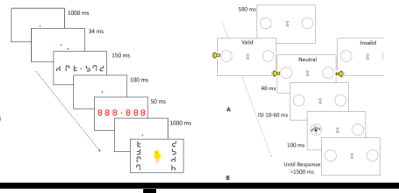
Department of Brain and Cognitive Sciences, Center for Visual Science, University of Rochester, Rochester, New York 14627, USA

Qui le ***caccia al coniglio***, il nostro ;o)
http://www.youtube.com/watch?v=QVHVfiZ34xM
oppure
http://www.youtube.com/watch?v=G0WChifZS4U&feature=related
un gioco di controllo sempre coniglio
http://www.youtube.com/watch?v=HoSvCd_JUjc&feature=related

Non-gamer dyslexic children (N=20)

Pre-training (T1)

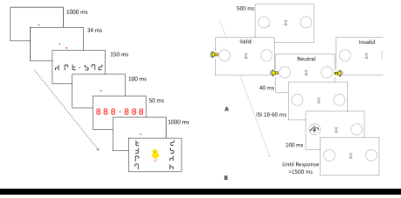
Sandro
Simone
Milena
Viola
Massimo
Andrea



Non-action video games (N=10)

Post-training (T2)

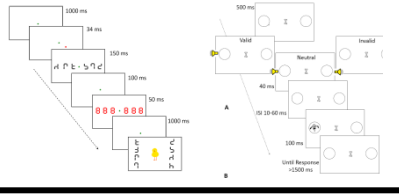
Sandro
Simone
Milena
Viola
Massimo
Andrea



Action video games (N=10)

12 hours (80 minutes x 9 days)

Sandro
Simone
Milena
Viola
Massimo
Andrea



Post-training (T2)

Sandro
Simone
Milena
Viola
Massimo
Andrea

Follow-up (T3) after 2 months from T2

(ii) “Action Video-game” and Reading Treatment in Dyslexia???

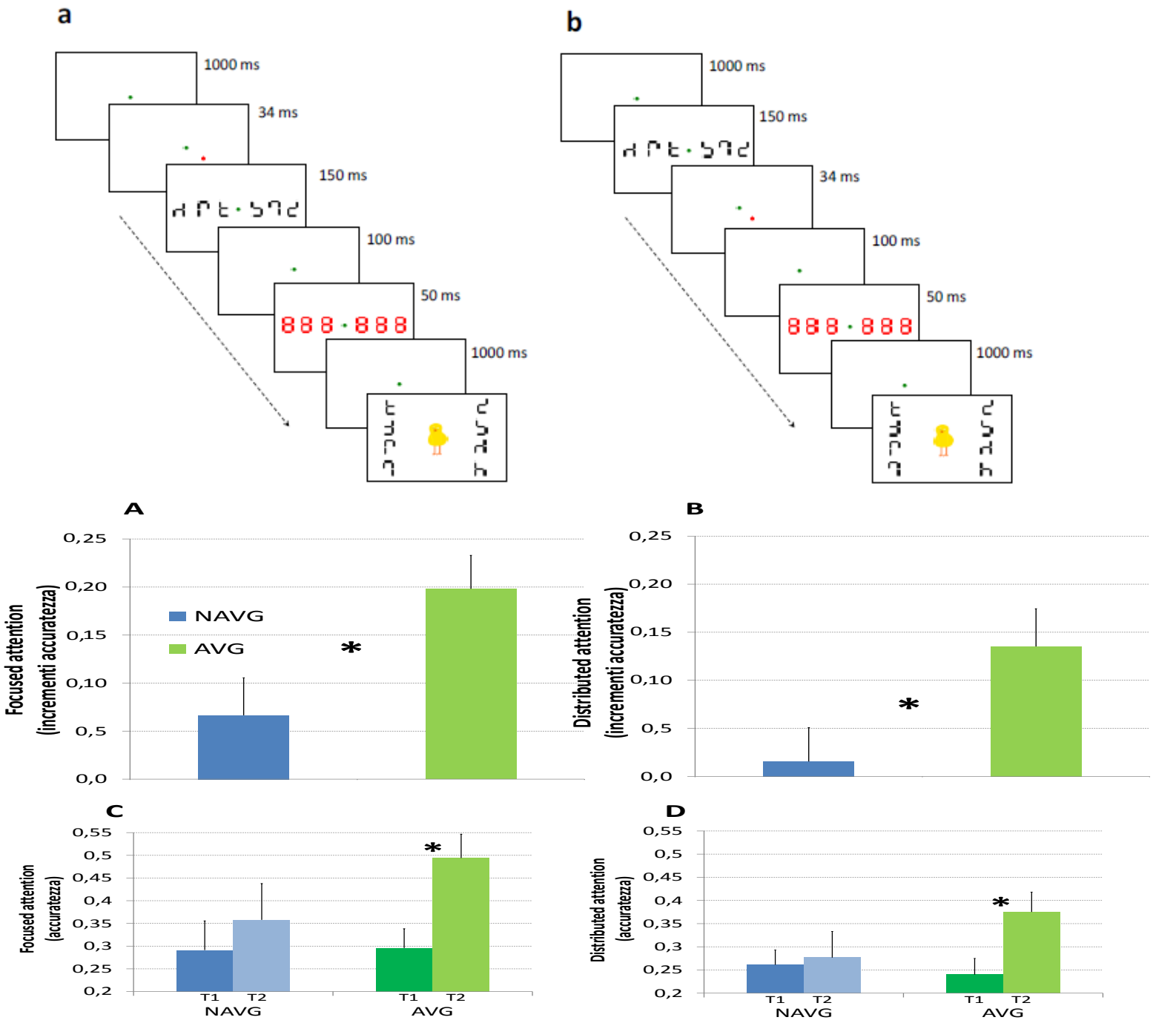
letters to nature

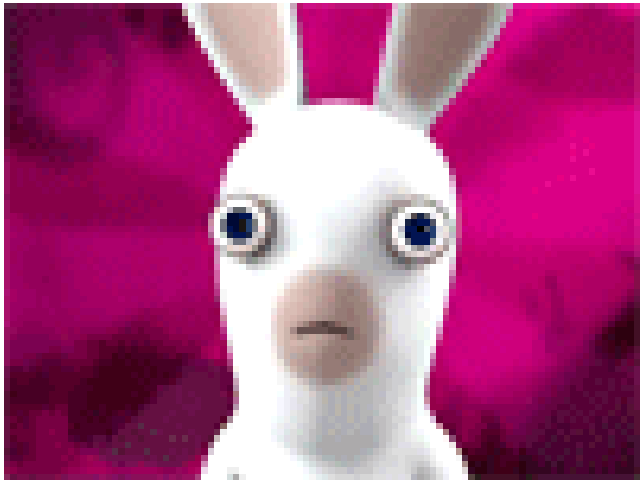
Action video game modifies visual selective attention

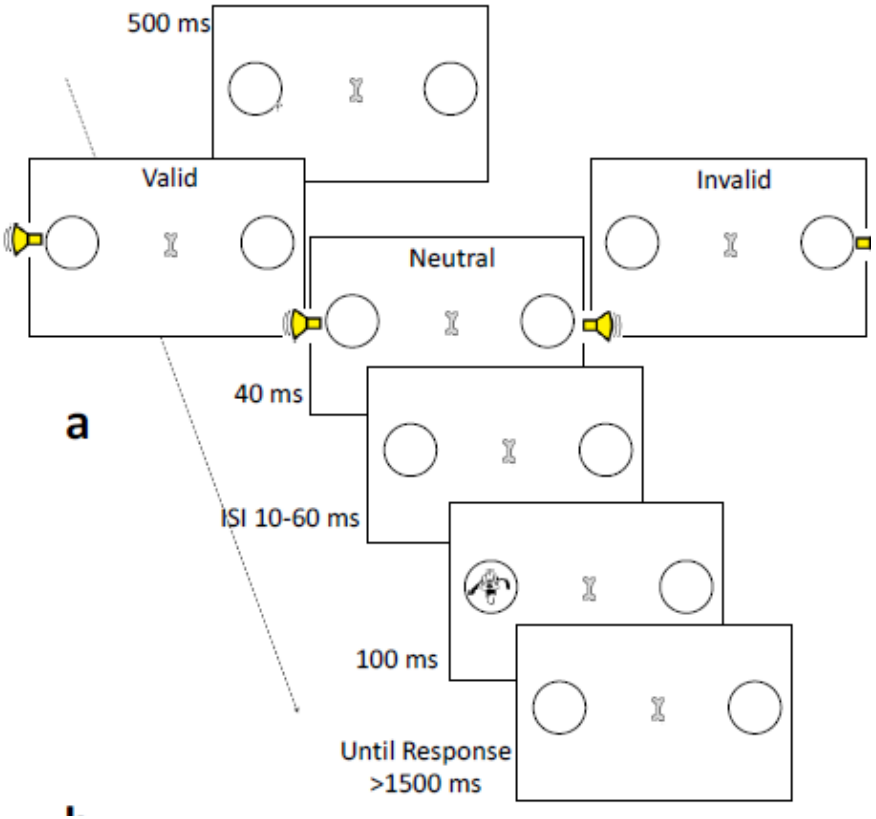
C. Shawn Green & Daphne Bavelier

Department of Brain and Cognitive Sciences, Center for Visual Science, University of Rochester, Rochester, New York 14627, USA

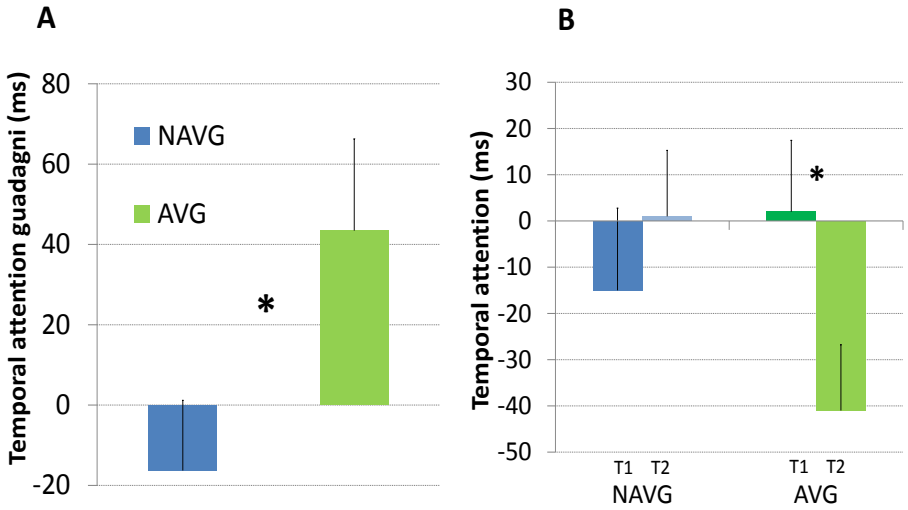
	NAVGp	*AVGp*	$t_{(18)}$ *p* value
Age (months)	114,72(±17,15)	121,43(±17,35)	.40
IQ	98,4(±9.94)	100,6(±10,23)	.63
Words reading	-2,87(±1,46)	-3,3(±2,85)	.67
Pseudo-words reading	-2,48(±1,51)	-2,05(±1,31)	.50
Phonemic blending (number of correct phonemes)	30,9(±16,1)	32,6(±15,52)	.80

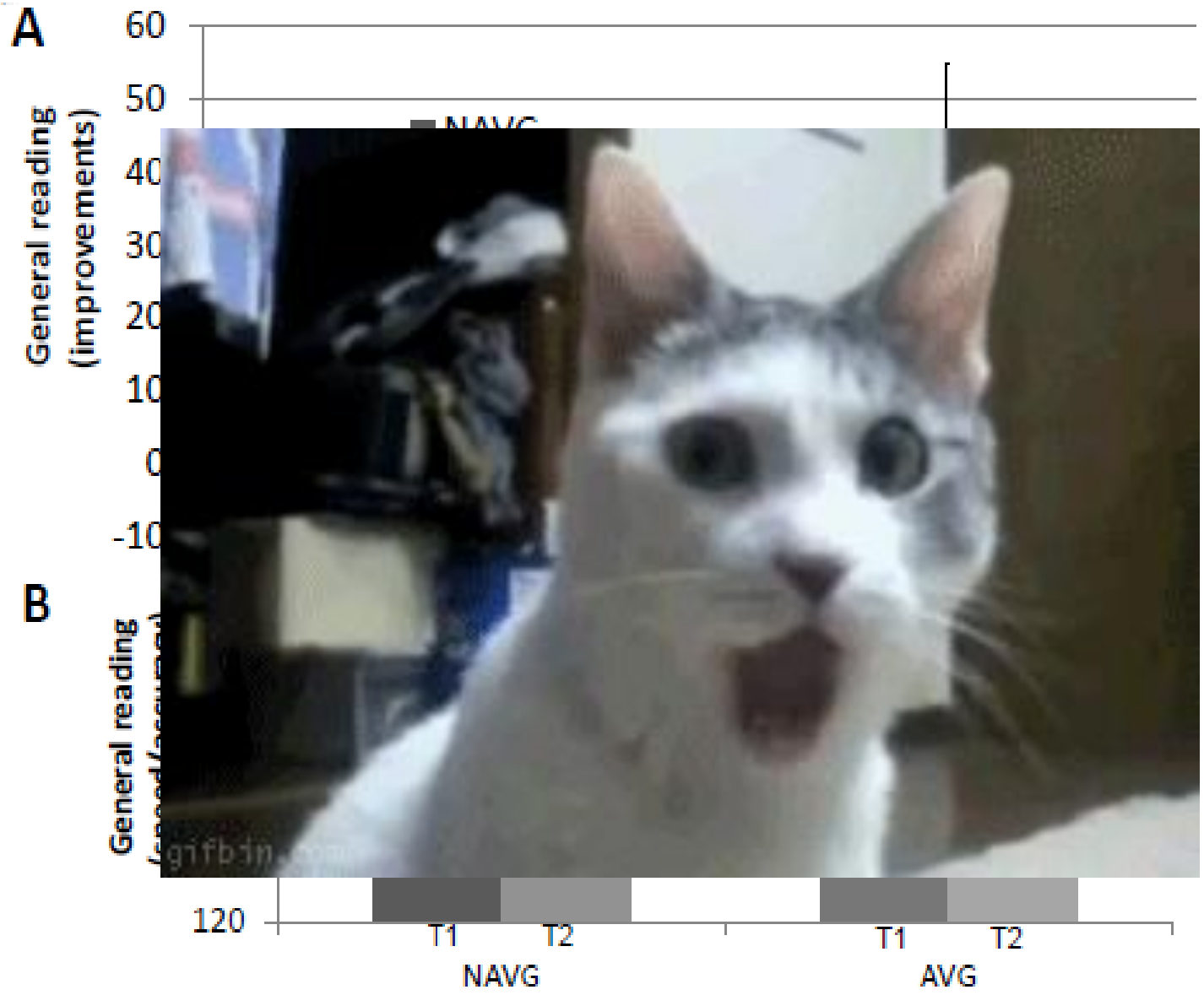

a
1000 ms
34 ms
150 ms
100 ms
50 ms
888·888
1000 ms
b
1000 ms
150 ms
34 ms
100 ms
50 ms
888·888
1000 ms
A
Focused attention
(incrementi accuratezza)
0,25
0,20
0,15
0,10
0,5
0,0
NAVG
AVG
*
B
Distributed attention
(incrementi accuratezza)
0,25
0,20
0,15
0,10
0,5
0,0
*
C
Focused attention
(accuratezza)
0,55
0,5
0,45
0,4
0,35
0,3
0,25
0,2
*
T1
T2
NAVG
T1
T2
AVG
D
Distributed attention
(accuratezza)
0,55
0,5
0,45
0,4
0,35
0,3
0,25
0,2
*
T1
T2
NAVG
T1
T2
AVG



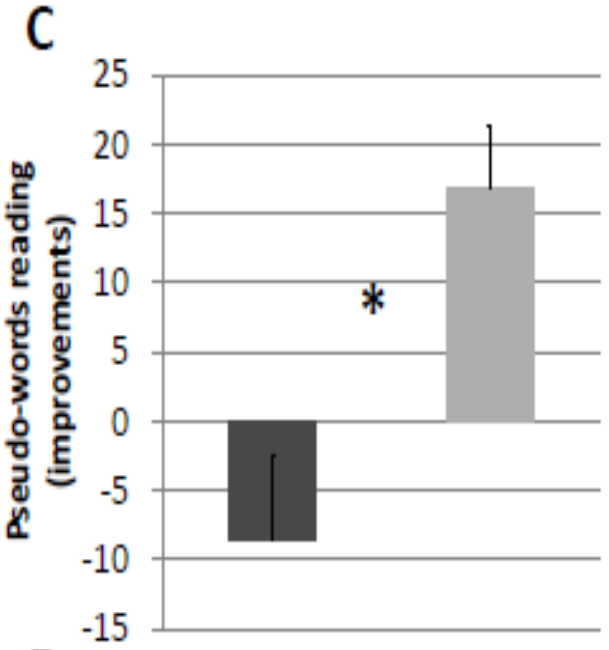

500 ms
Valid
Invalid
Neutral
40 ms
a
ISI 10-60 ms
100 ms
Until Response
>1500 ms

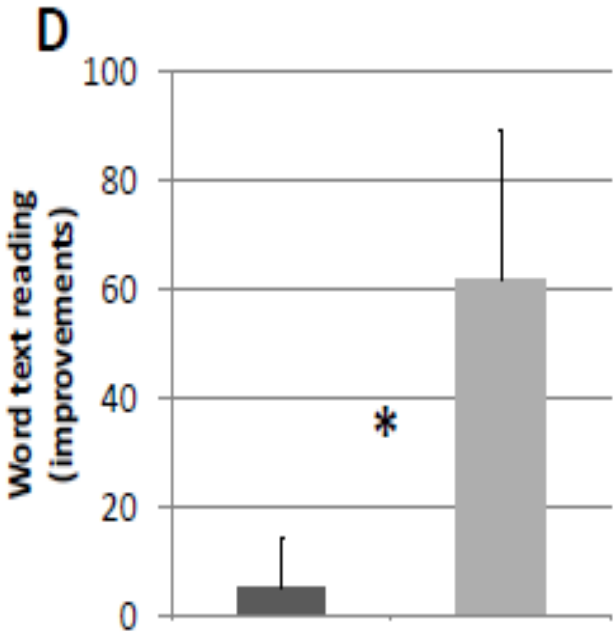

REC

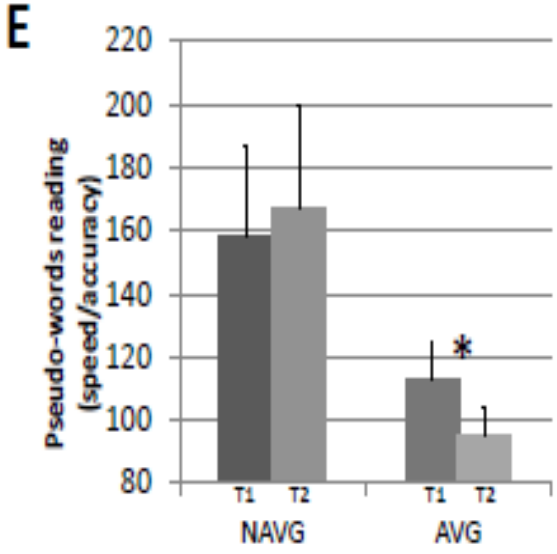

A
B
Temporal attention guadagni (ms)
80
60
40
20
0
-20
NAVG
AVG
*
Temporal attention (ms)
30
20
10
0
-10
-20
-30
-40
-50
T1 T2
NAVG
T1 T2
AVG
*

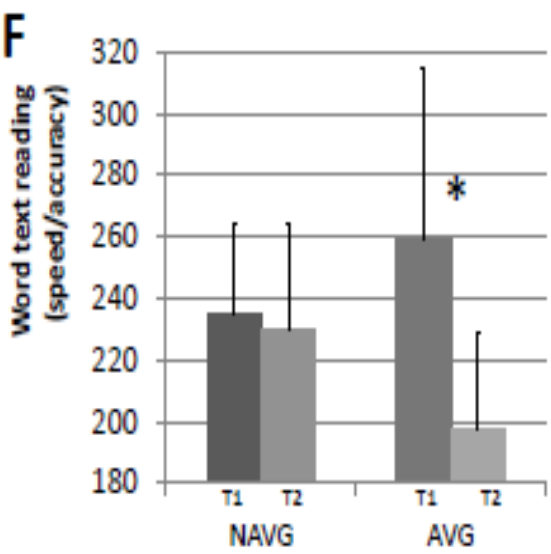

A
60
50
40
30
20
10
0
-10
General reading (improvements)
B
120
T1
T2
T1
T2
NAVG
AVG

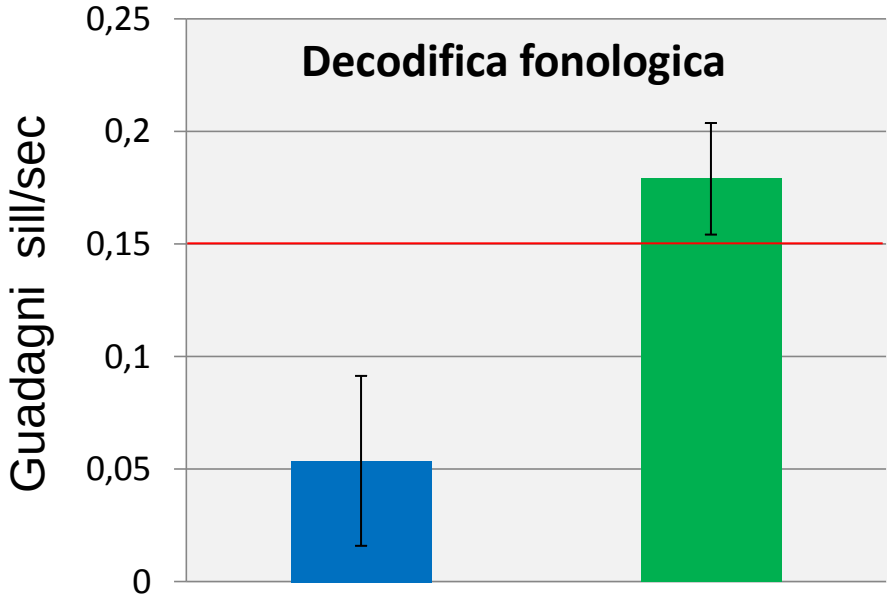

MAKE GIFS AT GIFSOUP.COM


C
Pseudo-words reading (improvements)
25
20
15
10
5
0
-5
-10
-15
*

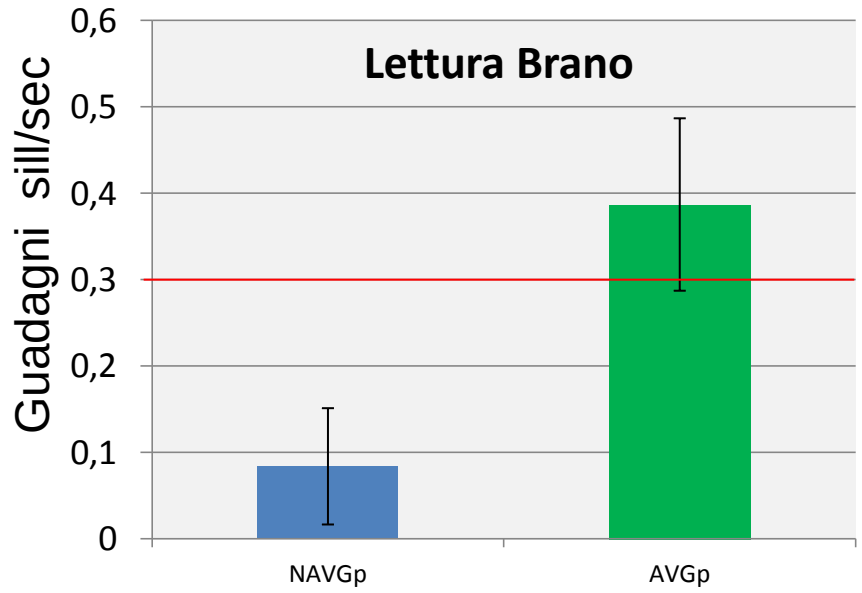

D
Word text reading (improvements)
100
80
60
40
20
0
*


E
Pseudo-words reading (speed/accuracy)
220
200
180
160
140
120
100
80
*
T1
T2
T1
T2
NAVG
AVG


F
Word text reading (speed/accuracy)
320
300
280
260
240
220
200
180
*
T1
T2
T1
T2
NAVG
AVG



Miglioramento spontaneo atteso in un anno in un dislessico nelle non-parole=0,15 sill/sec



Miglioramento spontaneo atteso in un anno
per un dislessico in un brano=0,30 sill/sec