

# ALFABETIZAÇÃO: PROGRAMAS DE ENSINO BALANCEADOS

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***INDH – Instituto de Neuropsicologia e Desenvolvimento Humano***



***Programa de Pós-graduação em Distúrbios do Desenvolvimento***

# Linguagem escrita

- Ler e escrever: processos de extrema complexidade.
- Envolvem diversos aspectos, como sociais, culturais, econômicos, familiares, pedagógicos, cognitivos, emocionais, motivacionais, linguísticos, biológicos.
- Grande desafio: promover tais processos e avaliá-los.



**Modelo de componentes de leitura  
(adaptado de Aaron et al., 2008)**

**Domínio I**

**Componentes  
cognitivo-  
linguísticos**

**Reconhecimento de palavras**

**Compreensão**

**Fluência**

**Domínio II**

**Outros  
componentes  
psicológicos**

**Aspectos psicomotores**

**Motivação**

**Aspectos emocionais**

**Aspectos cognitivos  
gerais**

**Autorregulação**

**Domínio III**

**Componentes  
ambientais**

**Ambiente em casa**

**Ambiente escolar**

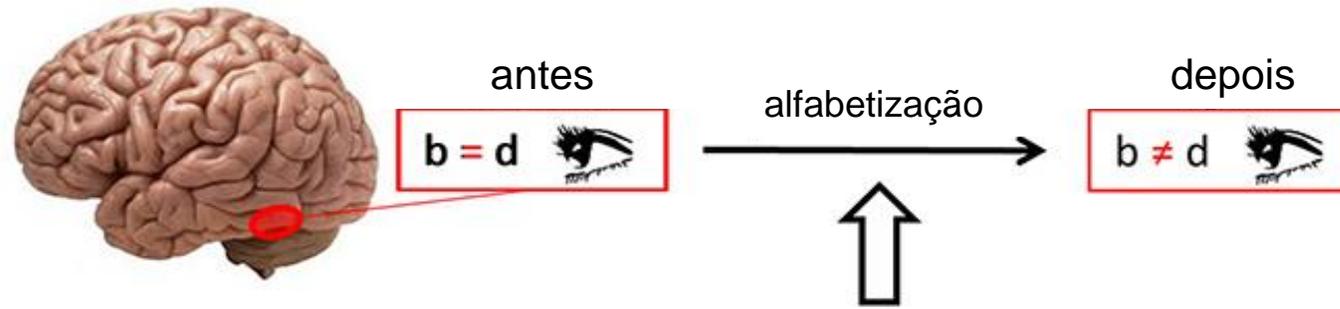
**Cultura**

**Envolvimento parental**

**Influência dos pares**

**Língua**

Modelos cognitivos de leitura têm sido corroborados por evidências das neurociências.



Planos motores para escrita manual



Planos motores para vocalizações e.g., part of Broca's area



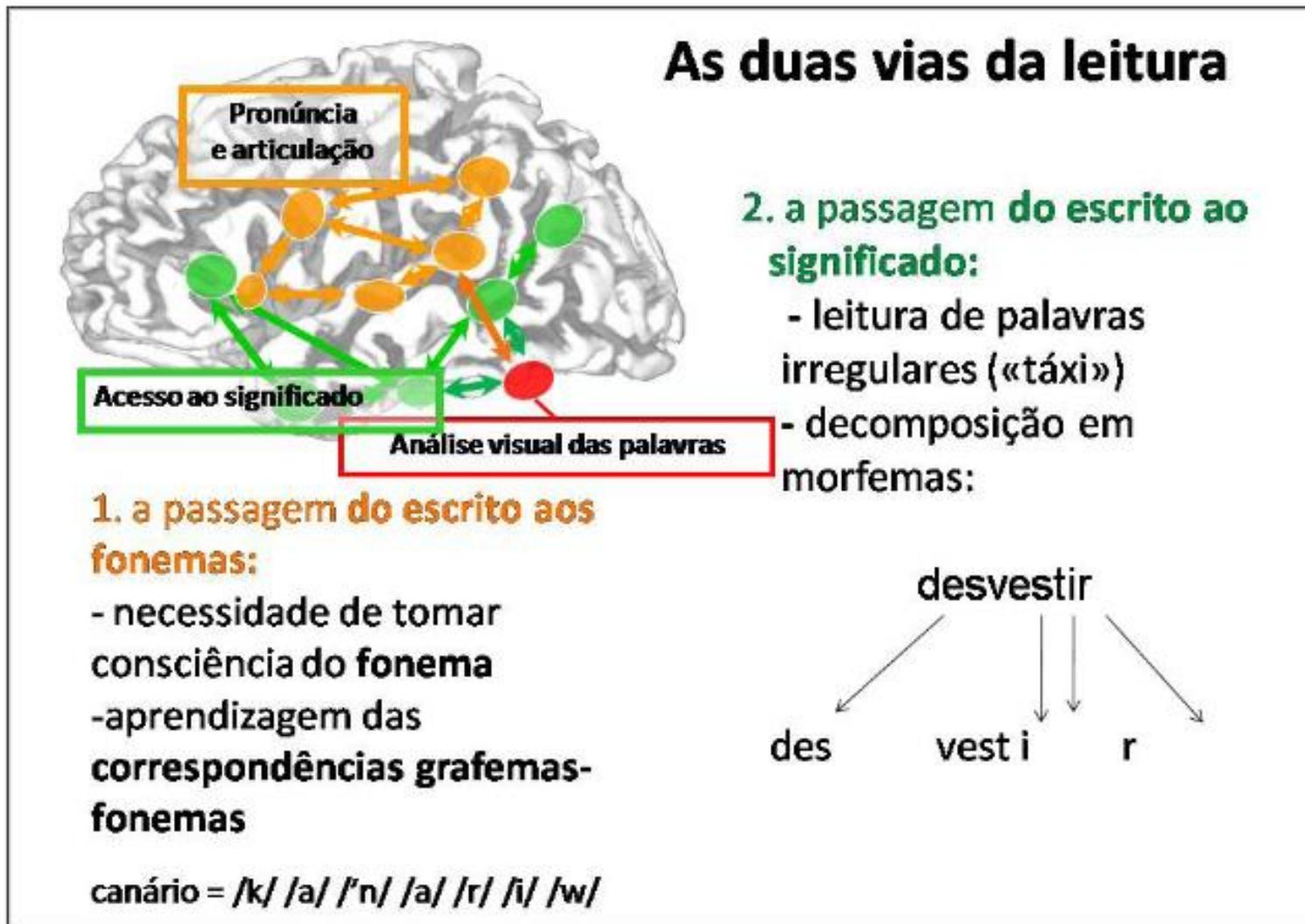
Representações auditivas dos fonemas e.g., Planum Temporale  $/b/ \neq /d/$



Áreas visuais primárias

Representações visuais de letras e.g., Visual Word Form Area (VWFA)  $b \neq d$

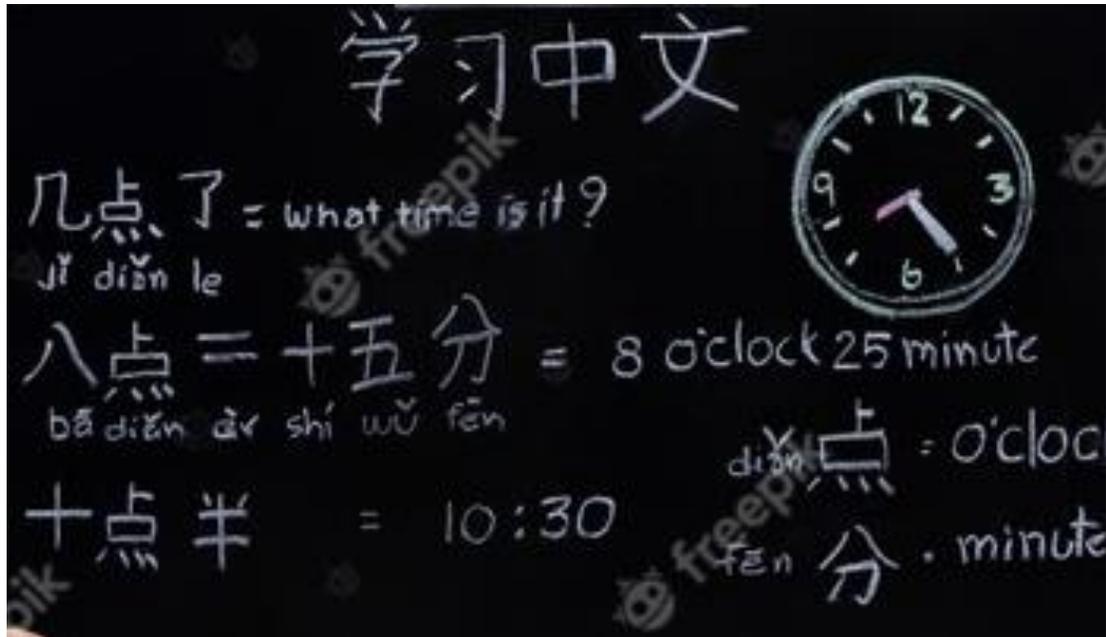




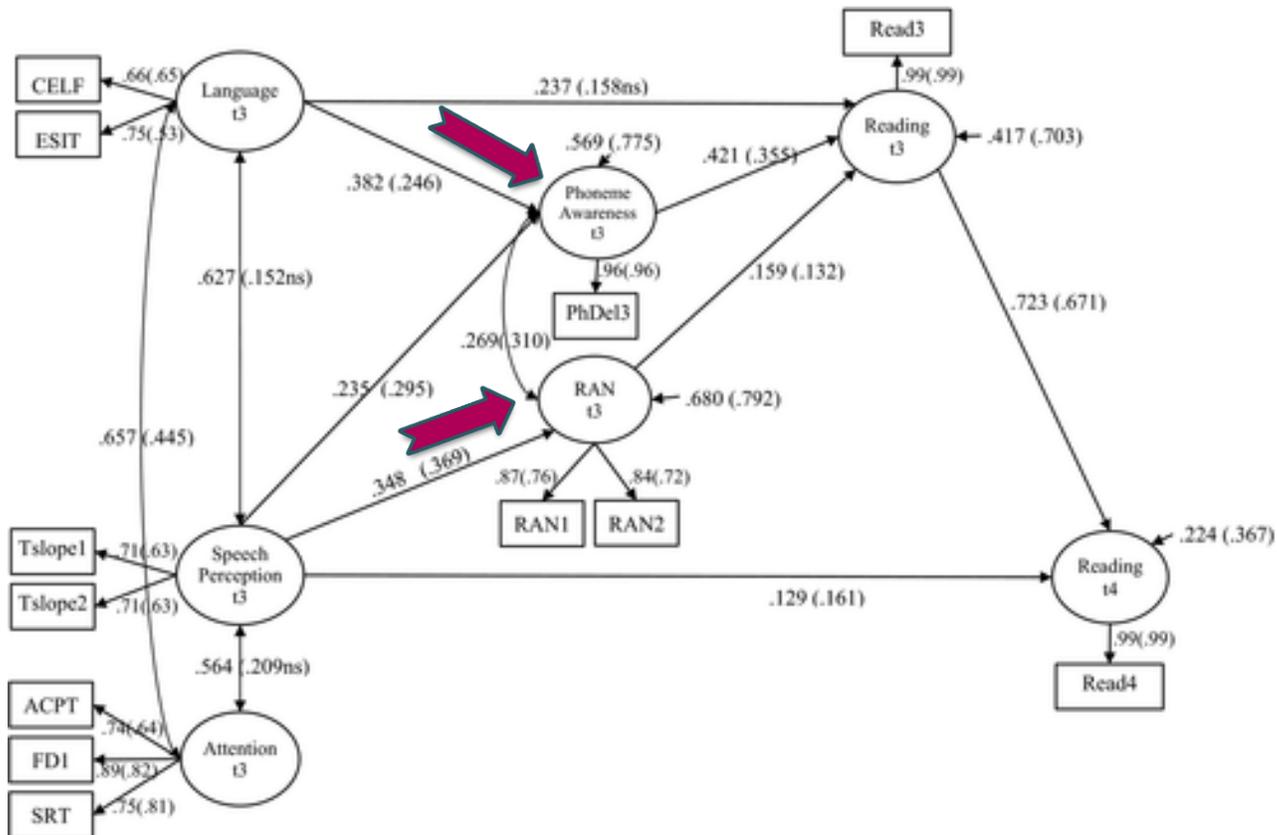
**Figura 3.** As duas vias da leitura.

Dehaene (2013)

# Ortografia



は ha	ひ hi	ふ hu	へ he	ほ ho
ぱ pa	ぴ pi	ぷ pu	ぺ pe	ぽ po
ば ba	び bi	ぶ bu	べ be	ぼ bo
さ sa	し shi	す su	せ se	そ so



Snowling et al. (2018) – crianças falantes de inglês



Pan et al. (2015) – Modelos para aprendizagem dos caracteres chineses (crianças falantes de mandarim)

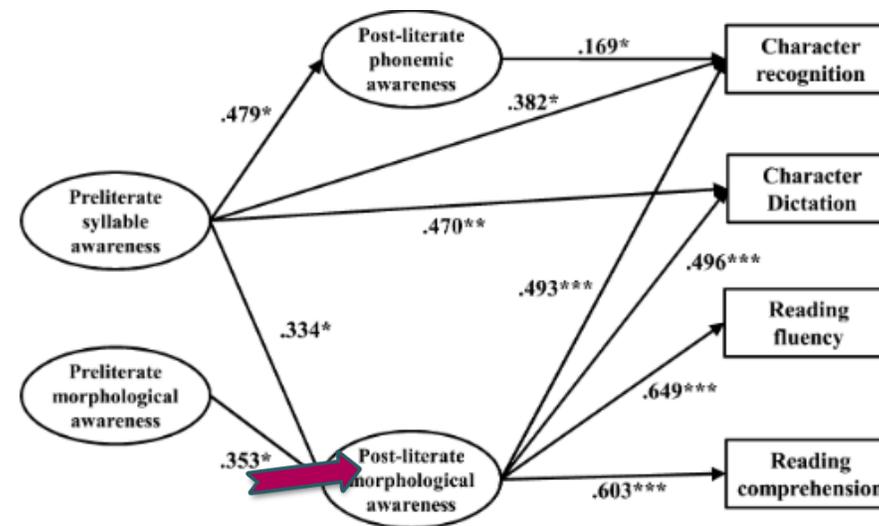


Figure 2 Model of the contributions of phonological awareness and morphological awareness to Chinese literacy skills. SD = Syllable Deletion, MC = Morphological Construction, PD = Phoneme Deletion, MP = Morphological Production. \*p < .05; \*\*p < .01; \*\*\*p < .001.

# • Aspectos psicomotores



Contents lists available at SciVerse ScienceDirect

Trends in Neuroscience and Education

journal homepage: [www.elsevier.com/locate/tine](http://www.elsevier.com/locate/tine)



## The effects of handwriting experience on functional brain development in pre-literate children

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<sup>b</sup> Columbia University, United States

### ARTICLE INFO

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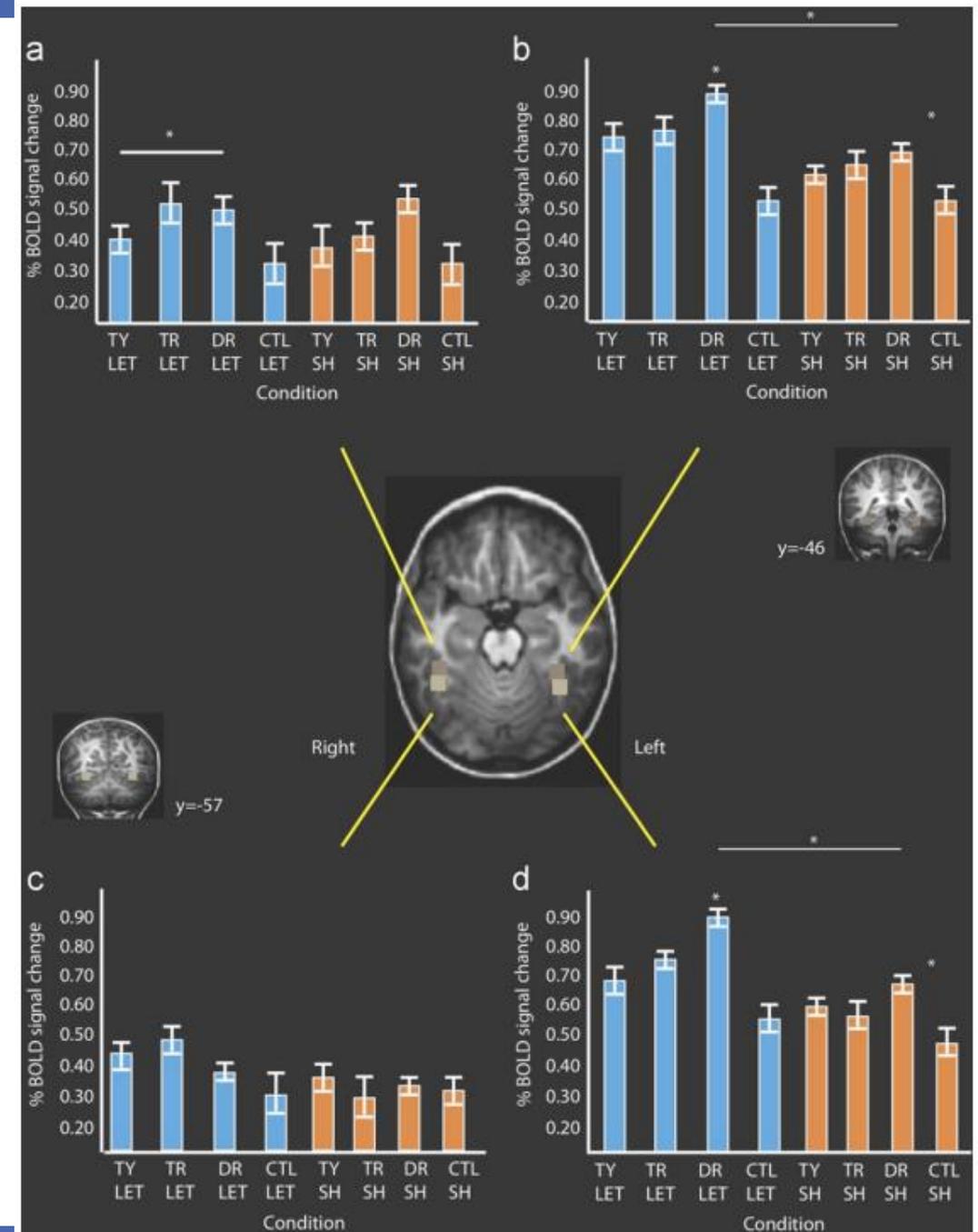
fMRI  
Brain  
Development  
Writing  
Reading  
Children

### ABSTRACT

In an age of increasing technology, the possibility that typing on a keyboard will replace handwriting raises questions about the future usefulness of handwriting skills. Here we present evidence that brain activation during letter perception is influenced in different, important ways by previous *handwriting* of letters versus previous *typing* or *tracing* of those same letters. Pre-literate, five-year old children printed, typed, or traced letters and shapes, then were shown images of these stimuli while undergoing functional MRI scanning. A previously documented “reading circuit” was recruited during letter perception only after handwriting—not after typing or tracing experience. These findings demonstrate that handwriting is important for the early recruitment in letter processing of brain regions known to underlie successful reading. Handwriting therefore may facilitate reading acquisition in young children.

Published by Elsevier GmbH.

- **Digital, tracejar ou escrever.**
- **A condição de “escrever” produziu a maior ativação do circuito da leitura (área occipito-temporal de HE) do que digitar ou tracejar.**

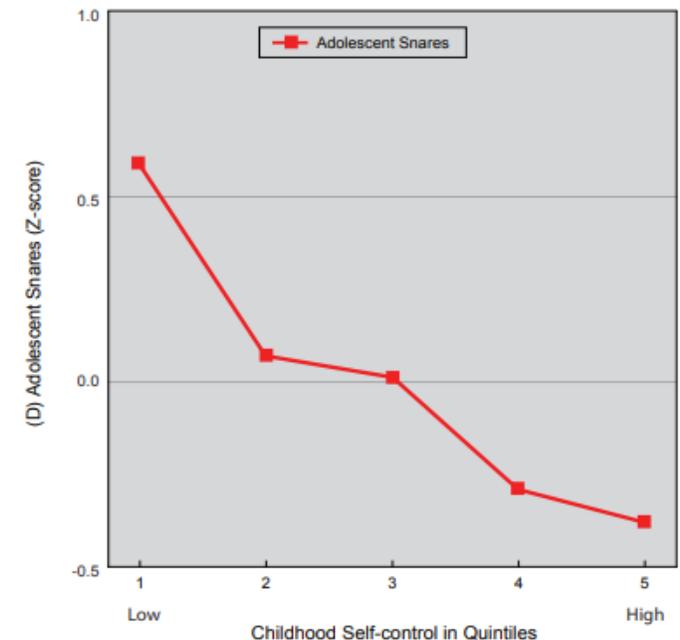
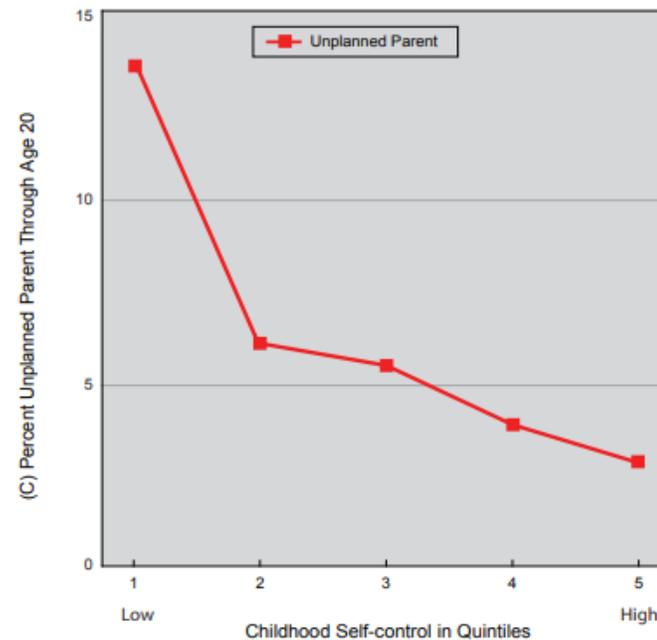
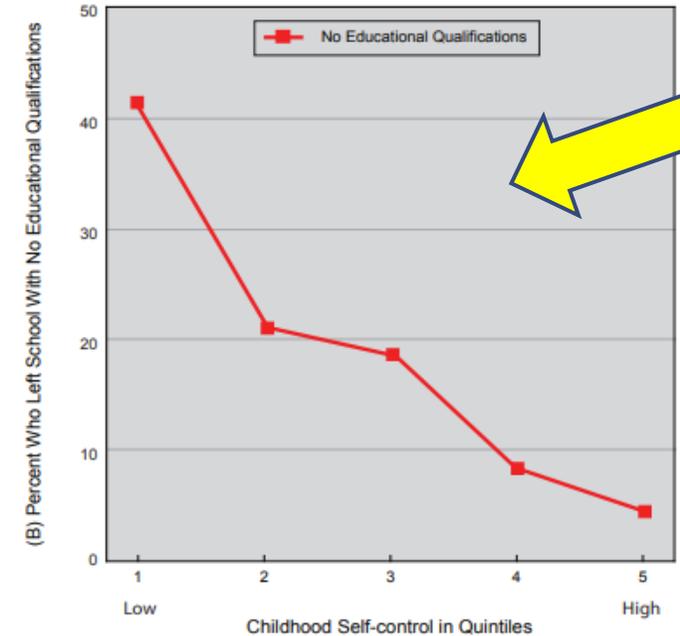
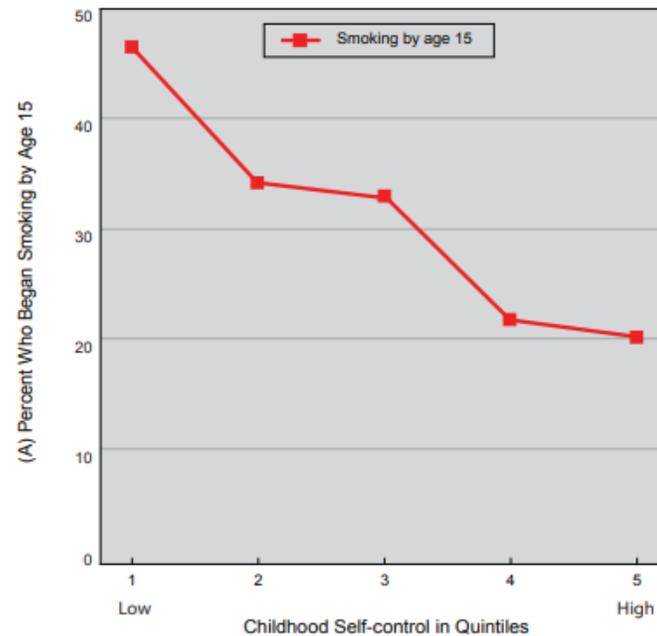


# • Autorregulação

Moffitt et al. (2011):

autocontrole e comportamentos ulteriores (saúde física, mental, NSE, estrutura familiar).

1.037 crianças: nascimento a 32 anos de idade.



## Intervention for executive functions development in early elementary school children: effects on learning and behaviour, and follow-up maintenance

Natália Martins Dias<sup>a</sup> and Alessandra Gotuzo Seabra<sup>b</sup>

<sup>a</sup>Educational Psychology Post-Graduation Program, Centro Universitário FIEO, Osasco, Brazil; <sup>b</sup>Developmental Disorders Post-Graduation Program, Universidade Presbiteriana Mackenzie, Sao Paulo, Brazil

### ABSTRACT

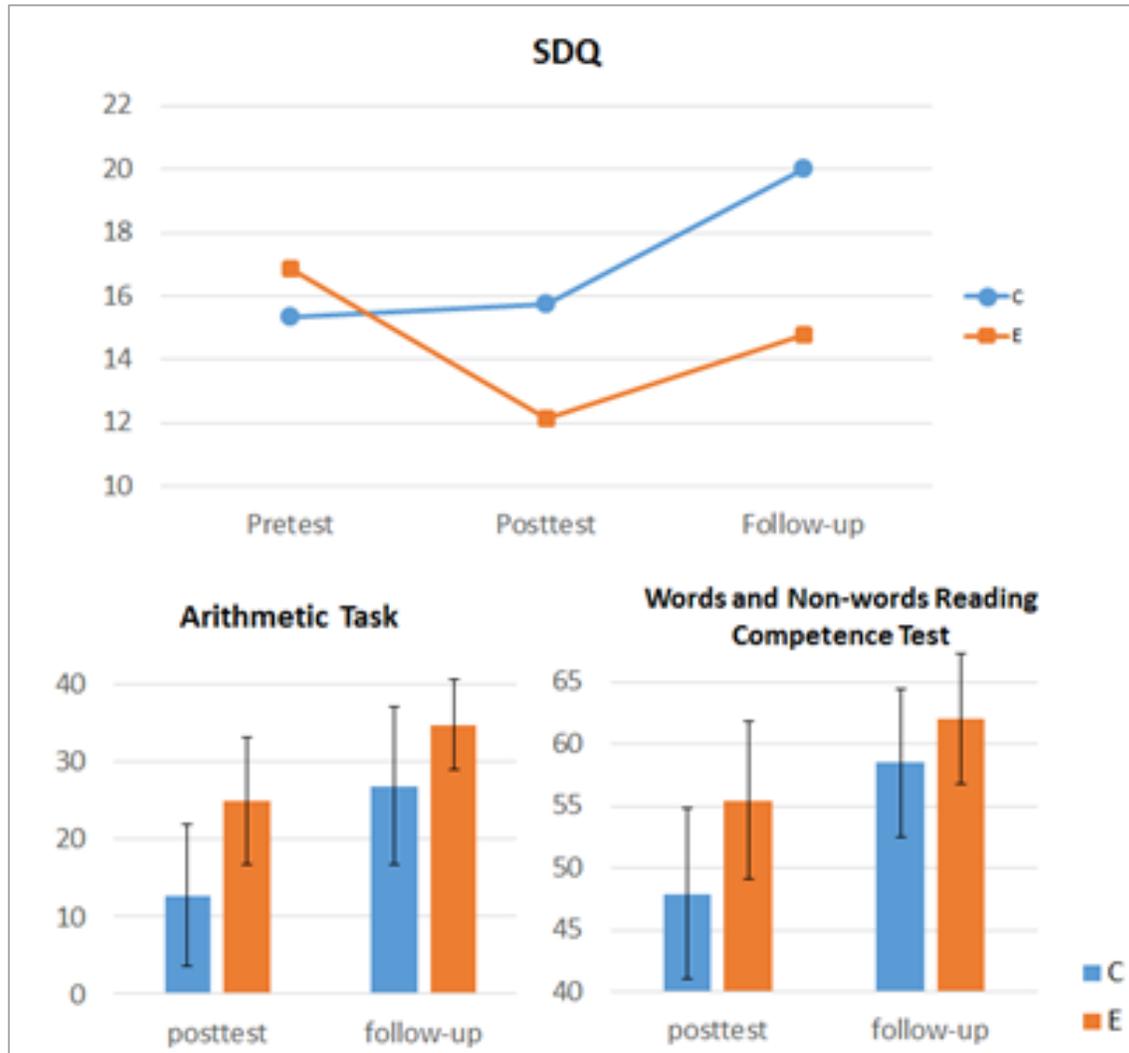
Executive functions (EF) can be promoted by classroom interventions. Our study investigated whether (a) an intervention conducted by teachers improves EF in children; (b) there are effects on behaviour and academic achievement; and (c) there are stable benefits in a one-year follow-up. Fifty-eight first-graders, divided into experimental (EG = 28) and control (CG = 30) groups, were assessed in EF, reading and arithmetic tests. Parents and teachers answered EF and behaviour functional scales. The intervention was conducted by teachers in the classroom context. EG children showed greater gains in EF and outperformed controls on reading and arithmetic measures. The EG maintained better performance in the one-year follow-up and showed transfer effect for behaviour measures. The EF intervention may be a useful tool for promoting improved adjustment and academic achievement.

### ARTICLE HISTORY

Received 5 October 2015  
Accepted 15 July 2016

### KEYWORDS

Self-regulation; early intervention; cognition; academic achievement; prevention



# Programa de Intervenção para Promoção de Autorregulação - PIPA



Trends in Psychology  
<https://doi.org/10.1007/s43076-021-00102-1>

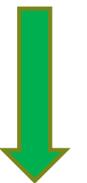
ORIGINAL ARTICLE



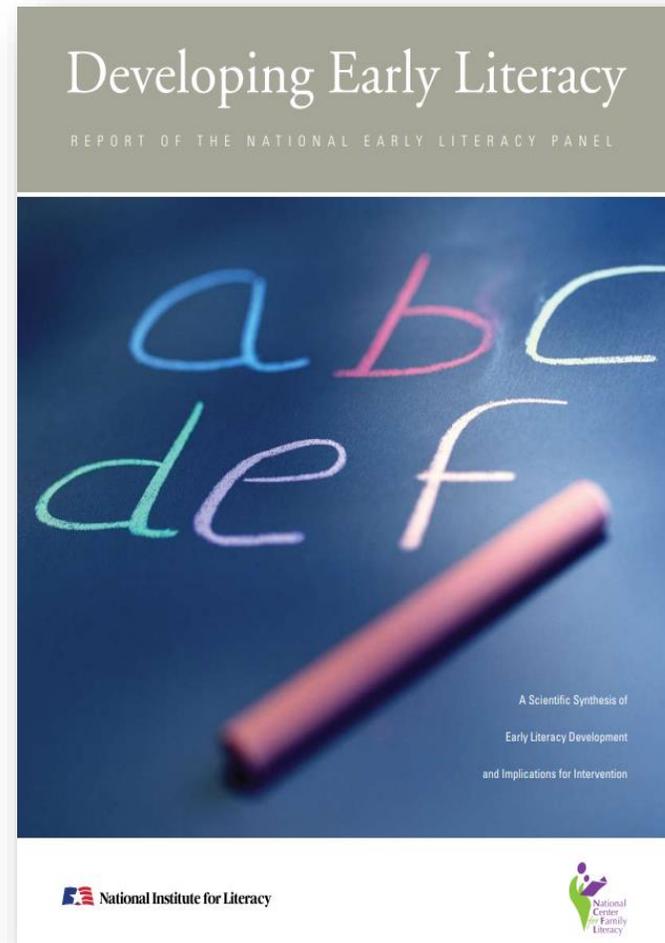
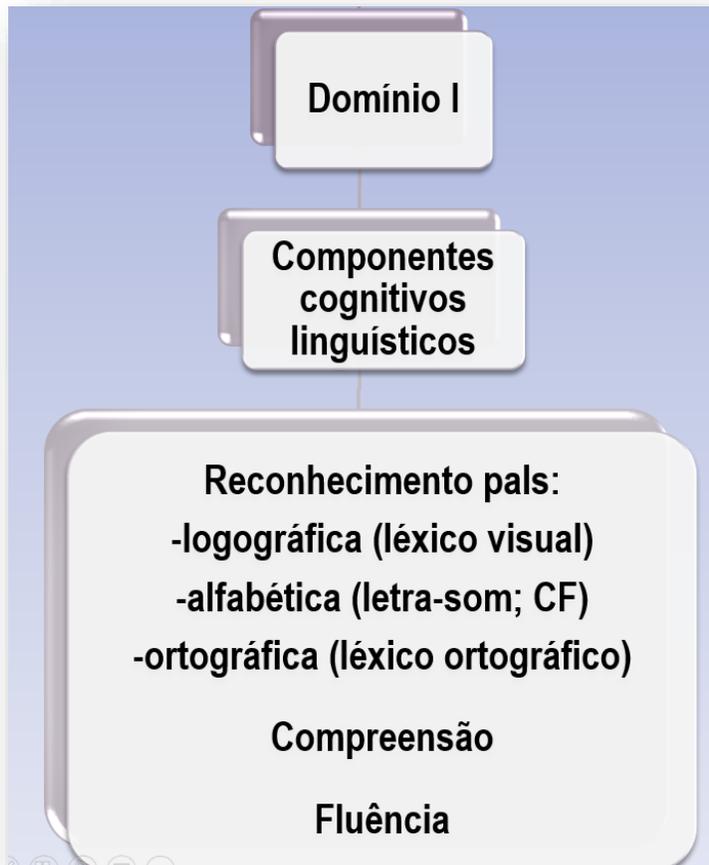
## Promotion of Self-regulation in Preschool Children: Effects and Perceptions of Teachers

Grace Zauza<sup>1</sup> · Camila Barbosa Riccardi León<sup>1</sup> ·  
Rauni Jandé Roama-Alves<sup>2</sup> · Alessandra Gotuzo Seabra<sup>3</sup> ·  
Natália Martins Dias<sup>4</sup>

		T1	T2	T3
CG	M (SD)	7.75 (7.93)	8.75 (6.89)	14.00 (8.17)
EG	M (SD)	9.40 (7.40)	8.80 (8.34)	6.20 (3.89)



# Componentes cognitivo-linguísticos: predição e intervenção





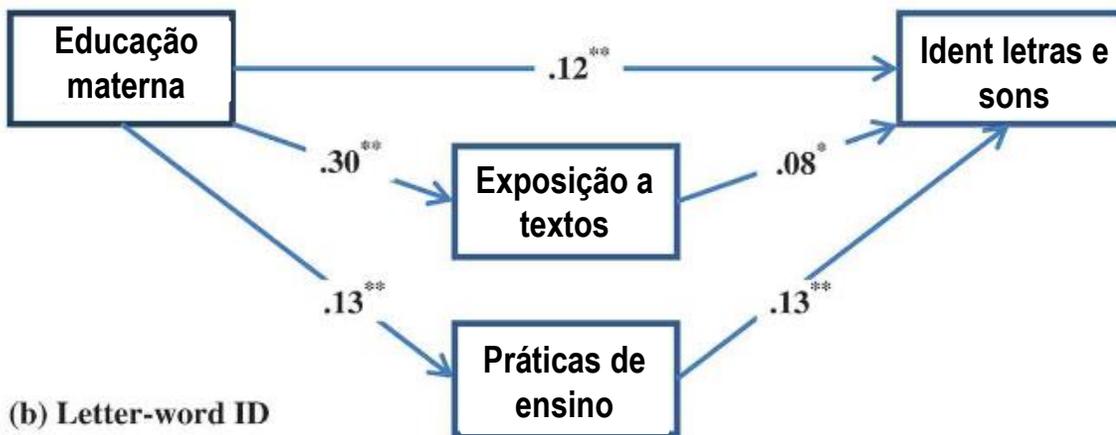
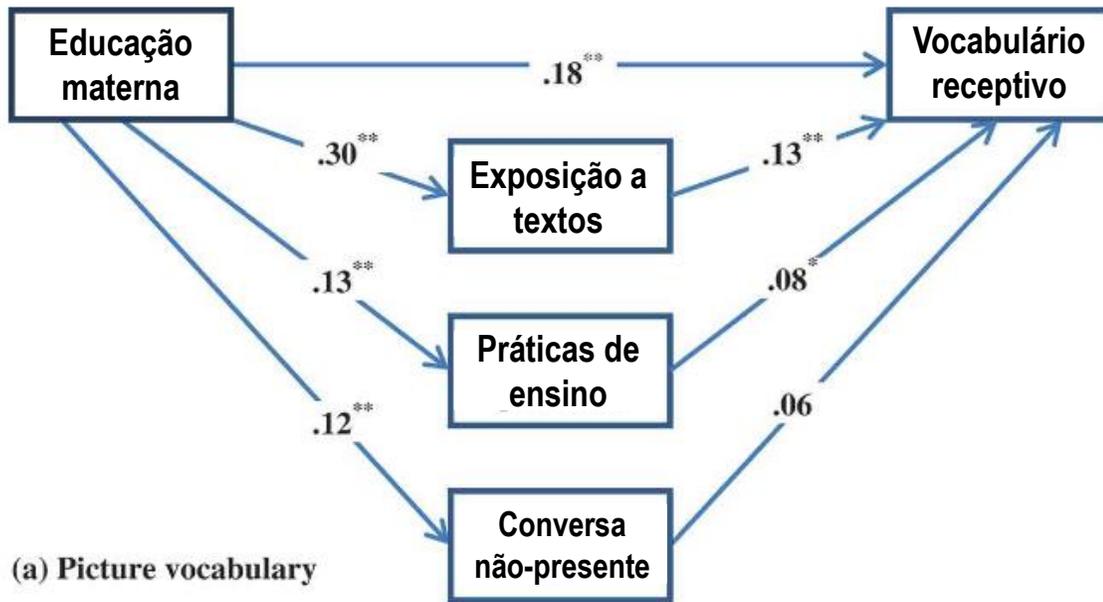
*Table 2.4. Summary of Meta-Analytic and Multivariate Results for Literacy-Related Predictor Variables with Moderate to Strong Relationships with Conventional Literacy Outcomes*

Predictor Variable	Decoding	Reading Comprehension	Spelling	Multivariate Significance
AK	++	+	++	Yes
PA	+	+	+	Yes
Concepts about print	+	++	+	Sometimes
RAN letters and digits	+	+	NA	Yes
RAN objects and colors	+	+	+	Yes
Writing or writing name	+	+	+	Yes
Oral language	+	+	+	Sometimes
Phonological STM	—	+	+	Yes
Visual perception	—	—	+	No
Print awareness	—	+	NA	NA

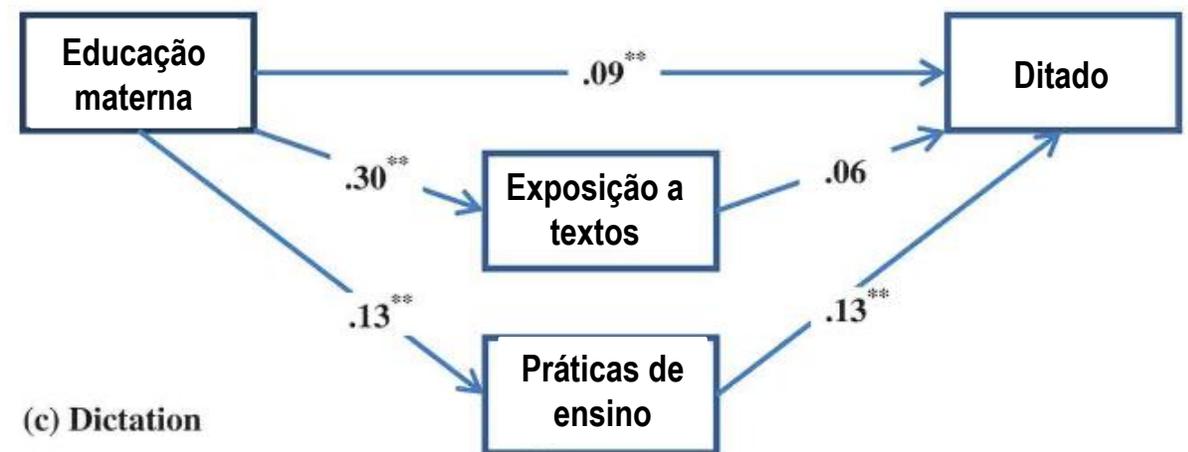
*Note: ++ = strong relationship based on zero-order correlations; + = moderate relationship based on zero-order correlations; — = weak relationship based on zero-order correlations; NA = no relevant data available for analysis.*

**AK = conhecimento do alfabeto; PA = consciência fonológica; RAN = nomeação automática rápida; Phonological STM = memória fonológica de curto-prazo**

# Componentes cognitivo-linguísticos são mais relevantes que os demais!



Articles  
**Beyond Mother Education: Maternal Practices as Predictors of Early Literacy Development in Chilean Children from Low-SES Households**  
 Susana Mendive ✉, María Rosa Lissi, Roger Bakeman & Adriana Reyes  
 Pages 167-181 | Published online: 11 Jul 2016  
[Download citation](#) <https://doi.org/10.1080/10409289.2016.1197014> [Check for updates](#)



# Leitura no 1º Ano

Psicologia: Ciência e Profissão 2020 v. 40, e205497, 1-14.  
<https://doi.org/10.1590/1982-3703003205497>

Article

## Prediction of Reading and Writing in Elementary Education through Early Childhood Education

Talita de Cassia Batista Pazeto<sup>1</sup>

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Cristiano Mauro Assis Gomes<sup>3</sup>

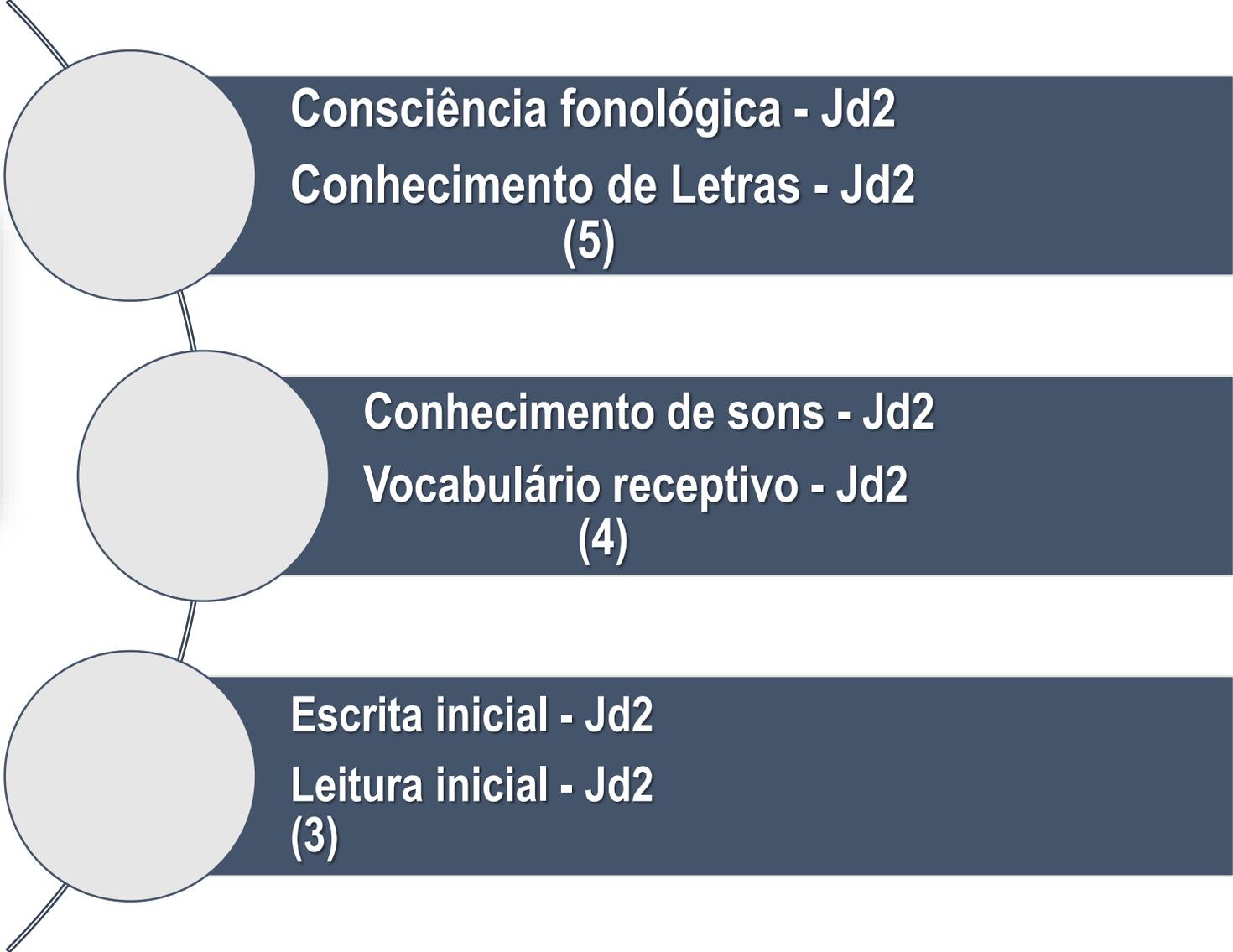
<sup>3</sup>Universidade Federal de Minas Gerais, MG, Brazil.

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<sup>2</sup>Universidade Federal de Santa Catarina, SC, Brazil.

Alessandra Gotuzo Seabra<sup>1</sup>

<sup>1</sup>Universidade Presbiteriana Mackenzie, SP, Brazil.



Consciência fonológica - Jd2  
Conhecimento de Letras - Jd2  
(5)

Conhecimento de sons - Jd2  
Vocabulário receptivo - Jd2  
(4)

Escrita inicial - Jd2  
Leitura inicial - Jd2  
(3)

# Holanda



Early intervention with children of dyslexic parents:  
Effects of computer-based reading instruction  
at home on literacy acquisition

Anne G.F.M. Regtvoort\*, Aryan van der Leij

*Department of Educational Sciences, University of Amsterdam, Amsterdam, The Netherlands*

- Instrução de leitura: aos 6 anos, principalmente fônica.
- Intervenção comparando grupos: 14 semanas, em casa, intervenção computadorizada de consciência fonológica e relações grafofonêmicas.
- **Técnica “Word Building”**
  - Consciência fonêmica
  - Ensino dos sons das letras (recorte de algumas consoantes e vogais)
  - Atividades de leitura de palavras monossilábicas

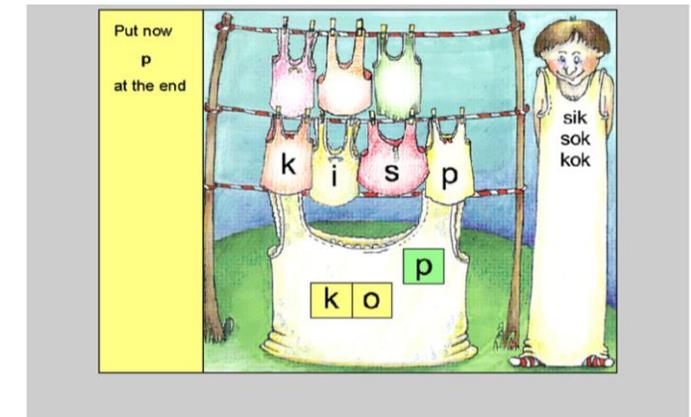


Fig. 1. Example screen of building a new word: *kop* (cup) from the previous decoded word *kok* (cook) by putting the letter *p* to the onset unit /ko/.

- Quem já estava bem, no pós-teste melhora com ou sem intervenção.
- Quem estava rebaixado, no pós-teste só melhora com a intervenção.

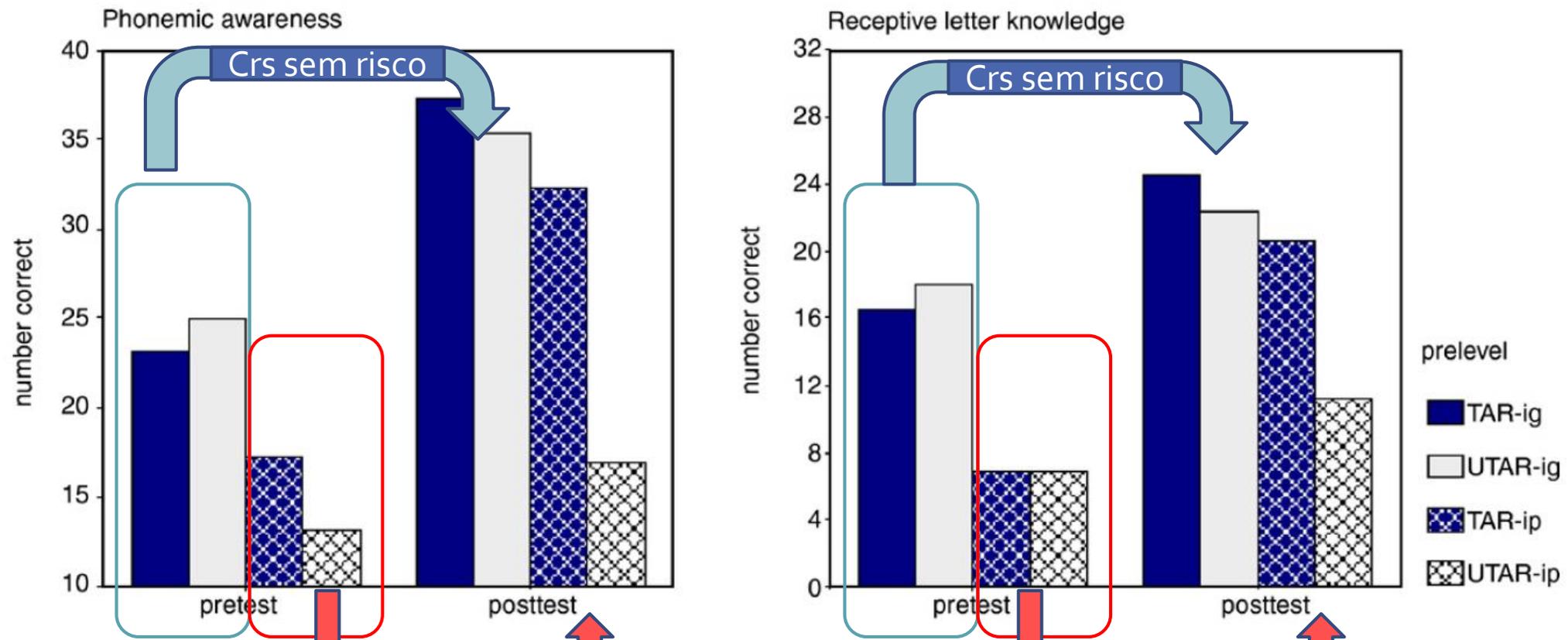


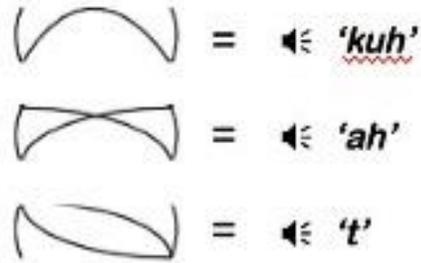
Fig. 2. Gains on phonemic awareness (number correct) and receptive letter knowledge (number correct) from pretest to posttest for children initially good in the not-at-risk group at pretest) and children initially good in the trained (TAR) and untrained (UTAR) at-risk groups.

- **Adultos, desenvolvimento sem alterações, ensinados em um “novo alfabeto”**

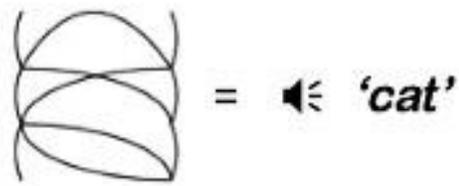
Yoncheva et al. (2015)

## training phase

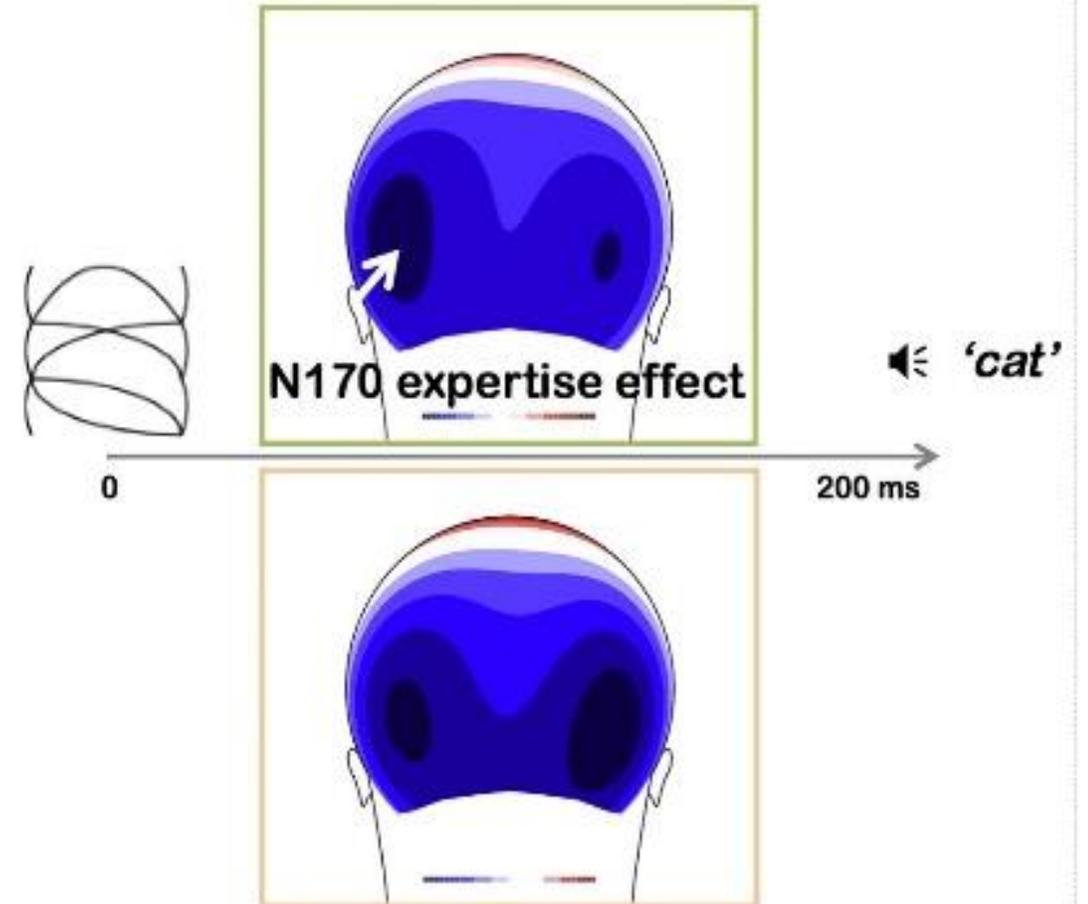
focus on letter-to-sound mapping



focus on whole word mapping

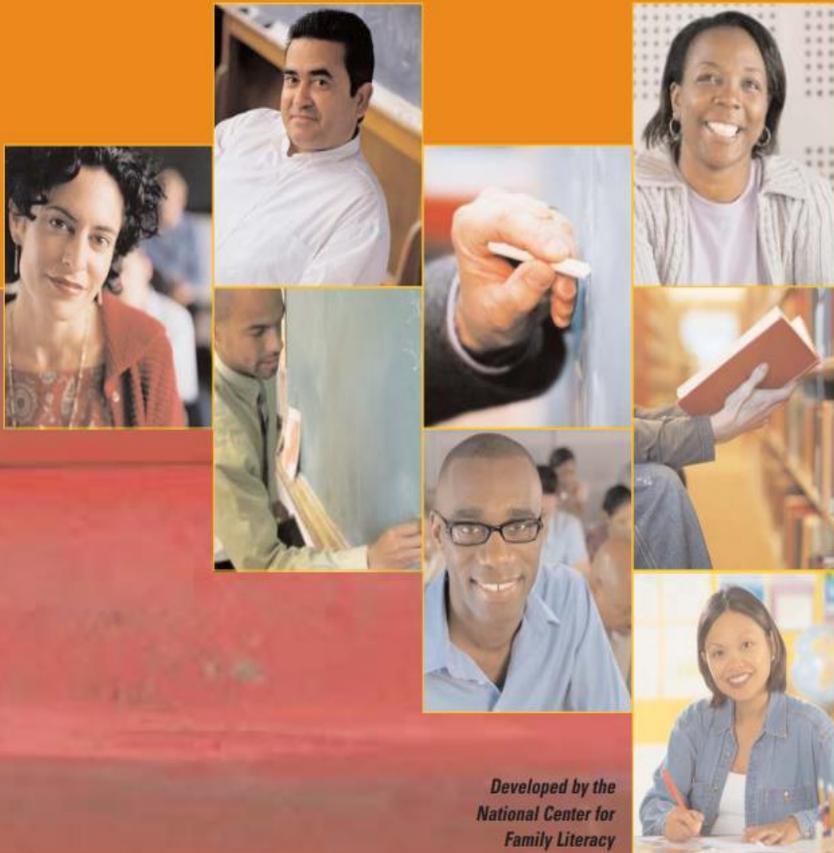


## test phase: reading



# Applying Research In Reading Instruction For Adults

First Steps For Teachers



*Developed by the  
National Center for  
Family Literacy*

<http://files.eric.ed.gov/fulltext/ED496838.pdf>

# O que compõe um programa de alfabetização de adultos?

## • Componentes da Leitura

- Consciência fonêmica
- Decodificação
- Fluência
- Vocabulário
- Compreensão

## • Componentes da Instrução de Leitura

- Instruções de consciência fonológica
- Instruções fônicas
- Desenvolvimento de fluência
- Desenvolvimento de vocabulário
- Instruções de estratégias de compreensão

## What Are the Components of Reading?

Research has identified five components of reading:

- Phonemic awareness
- Decoding
- Fluency
- Vocabulary
- Comprehension

Each of the first four components plays an important role in facilitating comprehension, which is, of course, what reading is all about.

## What Are the Components of Reading Instruction?

Paralleling the reading components are the instructional components:

- Phonemic awareness training
- Phonics instruction
- Fluency development
- Vocabulary development
- Comprehension-strategies instruction

# Atividades fônicas com adultos

## Summary: Phonics Instruction Tips in a Nutshell

Avaliar

- *Assess phonics skills of adult beginning and (some) intermediate-level readers (see Chapter 8 for an initial assessment plan).*
- *Provide explicit, systematic phonics instruction that is matched to the assessed needs of learners.*
- *Follow a defined scope and sequence of skills or adopt a structured phonics-based program.*
- *Provide practice of the phonics elements you have taught, including (perhaps) use of controlled-vocabulary texts.*
- *Do not make decoding skills the entire focus of the reading lesson. In each lesson, address the other needed component skills as well, and provide opportunities for learners to gain access to adult-interest reading materials.*

Instruções explícitas e sistemáticas

Definir o escopo e a estrutura do programa

Usar, na prática, o que foi ensinado (textos controlados)

Mesclar com outras instruções para manter o interesse do aluno

## Atividades de Fluência com adultos

### Summary: Fluency Tips in a Nutshell

- *Use a fluency measure with (at least) beginning and intermediate-level readers to get an initial assessment of reading speed, accuracy, and expression. (You may need more than one measure to address these different aspects of fluency.)*
- *Use guided repeated oral reading techniques to build reading fluency. A learner may read aloud to, or in unison with, a teacher or tutor, who provides modeling and assistance.*
- *Audiotapes allow adults to work independently on repeated oral reading.*
- *Preparing for “performance reading”—classroom presentations or reading to children—gives adults an authentic reason to re-read text.*

Avaliar

Técnica da leitura oral repetida guiada (pares, professor, tutor, classe)

Atividades que “incentivem” leitura prévia, ex., ler para uma criança

## Atividades de Compreensão com adultos

Instruções em compreensão em todas as 'séries'

**Summary:** Comprehension-Strategy Instruction Tips in a Nutshell

- *Provide instruction in comprehension strategies for learners at all reading levels.*
- *Teach learners how and when to use several broadly applicable, research-based strategies.*
- *Teach strategies explicitly, explaining what to do, and how and when to apply the strategies.*
- *Teach strategies one at a time, providing plenty of opportunities for guided practice to ensure learners can use them independently.*
- *Model the strategies for learners by thinking aloud as you read.*
- *Consider applying the comprehension strategies to listening comprehension, especially when working with weaker readers: read text aloud or use taped readings.*
- *Consider readability level and learners' background knowledge when choosing texts for comprehension-strategy instruction.*
- *Because decoding, fluency, and vocabulary are required for comprehension, include instruction/practice in all appropriate components in reading lessons.*

Explicitar como e quando usar estratégias

Ensinar estratégias explicitamente

Ensinar aos poucos e praticar

Usar na compreensão oral

Cuidado ao escolher textos

Lembrar que compreensão de texto requer todas as outras habilidades!

# Evidências também na alfabetização de adultos...

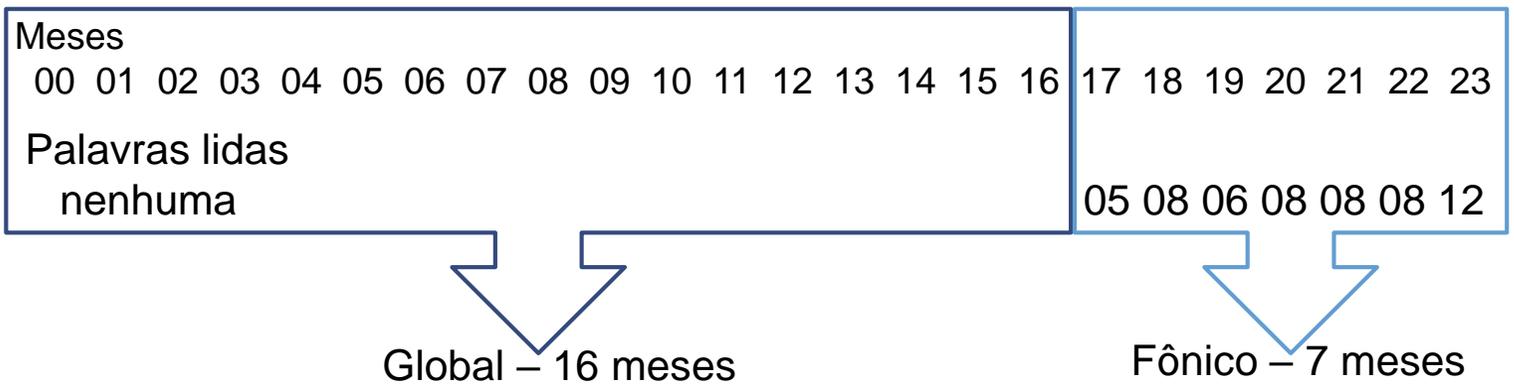


Table 1  
Performance in the Phonological Awareness Test (PAT)

Item set	Month			
	0	17th	23rd	25th
Syllabic synthesis	0	3	4	4
Phonemic synthesis	0	2	4	3
Rhymes	0	0	3	4
Alliteration	0	3	4	4
Syllabic segmentation	0	3	4	4
Phonemic segmentation	0	0	0	0
Syllabic manipulation	0	2	2	2
Phonemic manipulation	0	0	0	0
Syllabic transposition	0	2	2	4
Phonemic transposition	0	0	0	0
Total (max = 40)	0	15	23	25

Note. Month 0 = before start of literacy acquisition process; 17th month = start of phonological stimulation; 23rd month = end of phonological stimulation; 25th month = follow-up. Maximum points for each item set = 4.

Table 2  
Performance in Reading Speed Tasks (Number of Words Read per Minute)

Task item	Month							
	17th	18th	19th	20th	21st	22nd	23rd	25th
Monosyllabic words	3	5	3	4	4	4	5	6
Disyllabic words	2	2	3	4	3	4	6	7
Monosyllabic pseudo-words	0	0	0	0	1	0	0	1
Disyllabic pseudo-words	0	1	0	0	0	0	1	2

Notes. 25th month = follow-up. Maximum points for each task item = 10.

## Tracking Adult Literacy Acquisition With Functional MRI: A Single-Case Study

Lucia W. Braga<sup>1</sup>, Eduardo Amemiya<sup>1</sup>, Alexandre Tauil<sup>1</sup>, Denis Suguieda<sup>1</sup>, Carolina Lacerda<sup>1</sup>, Elise Klein<sup>2</sup>, Ghislaine Dehaene-Lambertz<sup>3</sup>, and Stanislas Dehaene<sup>3,4</sup>

Tracking Adult Literacy Acquisition With fMRI



Fig. 4. Increases in dorsal activation to sentences versus rest (S > R) as a function of time (-27, -70, 54). The image on the left (axial slice) also shows the activation arc passing through the left precentral gyrus, superior frontal, and right precentral gyrus.

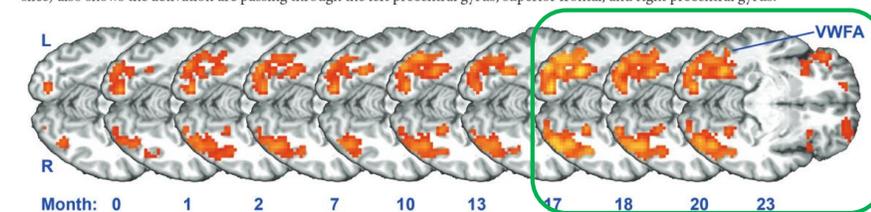
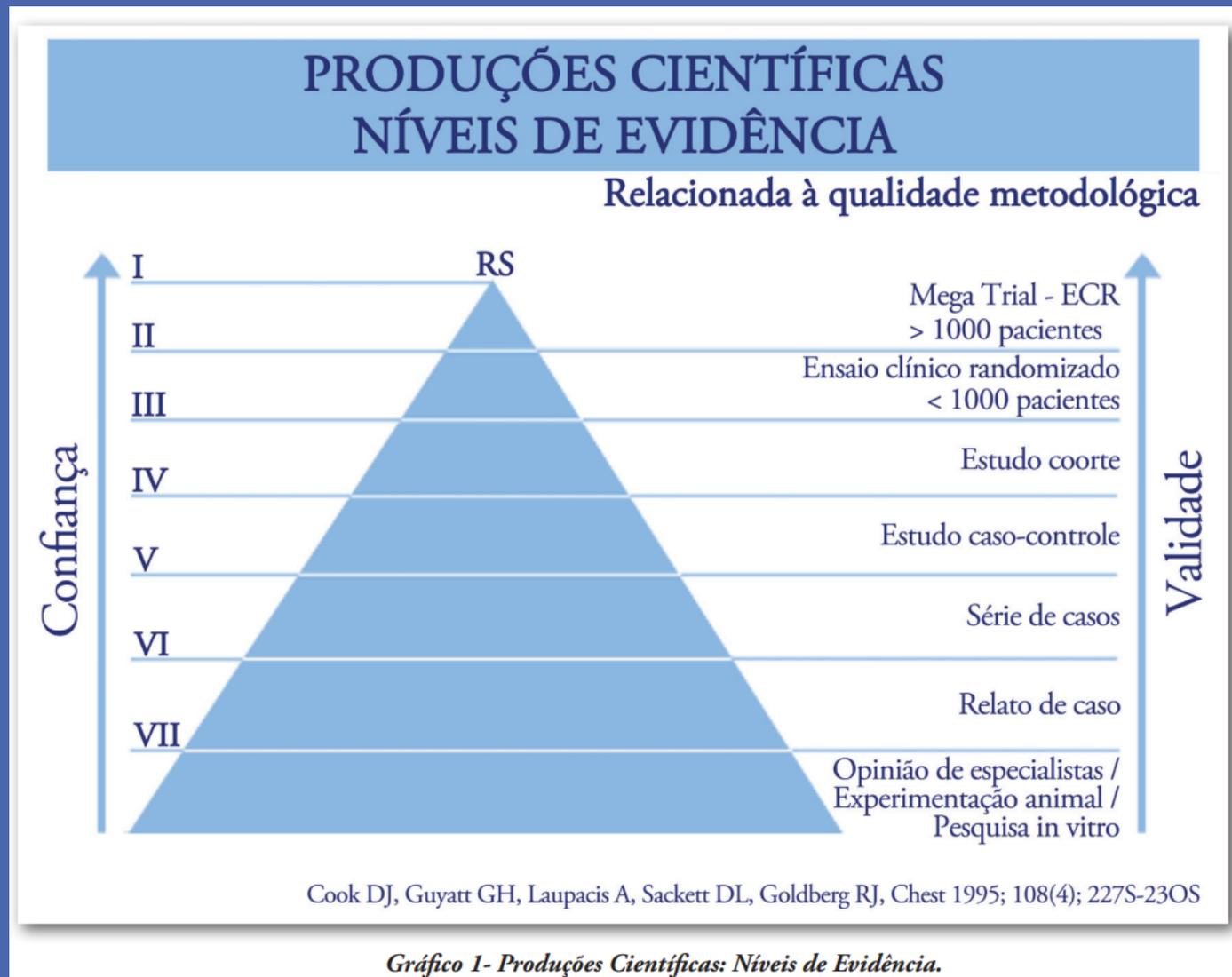


Fig. 5. Evolution of activation to sentences versus rest at and around the VWFA site. The image on the far left corresponds to the first session performed before literacy acquisition (month 0), while the image on the far right represents the last session (month 23).

# Diretrizes educacionais baseadas em evidências científicas



Oliveira (s/d), disponível em:  
[https://files.cercomp.ufg.br/weby/up/19/o/Pr\\_\\_ticas\\_cl\\_\\_nicas\\_baseadas\\_em\\_evid\\_\\_ncias.pdf](https://files.cercomp.ufg.br/weby/up/19/o/Pr__ticas_cl__nicas_baseadas_em_evid__ncias.pdf)

# Reino Unido

- Objetivos pedagógicos: palavra, oração e texto.
- Ensino fônico; fluência, texto.

# França

**Código e construção do significado.**

**Pré-escolar (*l'école maternelle*):**

**vocabulário, uso da escrita,  
princípio alfabético, consciência  
fonológica.**

(Ministère de L'Éducation Nationale, 2015)



# Estados Unidos

## National Institute of Child Health & Human Development - EUA (2000)

- **1997: Congresso solicitou relatório sobre conhecimentos em leitura, baseados em pesquisa, incluindo a eficácia das diferentes metodologias.**
- **Análise de 115.000 estudos publicados desde 1920.**



# Finlândia



## Objetivos educacionais relativos à linguagem escrita:

### ➤ 1ª e 2ª séries:

- **aprender as técnicas básicas de leitura e escrita, incluindo:**
  - **correspondências letra-som, quebrar fala em partes (palavras, sílabas e fonemas), reconhecer palavras, escrever nos níveis do som e da frase.**

### ➤ 3ª a 5ª séries:

- **ler textos com fluência e autoavaliar-se como leitores, ler diferentes tipos de textos aplicando estratégias de compreensão, escolher material de leitura adequado aos diferentes propósitos, buscar informação de fontes variadas etc.**

## No Brasil - Avanços importantes:

### BNCC

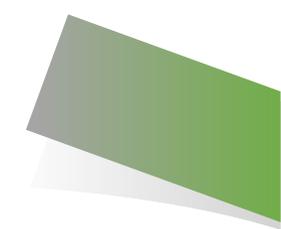
Referência ao papel fundamental da apropriação do sistema alfabético como base para a alfabetização.

“Sujeito alfabetizado é aquele que consegue ‘codificar e decodificar os sons da língua (fonemas) em material gráfico (grafemas ou letras)’ (BNCC - Brasil. MEC , 2017a, p. 87).”



## Avanços em direção à alfabetização equilibrada:

- IV. ênfase no ensino de seis componentes essenciais para a alfabetização:
- a) consciência fonêmica;
  - b) instrução fônica sistemática;
  - c) fluência em leitura oral;
  - d) desenvolvimento de vocabulário;
  - e) compreensão de textos; e
  - f) produção de escrita;



# Considerações finais

- Pesquisas mostram natureza complexa e multifatorial da alfabetização.
- Já conhecemos as habilidades direta e indiretamente relacionadas.
- É fundamental ações nessas diversas habilidades, nos diversos níveis de atuação (professores, gestores, famílias), para o processo pleno de alfabetização.
  - Diretrizes claras, instruções sistemáticas, formação dos professores (graduação e continuada) e material didático de qualidade e cientificamente embasados, acompanhamento por meio de avaliações.

Obrigada pela atenção.

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