

# Evidence-Based Education Preventing Reading Failure in America

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# Reading Failure An Educational and a Public Health Problem

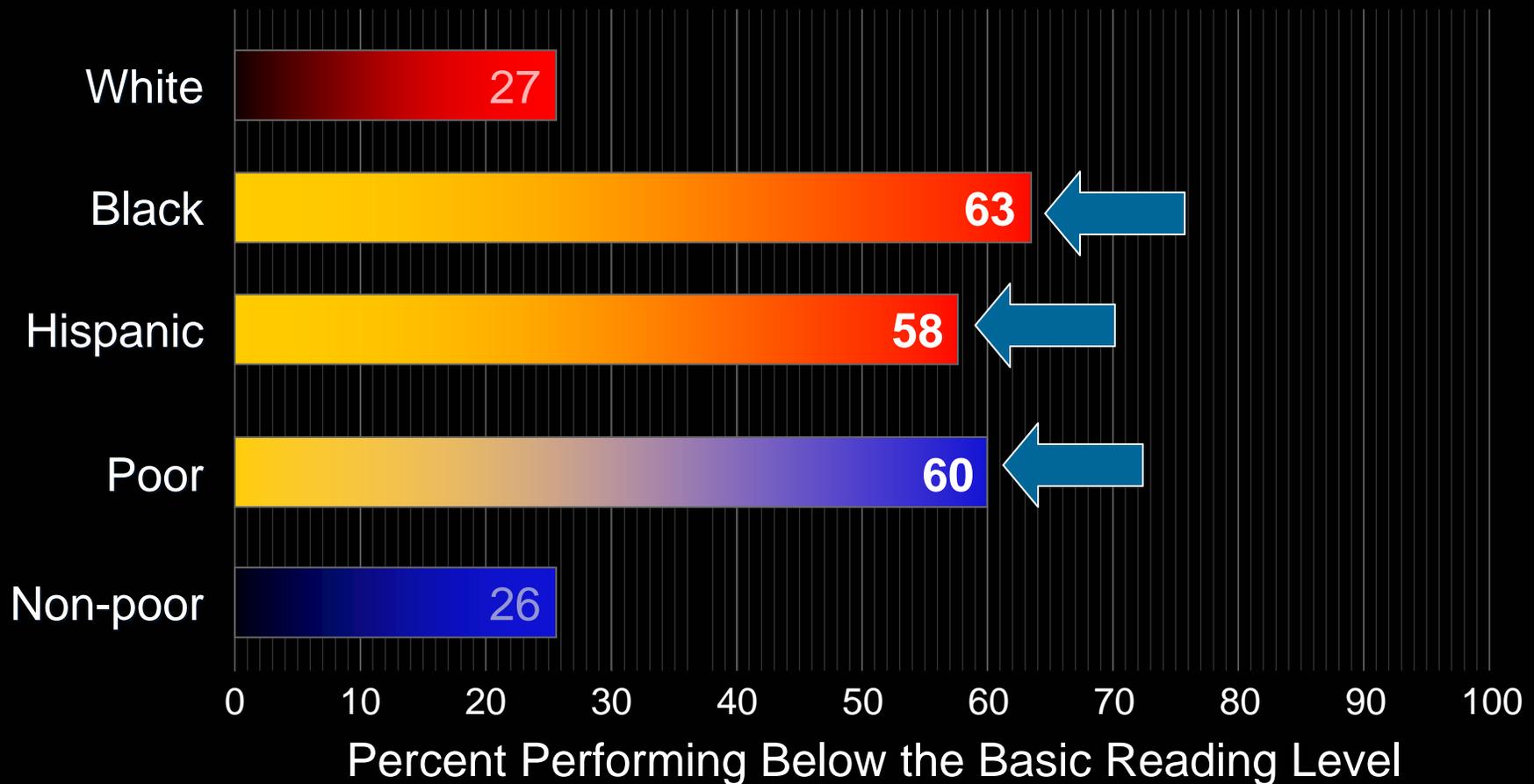
Reading Proficiency is Critical to Academic Learning and  
Success in School

*(Lyon, 1998; 2002, 2003, 2004; Snow, Burns & Griffin, 1998)*

The Ability to Read Proficiently is Significantly Related to  
Quality of Life and Health Outcomes

*(Lyon, 1997; Lyon & Chhabra, 2004; Thompson, 2001)*

# Percent of 4<sup>th</sup> Grade Students Performing Below Basic Level - 37%



# Research Questions

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- How do children develop language abilities?
- How do children develop social competencies?
- How can we foster children's emotional health?
- How do children learn to read?
- Why do some children have difficulties learning to read?
- How can we prevent reading difficulties?
- How can we remediate reading difficulties?

# The Scientific Investment

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- Number of Research Sites: 44
- Children and Adults Studied: 48,000
- Proficient Readers: 22,000
- At-Risk/Struggling Readers 26,000
- Average Years Studied/Followed: 9
- Max Longitudinal Span to Date: 24
- Current Prevention/Intervention Trials 12
- Schools Currently Participating: 266
- Classrooms Currently Participating: 985
- Classroom Teachers Participating: 1,012



# Some Reasons Why Reading Instruction Has Not Been Helpful

- Untested Theories and Assumptions Regarding Reading Development and Instruction
- Romantic Beliefs About Learning and Teaching
- Fads
- Appeals to “So Called” Authority

# Our Youngest Citizens Will Surprise Us

- Infants, Toddlers, and preschoolers can learn more than we ever thought possible
- From birth to age 3 the brains of children are rapidly forming connections between neural cells
- The quality and degree of connections between neural cells are established through the the quality of interactions the child has with adults, other children, and the environment
- Infants before the age of 6 months can perceive and express all sounds of all languages spoken on the planet



P. Kuhl, U. Washington



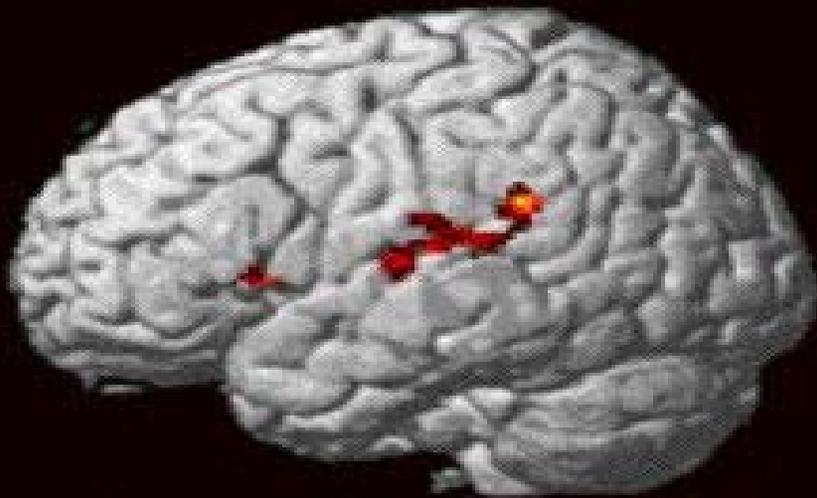
# Our Youngest Citizens Will Surprise Us

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- Depending on the environment, vocabulary development accelerates rapidly during the second year of life.
- Under the right circumstances, most 18 month olds (on average) learn 9 new words a day, every day, throughout the preschool years
- By 3 years of age the child can speak in full sentences

# Learning Begins Early

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# The Role of the Environment and Early Experience on Language Development

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- Language development requires an interplay between genes, biology, and environmental factors
- Poverty and disadvantage reduce the quantity and quality of interactions with language
- Limited language interactions in the home environment place children at severe risk for school failure, particularly in reading
- Cultural influences every aspect of human development and must be considered in the design and implementation of any program

# Environmental Influences

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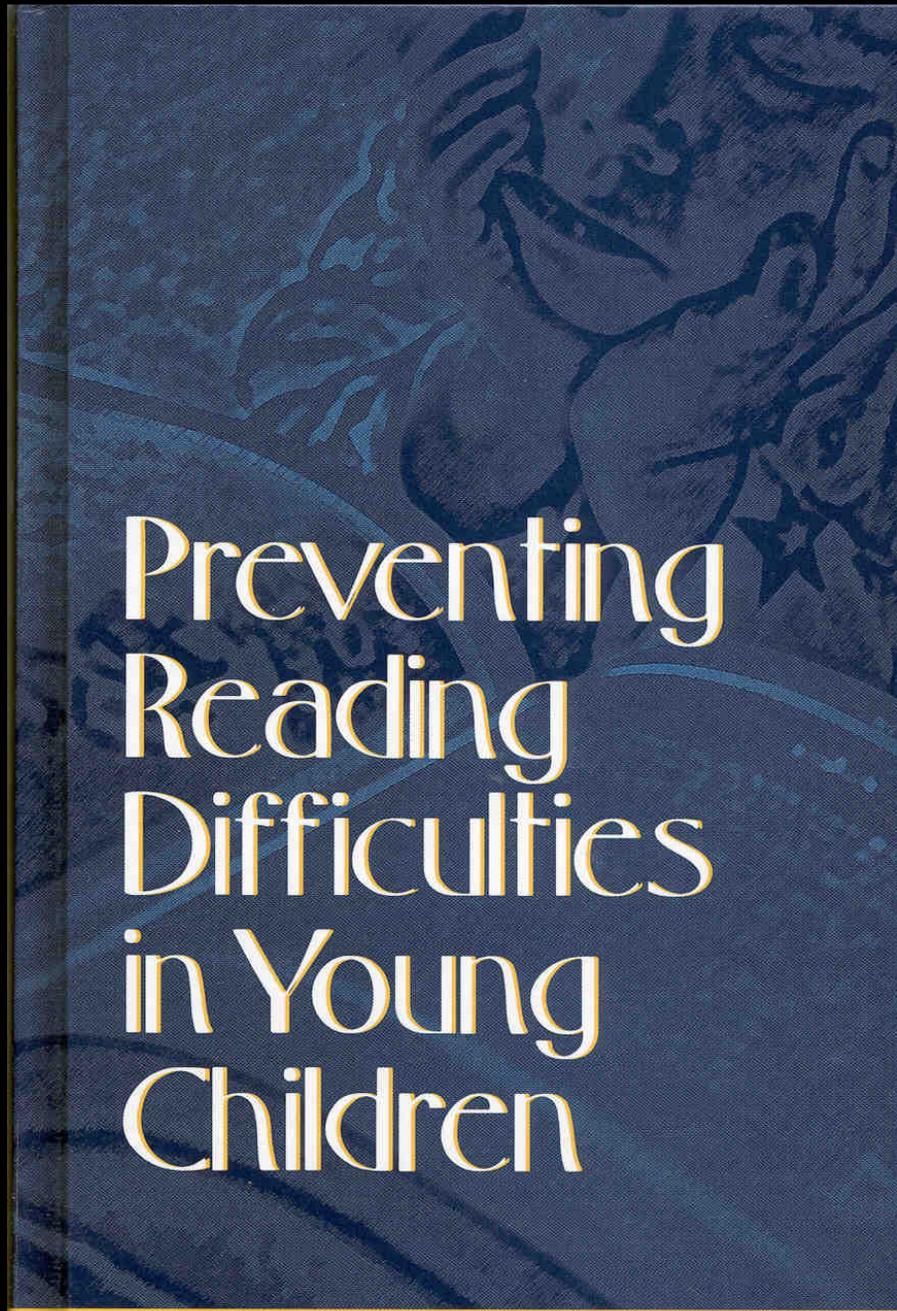
- By kindergarten a child from disadvantage typically has twice the vocabulary as a youngster born into poverty
- The typical 5-year-old from an urban environment and disadvantaged home enters kindergarten at the 5<sup>th</sup> percentile in vocabulary
- By age 16 advantaged children have four times the vocabulary as children born into poverty

# Major Sources of Reading Failure

- Socioeconomic Factors – Poverty
- Biological Factors – Genetics and Neurobiology
- Instructional Factors – Predominate

What Do Kids Need to Know to Read?

A HECK OF A LOT



Preventing  
Reading  
Difficulties  
in Young  
Children

NATIONAL RESEARCH COUNCIL

In 1995, the U.S.  
Department of Education  
and the National Institutes  
of Health

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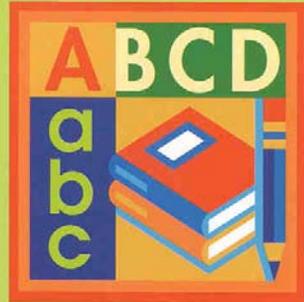


National Academy of  
Sciences



Report from the National  
Research Council

1998



REPORT OF THE

# National Reading Panel

TEACHING CHILDREN TO READ

An Evidence-Based Assessment of the  
Scientific Research Literature on Reading and  
Its Implications for Reading Instruction

In 1997, United States Congress

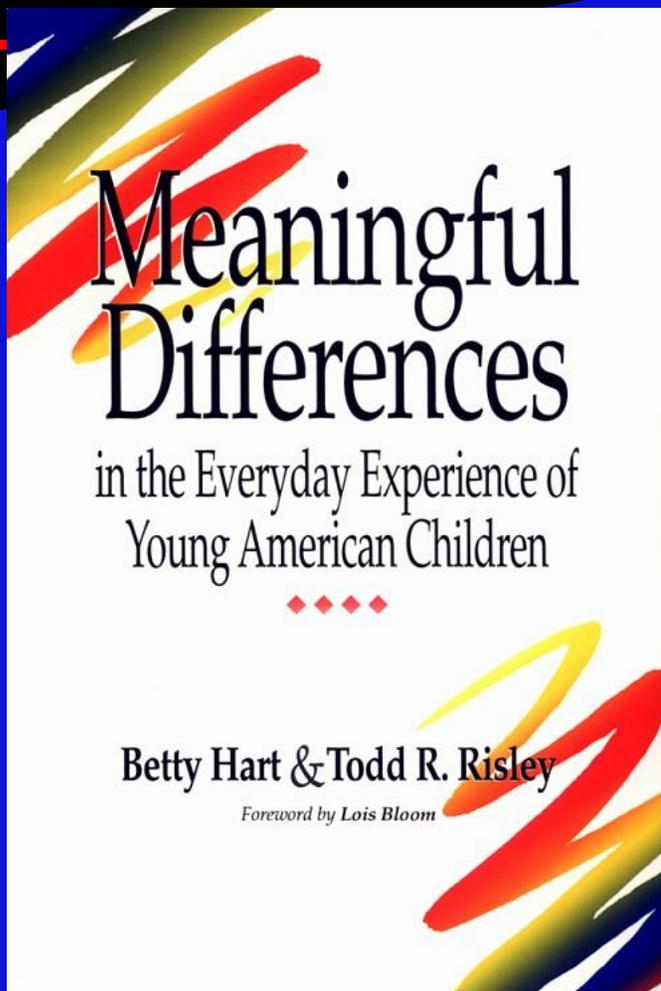


National Institute of Child Health and Human Development & U.S. Department of Education



Report of the National Reading Panel

# How Do Children Learn to Read?

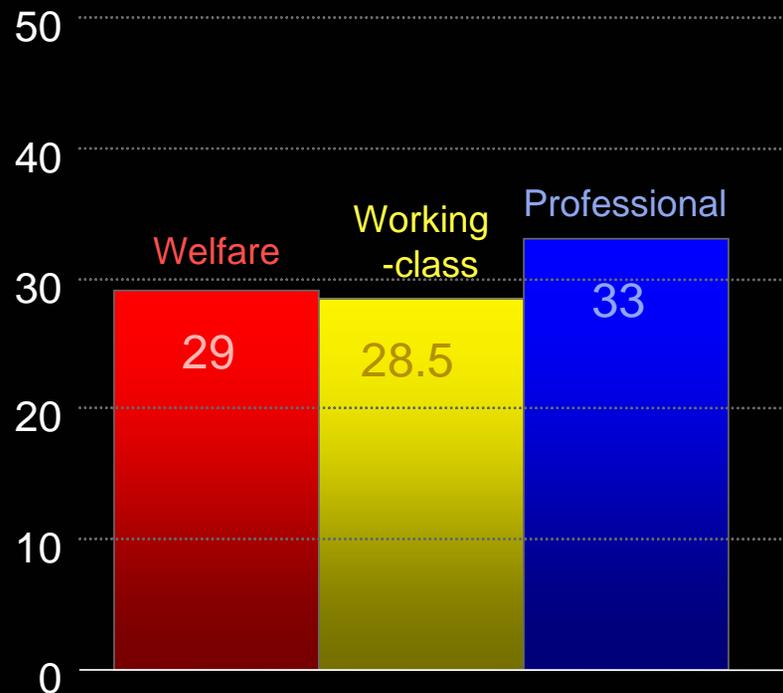


# How Do Children Learn to Read? The Influence of Early Language and Literacy Experiences

Differences in exposure to words over one year can predict substantial difficulties in oral language and reading development:

- Children in Professional Families – 11 million
- Children in Working-class Families – 6 million
- Children in Welfare Families – 3 million

## Mean Number of Interactions Initiated per Hour

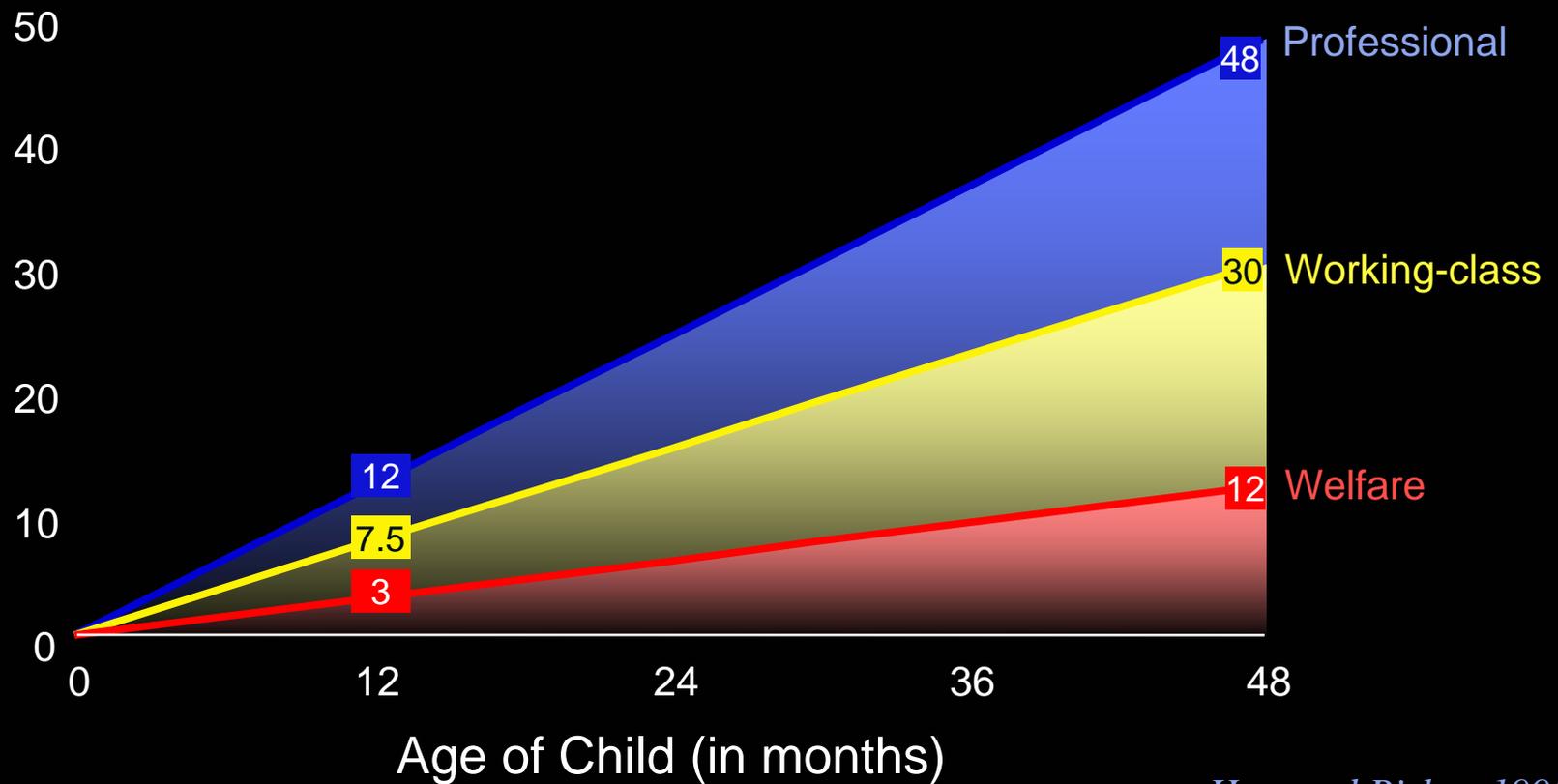


## Mean Number of Minutes per Interaction per Hour



# Cumulative Language Experiences

Cumulative Words  
Spoken to Child  
(in millions)



*Hart and Risley, 1995*

# The Effects of Weaknesses in Oral Language on Reading Growth

Reading

Age Level

16

15

14

13

12

11

10

9

8

7

6

5

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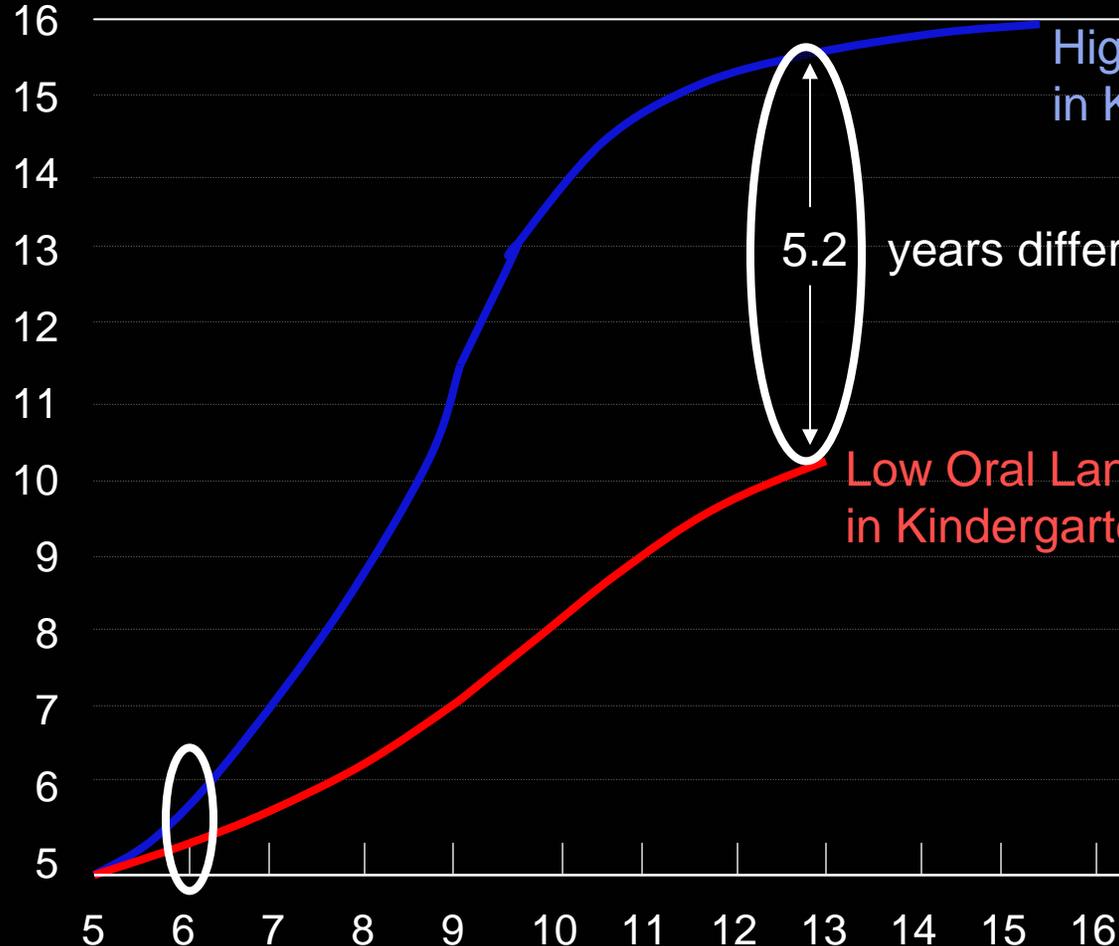
Chronological Age

High Oral Language  
in Kindergarten

5.2 years difference

Low Oral Language  
in Kindergarten

Hirsch, 1996



# How Do Children Learn to Read?

## Phonological and Phonemic Awareness



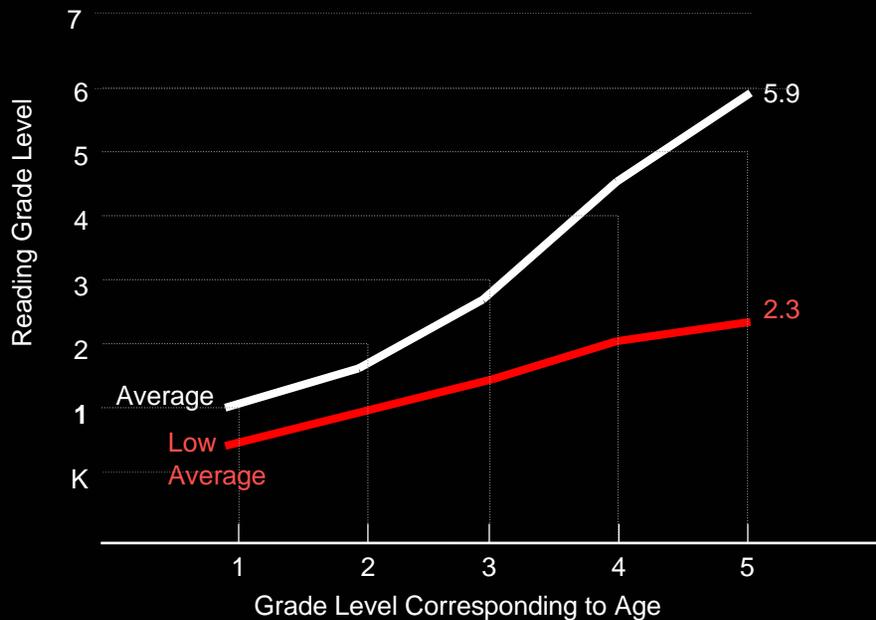
**What is Phonological Awareness?**

# How Do Children Learn to Read?

## Phonological Awareness

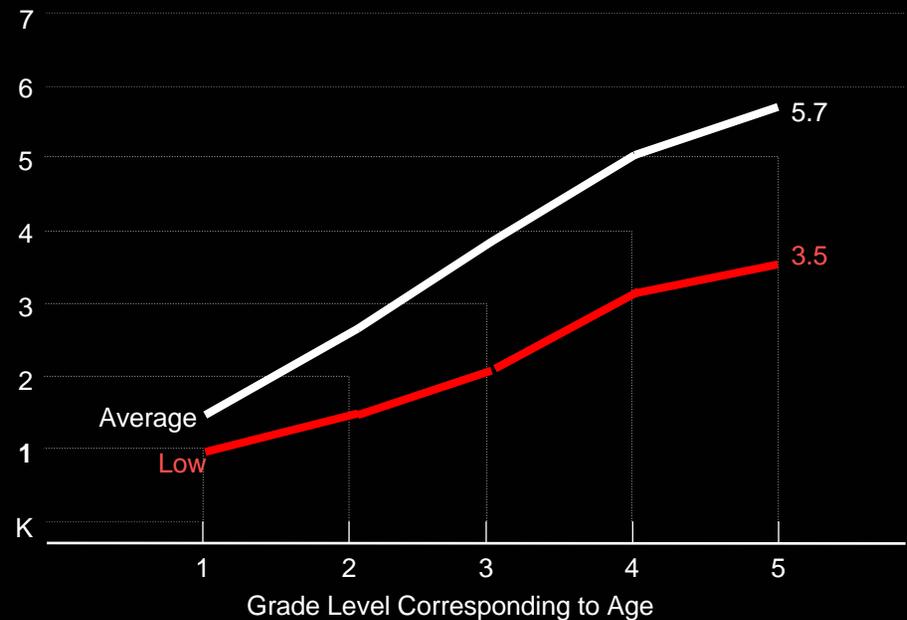
- Phonological awareness involves the **understanding** that spoken words are composed of segments of sound smaller than a syllable.
- It also involves the **ability** to notice, think about, or manipulate the individual sounds in words.

# How Do Children Learn to Read?



## Growth in “phonics” ability

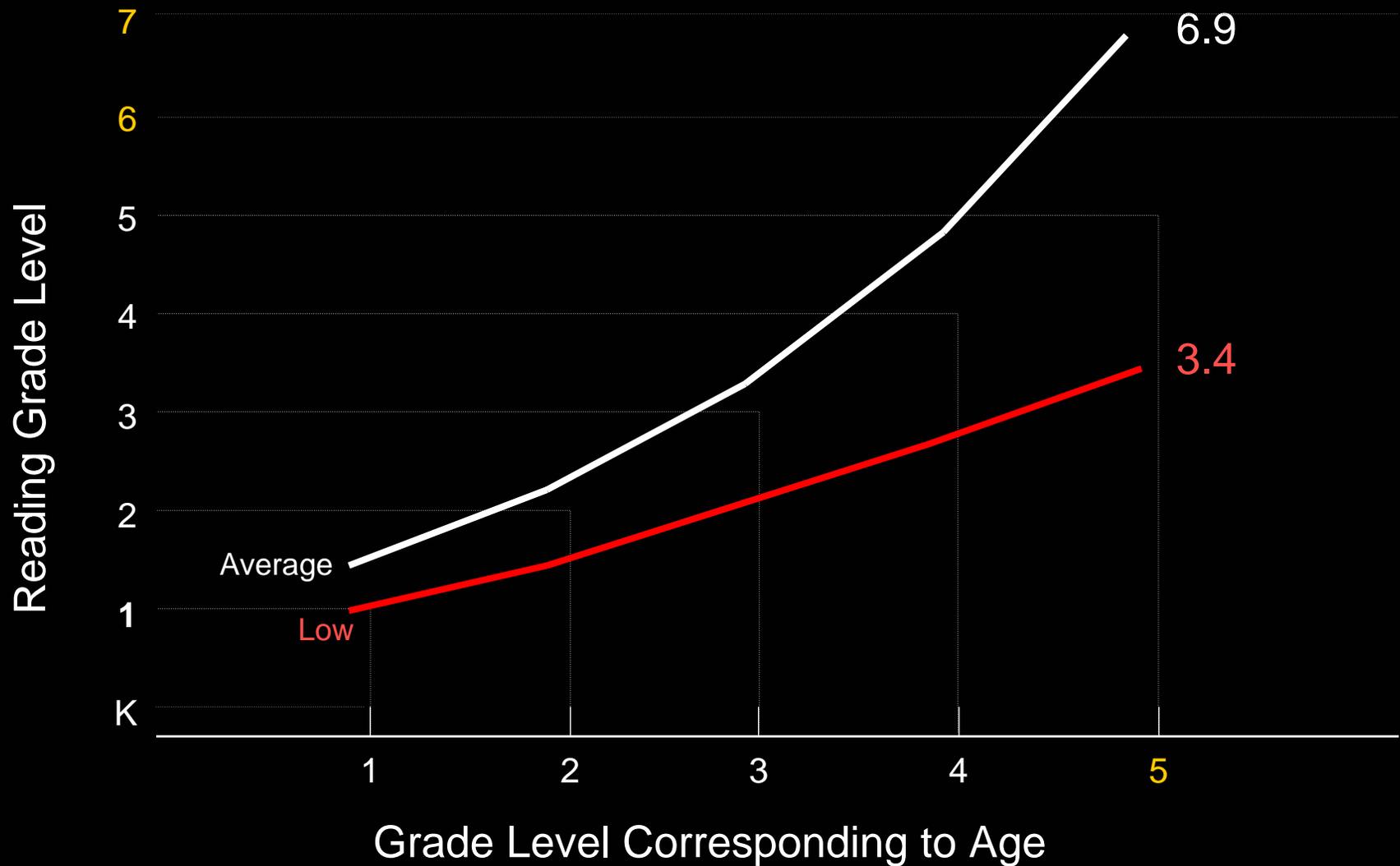
of children who begin 1<sup>st</sup> grade in the bottom 20% in Phoneme Awareness and Letter Knowledge



## Growth in word reading ability

of children who begin 1<sup>st</sup> grade in the bottom 20% in Phoneme Awareness and Letter Knowledge

# Growth in Reading Comprehension of Children Who Begin 1<sup>st</sup> Grade in the Bottom 20% in Phoneme Awareness and Letter Knowledge



# How Do Children Learn to Read?

## PHONICS

Oh My Gosh – The F word

# What is “Phonics”?

It is a kind of knowledge

Which letters are used to represent which phonemes

It is a kind of skill

Pronounce this word...

blit

fratchet

# How Do Children Learn to Read?

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## FLUENCY

A common definition of reading fluency:

**“Fluency is the ability to read text quickly, accurately, and with proper expression”**

*National Reading Panel*

# The Most Common Method of Measuring Reading Fluency in the Early Elementary Grades:

Measuring the number of words per minute a child can read accurately

# Fluency

- There is a strong relationship between how fast you read and how well you comprehend
- Fluent and automatic reading frees up “cognitive space” so that conscious attention can be devoted to textual meaning
- If decoding and word recognition are slow and labored, material will be forgotten before it is understood
- The most powerful way to increase reading fluency is through reading and reading and reading (see NRP)

# Fundamental Discoveries About How Children Learn to Read

The challenge of continuing growth in fluency becomes even greater after 3<sup>rd</sup> grade.

4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> graders encounter about 10,000 words they have never seen before in print during a year's worth of reading.

Furthermore, each of these “new” words occurs only about 10 times in a year's worth of reading.

Sadly, its very difficult to correctly guess the identity of these “new words” just from the context of the passage.



# How Do Children Learn To Read?

VOCABULARY

# Vocabulary You Can't Read Without

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## Reading Comprehension and Vocabulary

- Relationship between Vocabulary Score (PPVT) measures in Kindergarten and later reading comprehension:
  - Grade 1 - .45
  - Grade 4 - .62
  - Grade 7 - .69

# Vocabulary: You Can't Read Without It

- The “ fourth grade reading slump” reflects a language gap as much as a reading gap – Why?
- Reading tests (e.g., NAEP) in 4<sup>th</sup> grade are primarily measures of reading comprehension
- It is impossible to comprehend what is read without the vocabulary relevant to what is being read

# Vocabulary: You Can't Read Without It

- Reading comprehension, at a minimum, depends on decoding/word recognition accuracy and fluency, VOCABULARY, AND BACKGROUND KNOWLEDGE
- A student must be able to read correctly approximately 95 percent of the words accurately in text to comprehend what is read
- MOREOVER, to comprehend, a student must know the meanings of 90 to 95 percent of the words being read
- The unknown 5 to 10 percent can be inferred from text

# What Do Kids Need To Know To Read For Meaning?

Accurate and fluent word reading skills

Oral language skills (vocabulary, linguistic comprehension)

Extent of conceptual and factual knowledge

Knowledge and skill in use of cognitive strategies to improve comprehension or repair it when it breaks down.

Reasoning and inferential skills

Motivation to understand and interest in task and materials

