

Big Data: How Target knows what you want before you do

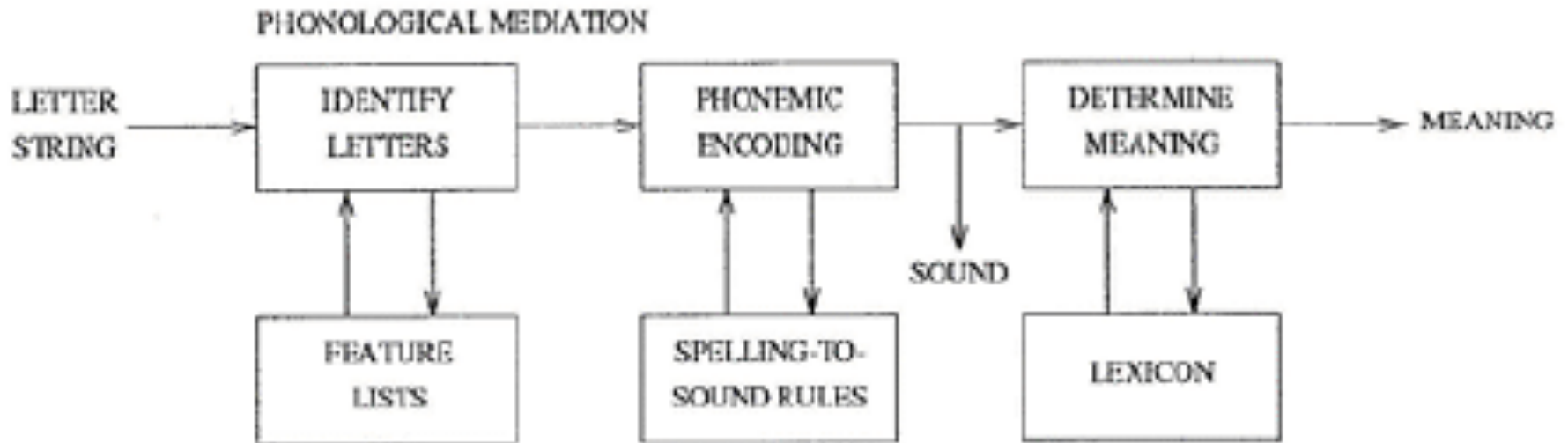
- Andrew Pole: Obsessed with using data
- Target: How can we find our pregnant customers?
 - They are big spenders
 - Can sign up for Birth Registry
 - Mine these data for their purchases
 - Target coupons to these items
 - Irrate father: Why my young daughter?

Two Important Influences in Reading

- Bottom Up Visual Processing
 - Vision and Visual Perception
 - Acuity
 - Tunnel Vision
- Top Down Knowledge Processing
 - Orthographic (Spelling) Constraints
 - Spelling/Sound Constraints
 - Lexical Constraints

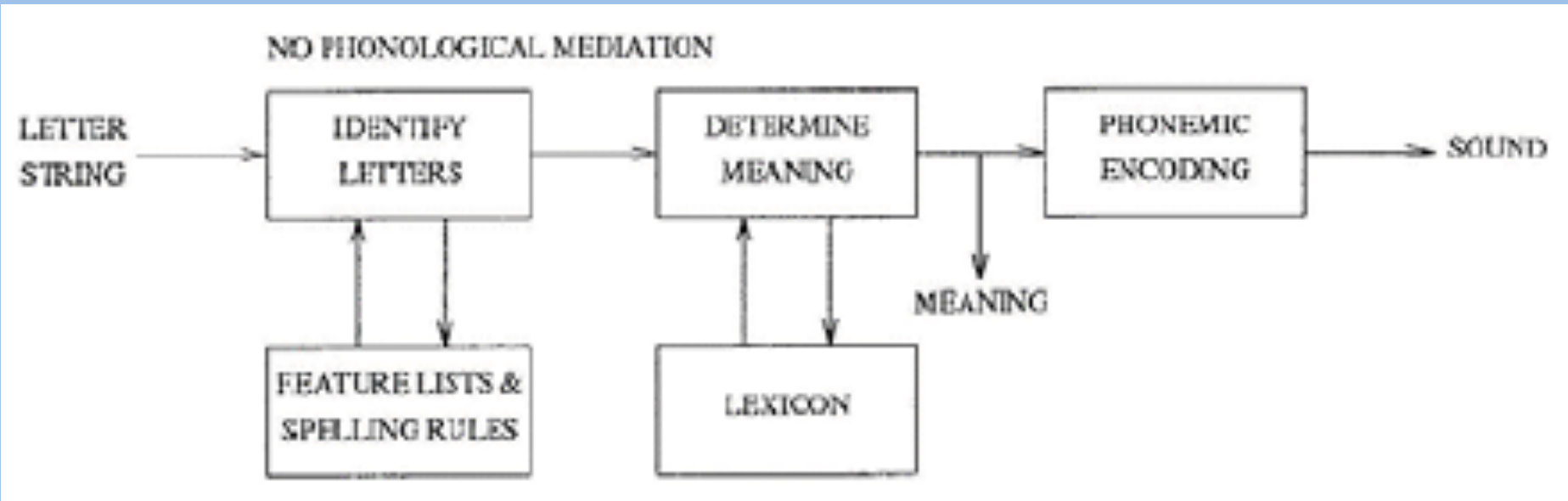
Word Recognition or Lexical Access

Important Issue in Reading with Implications for Learning to Read



Word Recognition or Lexical Access

Important Issue in Reading with Implications for Learning to Read



SUPERIOR RECTUS

(upward)

**LATERAL
RECTUS**

(outward)

**SUPERIOR
OBLIQUE**

(downward
& outward)

**MEDIAL
RECTUS**

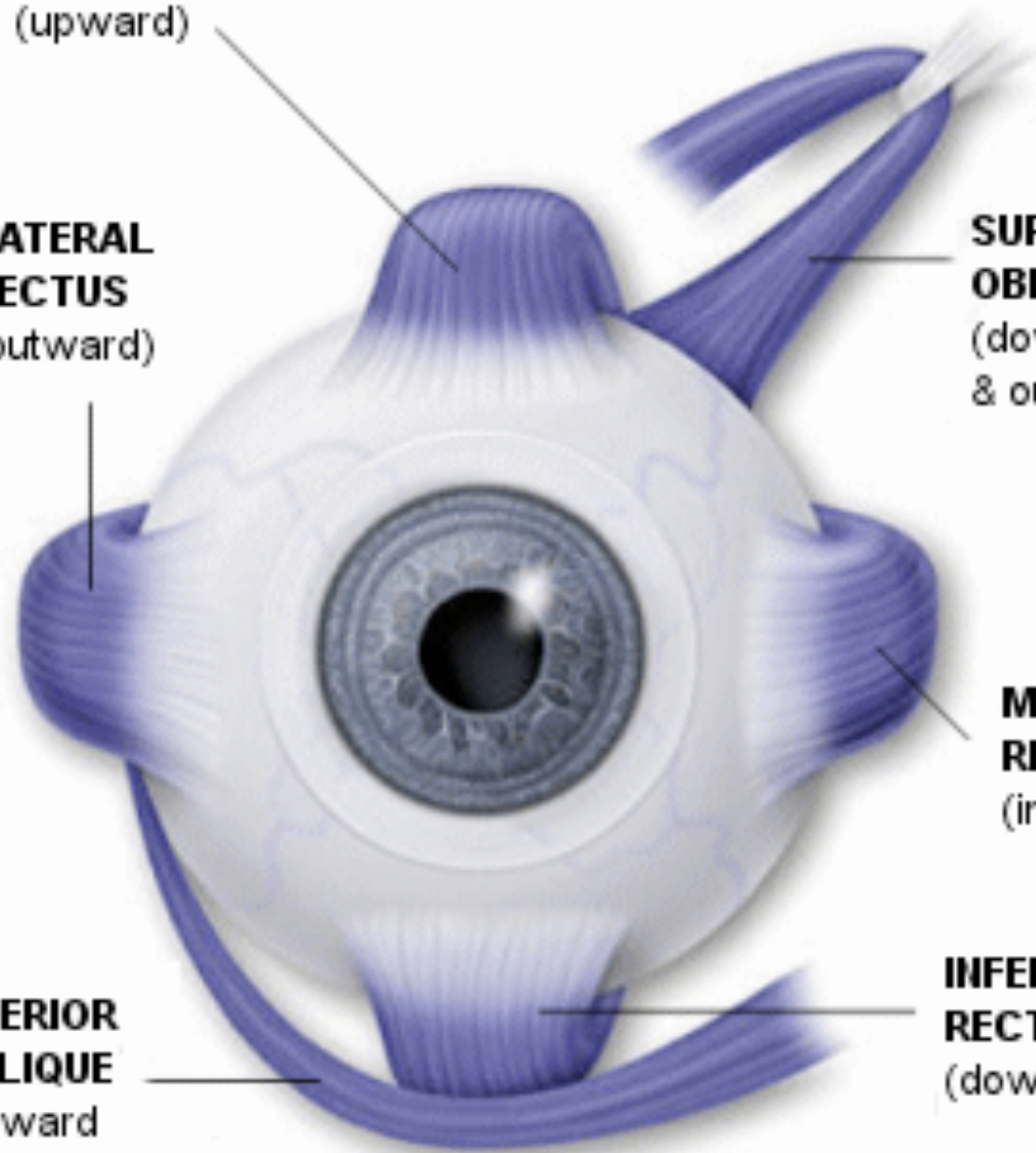
(inward)

**INFERIOR
OBLIQUE**

(upward
& outward)

**INFERIOR
RECTUS**

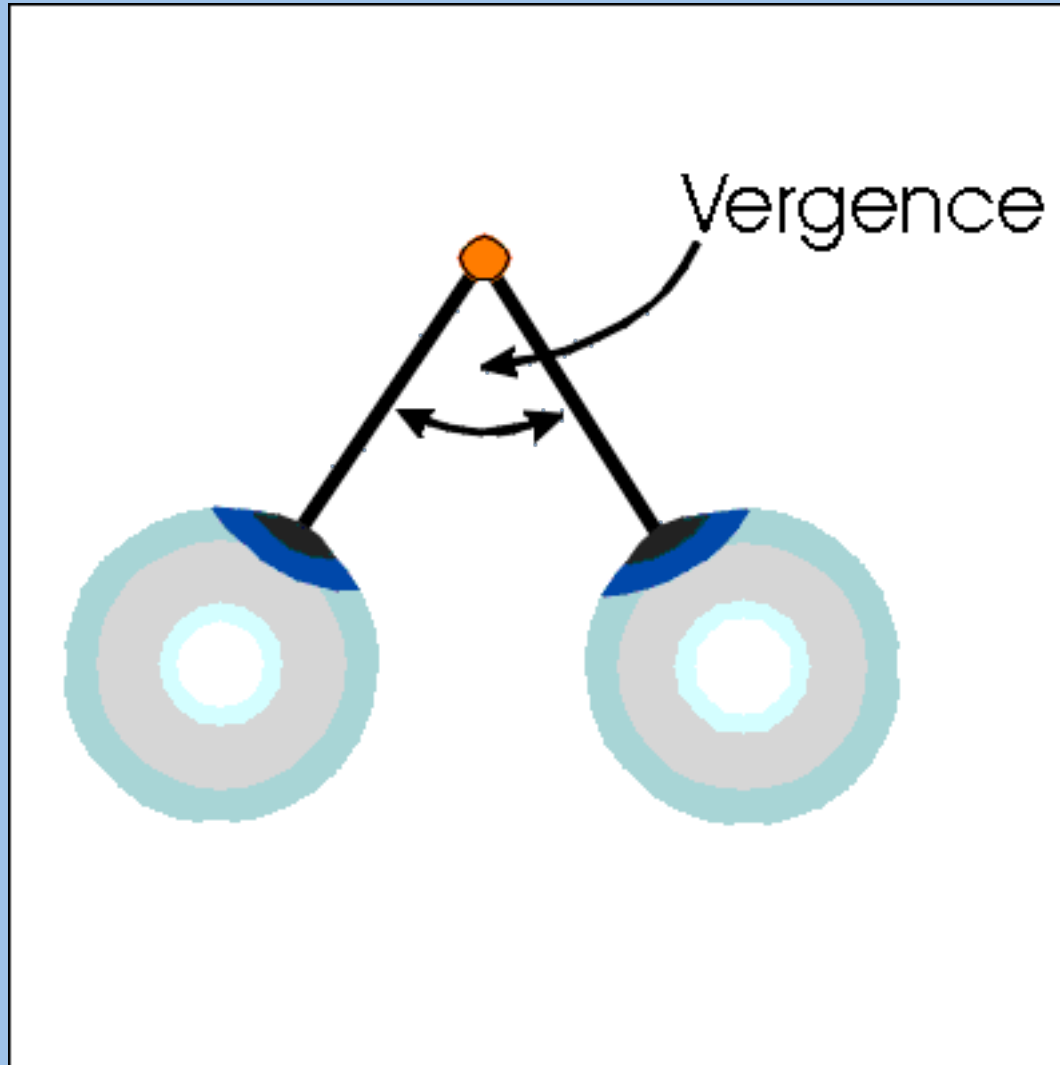
(downward)



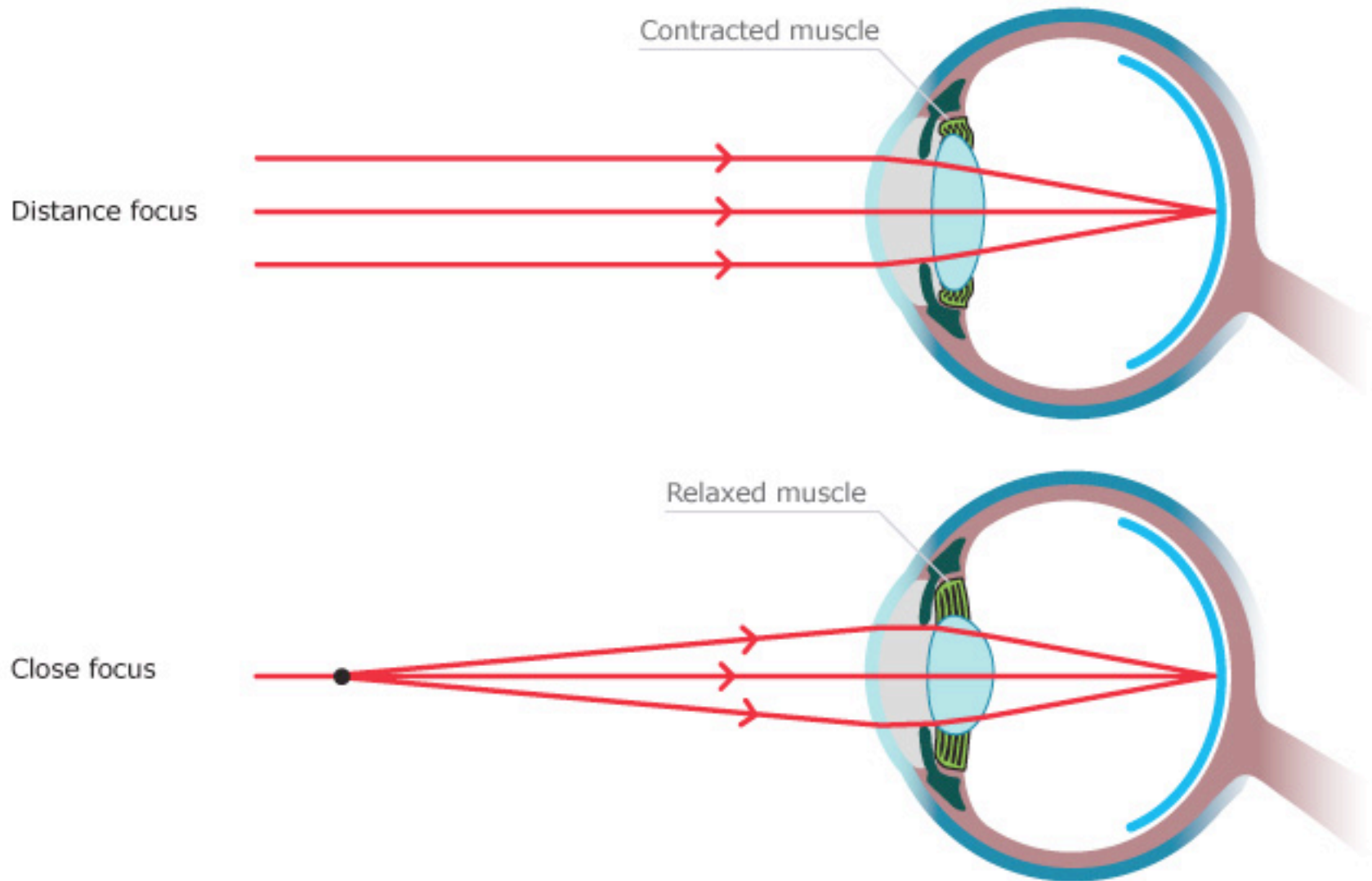
Eye Movements

- Slow Pursuit Movements
 - Tracking a slow moving object
- High Frequency Nystagmus
 - noise
- Vergence Eye Movements
- Accommodation
- Saccadic Eye Movements

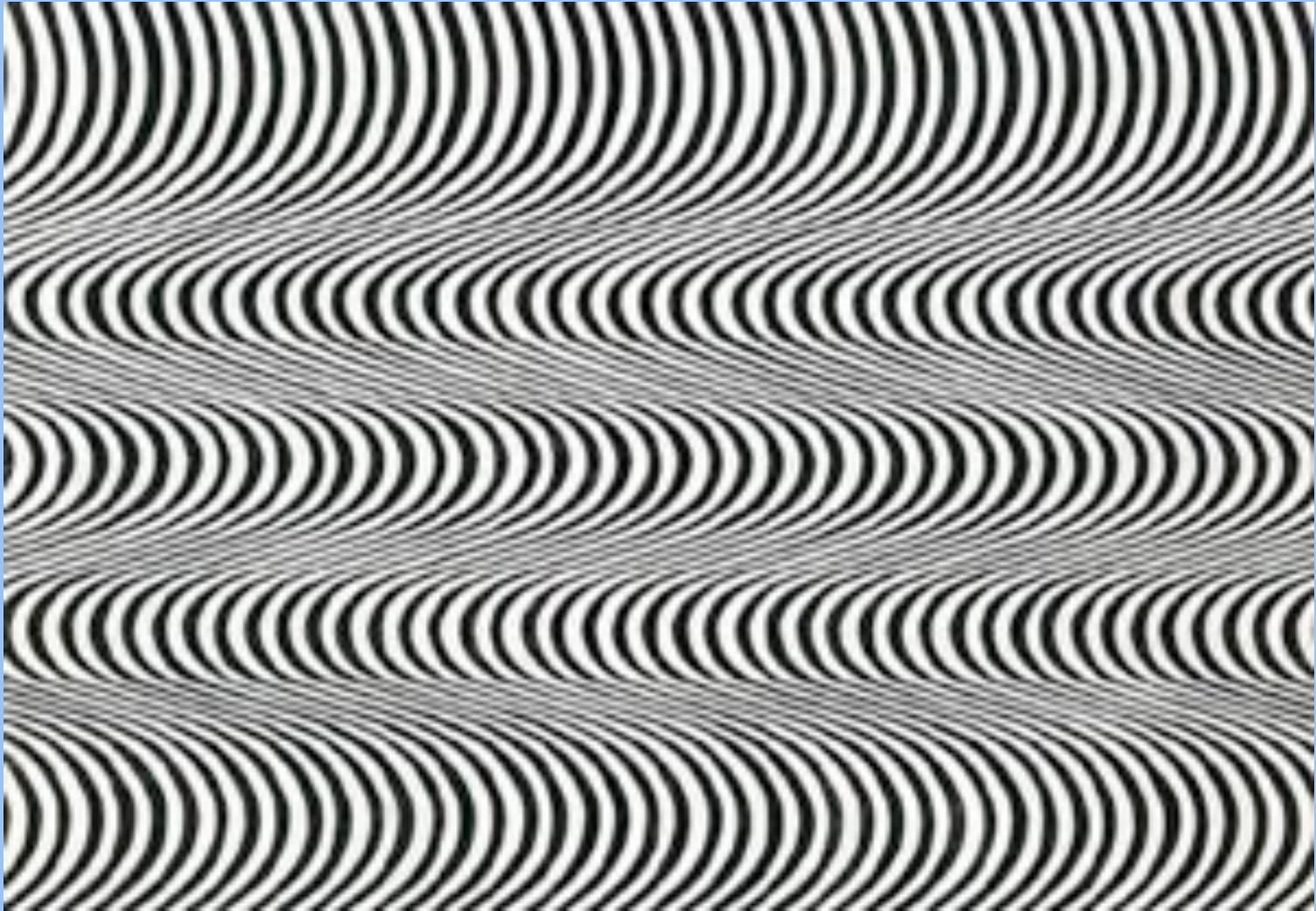
Vergence Eye Movements



How the eye focuses light

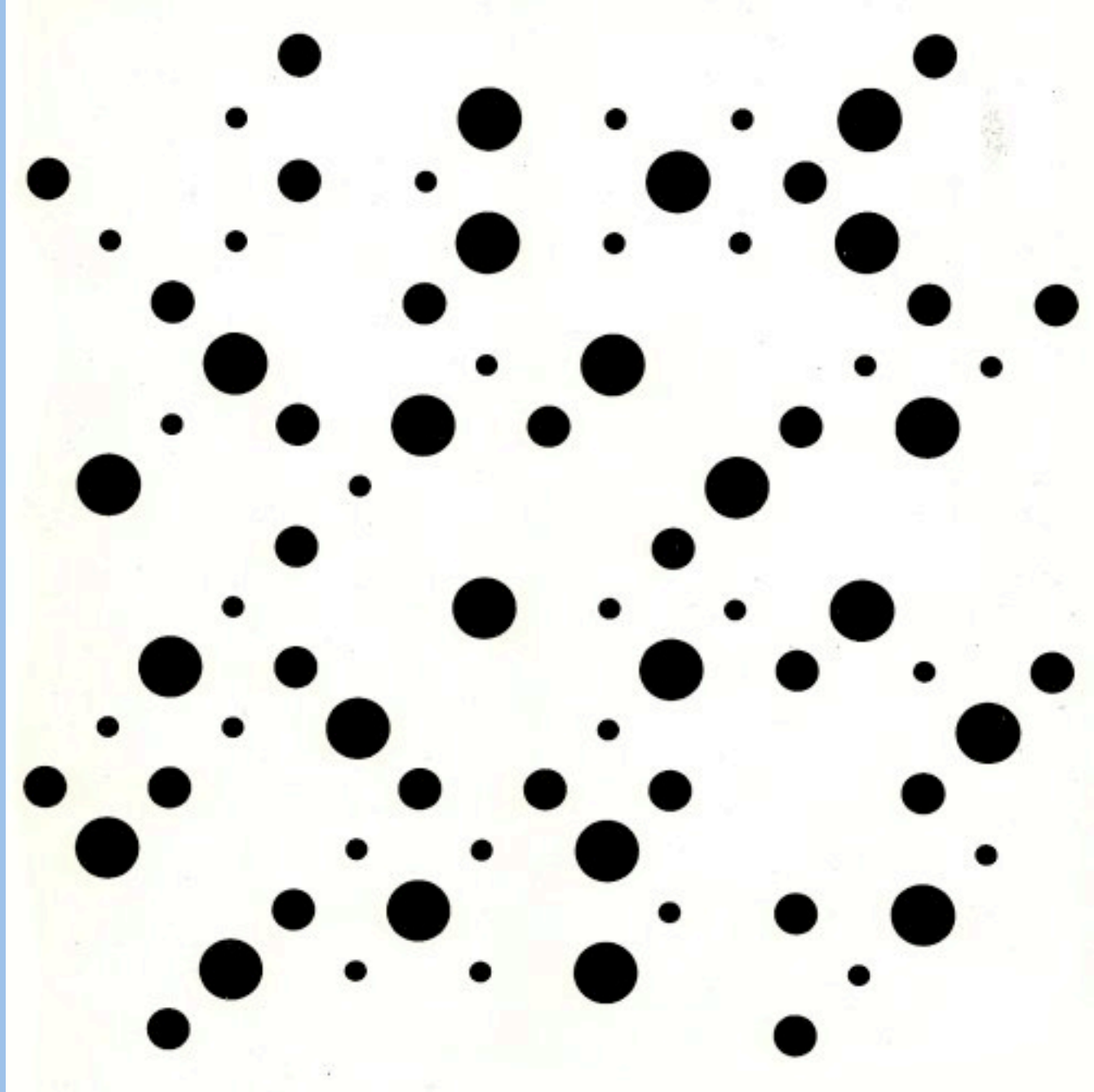


Small changes in accommodation
produce the optical movement.



Current by Bridget Riley

The white discs
reveal your
saccadic eye
movements.

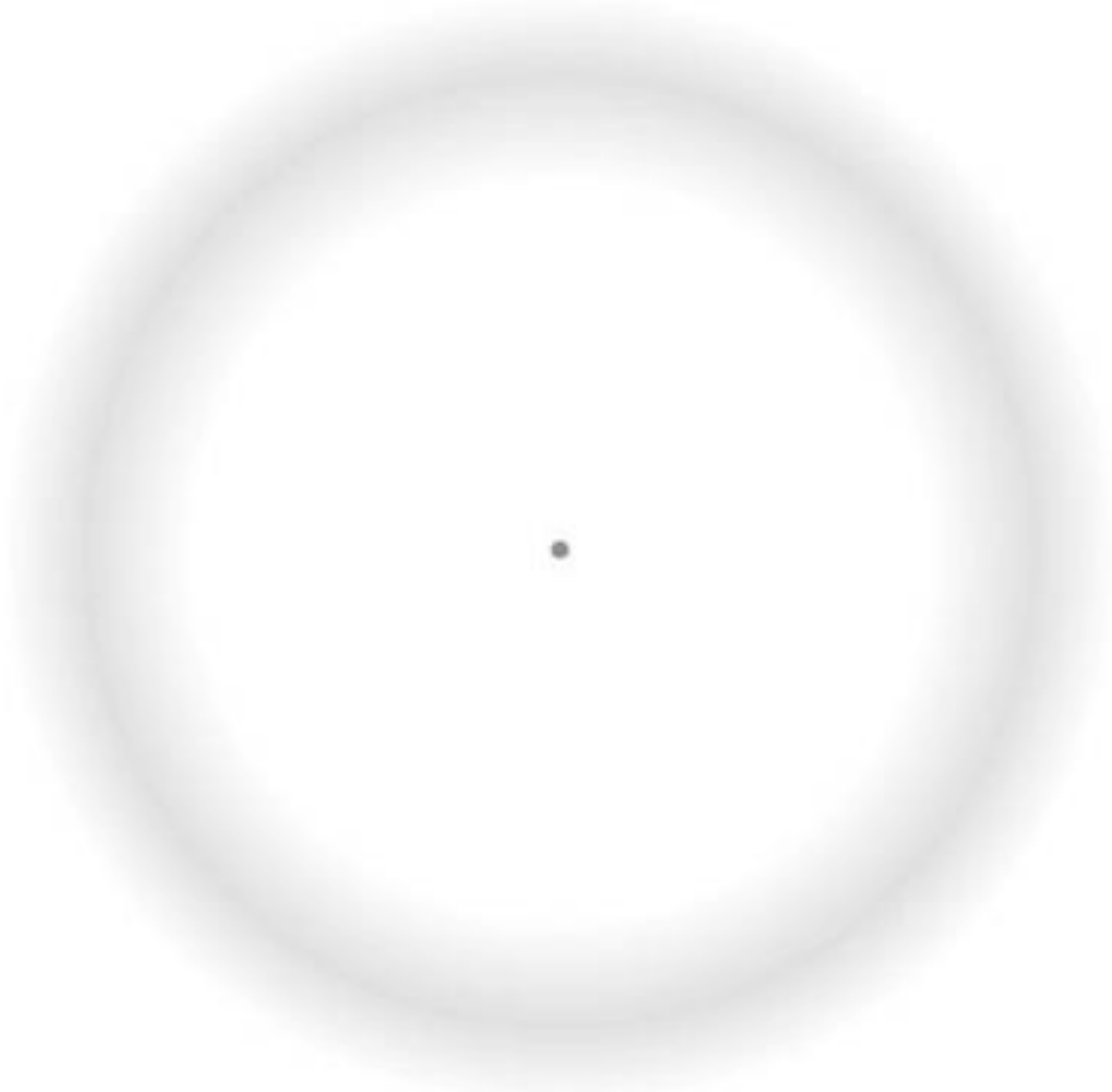


In the next 3 slides, fixating at the center with one eye can make parts of the circle disappear. Saccadic eye movements keep the visual world alive.



Peter Sedgley Pencil Ring 5/5

Looking Glass No. 1', Peter Sedgley



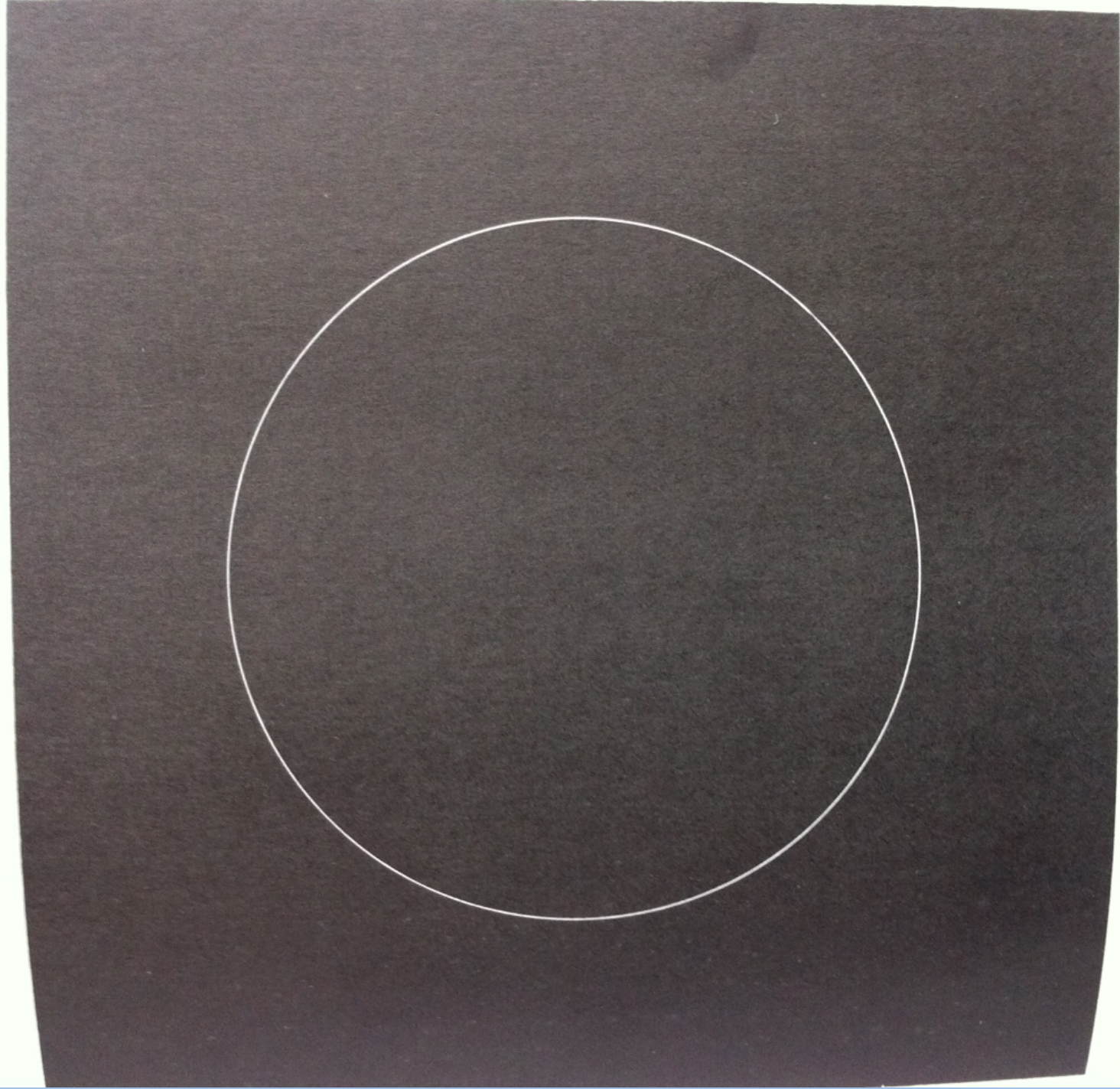


FIGURE 4. Minimum by Alexander Liberman

would disambiguate

Saccadic Eye Movements

Ballistic Movements

Very Fast

Table 1, Approximate Mean Fixation Duration and Saccade Length in Reading, Visual Search, Scene Perception, Music Reading, and Typing. (from Rayner, 1998).

Task	Mean fixation duration (ms)	Mean saccade size (deg.)
Silent reading	225	2 (about 8 letters)
Oral reading	275	1.5 (about 6 letters)
Visual search	275	3
Scene perception	330	4
Music reading	375	3
Typing	400	1 (about 4 letters)

Studying Eye Movements

during a saccade because the eyes are moving so

*

Normal Text

XXXXXXXX X XXXcade because the XXXX XXX XXXXXXX XX

*

Moving Window

XXXXXXXX X XXXXXXXX XXXXXse the eyes are mXXXXXXXX XX

*

Influences on Eye Movements

Fixation Duration and Size of Movement

Word Boundary Information

Length of the Fixated Word

Length of Next Word

Developmental Characteristics of Eye Movements During Reading

Article and characteristic	Grade level						Adult
	1	2	3	4	5	6	
<i>M</i>							
Fixation duration (ms)	355	306	286	266	255	249	233
Fixations per 100 words	191	151	131	121	117	106	94
Frequency of regressions (%)	28	26	25	26	26	22	14

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 - Sentential Constraints

Sentential Constraints in Reading

- Tulving, Mandler, and Bauml (1964)
- eight exposure durations with four sentential context lengths
- word-recognition task
- tachistoscopic presentation of a word followed the reading of the sentence context.
- Her closest relative was appointed as her legal ...

Predictions of the FLMP

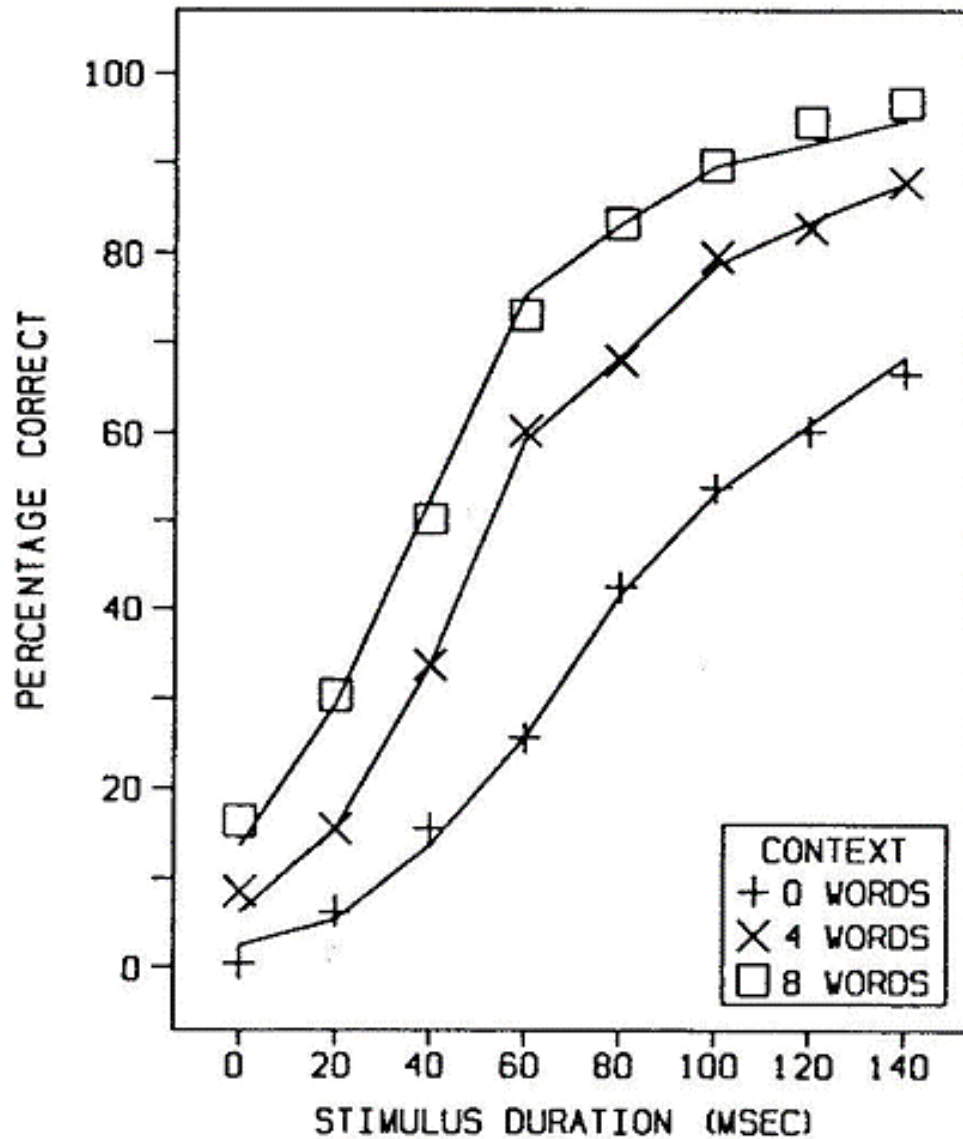


Figure 8. Observed (points) and predicted (lines) percentage correct identifications as a function of the stimulus duration of the test word and the number of context words (after Tulving et al., 1964; from Massaro).

Current Practice in Reading Instruction

- Grounded in Spoken Language
- Focus on Decoding
 - Print to Sound
- Essentially Ignores Structure of Orthography

Phonemic Awareness (PA) Is Essential For Beginning Readers

- PA instruction includes tasks like:
 - 1. Phoneme isolation, which requires recognizing individual sounds in words—for example, “Tell me the first sound in paste.” (/p/)
 - 2. Phoneme identity, which requires recognizing the common sound in different words—for example, “Tell me the sound that is the same in bike, boy, and bell.” (/b/)
-

Phonemic Awareness Is Essential For Beginning Readers

- PA instruction includes tasks like:
 - 3. Phoneme categorization, which requires recognizing the word with the odd sound in a sequence of three or four words—for example, “Which word does not belong? bus, bun, rug.” (rug)
 - 4. Phoneme blending, which requires listening to a sequence of separately spoken sounds and combining them to form a recognizable word—for example, “What word is /s/ /k/ /u/ /1/?” (school)
 -

Phonemic Awareness Is Essential For Beginning Readers

- PA instruction includes tasks like:
 - 5. Phoneme segmentation, which requires breaking a word into its sounds by tapping out or counting the sounds or by pronouncing and positioning a marker for each sound—for example, “How many phonemes are there in ship?” (three: /š/ /l/ /p/)
 - 6. Phoneme deletion, which requires recognizing what word remains when a specified phoneme is removed—for example,
 - “What is smile without the /s/?” (mile)

Phonics Instruction

- Phonics instruction is a way of teaching reading that stresses the acquisition of letter-sound correspondences and their use in reading and spelling.
- Commercial Examples
 - Hooked on Phonics
 - <https://orders.hookedonphonics.com/>
 - LeapFrog
 - <http://shop.leapfrog.com/leapfrog/jump/Letter-Factory-Phonics%22-%2B-Numbers/productDetail/Learning-Toys-%283-5-yrs.%29/MILESTONES19211/cat580010>

Phonics Instruction

- Larry Sanger
 - Founded Wikipedia
 - Taught sons to read by Your Baby Can Read
 - Created Reading Bear
- Illustration
- <http://www.readingbear.org/GettingStarted.aspx>

Phonics Instruction

- The primary focus of phonics instruction is to help beginning readers understand how letters are linked to sounds (phonemes) to form letter-sound correspondences and spelling patterns and to help them learn how to apply this knowledge in their reading.

Phonics Instruction

- Learn Letter Names
- Learn Letter Sounds
 - Scholastic 44
 - <http://www.scholastic.com/staysmart/system44.htm>
 - /b/
- Learn Blending Sounds



Cute Downside of Phonics Instruction

cat





ant

Phonics Instruction

- Logic of Decoding
- Fourth Grade
 - Frequent Observation
 - Decoding OK but Poor Comprehension
 - One reason may be that the decoding process, although well-learned, still requires attention and effort that leaves fewer resources for processing the meaning of what is being read.

Fluency Should Be A Focus of Early Reading Instruction

- Fluency is the ability to read with speed, accuracy, and proper expression.
- Repeated oral reading is a technique in which students read and re-read a passage. The intent is to get students to be able to automate their word recognition processes.
- Guided oral reading involves instructional feedback to students as they read.

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- Guided oral reading involves instructional feedback to students as they read.
- **Critique**
 - Can be misleading

Vocabulary Knowledge in Language Development

- Importance of vocabulary knowledge for understanding the world
- Positively correlated with both listening and reading comprehension

Need for Direct Vocabulary Instruction

- Word Meaning is usually ambiguous in context
- Value of Time on Task
- Present Words in a variety of contexts
- Provide multiple opportunities to learn and to expand on meanings

Vocabulary Knowledge

- Perceptual and Cognitive Development
- Listening and Reading Comprehension
- Central to Everyday Life

JOHANNES KEPLER'S UPHILL BATTLE



Source: © 1980 by Sidney Harris, *The American Scientist Magazine*

Direct Vocabulary Instruction

- Word Meaning Ambiguity
- Time on Task
- Variety of Contexts
- Multiple Learning Opportunities
- Multiple Meanings

Vocabulary

- Vocabulary Is The Most Important Predictor of Comprehension
- Vocabulary is the knowledge of word meanings.
- Direct, explicit instruction of vocabulary improves Comprehension
- Both explicit instruction and indirect or incidental acquisition are both important in acquisition of vocabulary.

Comprehension Strategies Should Be Taught Explicitly

- Strategies are specific procedures that guide individuals as they make meaning from text.
- Question answering is the traditional form of comprehension.
 - As they read, readers are aware of a set of questions that need to be answered.
-

Comprehension Strategies Should Be Taught Explicitly

- Question generation
 - the emphasis is on students producing the questions
- Question generation
 - Shows larger effects than other comprehension strategy instruction techniques.
-

Comprehension Strategies Should Be Taught Explicitly

- Constructing maps of story structure
 - a proven way to improve the comprehension of narrative or story text.
- Comprehension monitoring
 - a metacognitive strategy that involves the continual evaluation of a reader's understanding of the text.

Optimizing Learning to Read

- Motivation and Engagement Are Essential For Student Learning
- Principled Professional Development Will Yield High Quality Instruction
- Access to Books Is Crucial For Students
- Assessment Must Be a Cornerstone of Any Instructional Program