

© Original Artist _____

Reproduction rights obtainable from
www.CartoonStock.com



search ID: aba0628

"Copy and study this list of text messaging spelling words.
We will have a test tomorrow."

Good Prep
For
Government
Job

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.
- Decoding cannot be the complete answer

Homophones

- Words that sound the same but have different meanings and are usually spelled differently
- English is hodgepodge of words from different languages
 - Different etymologies
 - to, two, too

Homophones

- 1st Grade Homophones: to, too, two, be, bee, tea, tee, dew, due, do, ad, add, buy, by, one, won, in, inn, see, sea
- 2nd Grade Homophones: son, sun, tail, tale, I, eye, or, oar, blew, blue, arc, ark, bare, bear, but, butt, dear, deer, fair, fare

Demonstration

- Is Decoding sufficient?
- Read the following sentence

Demonstration

- The nun tolled hymn she had scene a pare of bear feat in hour rheum.

Demonstration

- Is Decoding sufficient?
- Read the following sentence
- The nun tolled hymn she had scene a pare of bear feat in hour rheum.
 - Readers stumble and have poor comprehension of the sentence.

Don't Kids also learn about Orthographic Structure?

- Two broad categories of orthographic structures
 - statistical redundancy
 - Position sensitive measures
 - Bigram frequency
 - rule-governed regularity
 - Phonological constraints
 - Scribal constraints

Motivation for Orthography

- Spoken Language Has Structure
 - It is easily learned
 - It is acquired naturally
- Does Written Language Have Structure
 - Is it easily learned
 - If so, might be acquired naturally
- Recent Research Findings

Evidence for Learning About Orthography

- Cunningham Study (2006)
 - Second graders, read pseudowords in stories
 - Could recognize word several days later
 - yait vs yate
- Pollo, Kessler, & Trieman (2009)
 - English and Portuguese children
 - 3 years 7 months to 6 years 0 month
 - pre-phonological awareness
 - Spelled words and pseudowords
 - Spellings reflected orthography
- Piasta et al. (2012)
- McInnis Dissertation

There is also a growing body of literature showing that beginning readers learn about properties of print that cannot be explained by its relationship to speech (Cunningham, 2006; Cunningham et al., 2001, 2002). Second grade children read aloud target homophonic pseudowords in the context of real stories. Prompted to recall the target homophones several days later, the second graders were able to distinguish between the original target spelling and the spelling of a homophonic alternative (i.e., yait and yate). Other results indicate that pre-school children learn significant properties of the orthography of their language well beyond what could be predicted from the spoken language.

Cunningham, A. E. (2006). Accounting for children's orthographic learning while reading text: Do children self-teach? *Journal of Experimental Child Psychology*. 96, 56-77.

Pollo, Kessler, & Trieman (2009) selected Portuguese and English native speakers between 3 years 7 months and 6 years 0 months who were described as pre-phonological: that is, they did not have phonological awareness in terms of how spoken language maps into written language. The pre-phonological children were asked to spell both words and nonwords. These children without knowledge of phonics must have used a strategy based on what they knew about spelling in their language. The word and nonword word spellings produced by these children reflected the properties of their native written language. The frequency of occurrence for both single letters and bigram combinations in their written responses mirrored the orthographic properties of the text the children had experienced.

Pollo, T. C., Kessler, B., & Treiman, R. (2009). Statistical patterns in children's early writing. *Journal of Experimental Child Psychology*, 104, 410-426.

Print Awareness Study

- Four Year Old Children
- had 4 reading sessions with one book per week for 30 weeks
- Two groups
 - 1. Normal Reading
 - 2. Emphasize Print Awareness
- had better word reading, spelling and comprehension skills
 - Even 1 or 2 years after intervention

Piasta et al. (2012) documented some very important findings relating to the proposed research. As part of Project STAR (Sit Together And Read), they carried out a randomized clinical trial to test the impact associated with emphasizing print during reading to four-year-old preschool children in the classroom (see also McGinty et al, 2011; Justice et al., 2010). Their comprehensive study involved more than 300 children in 85 classrooms. The children in the study came from low-income homes and started with below-average language skills. Two groups of children had 4 reading sessions with one book per week for 30 weeks. The books were selected to have print-salient features. The important difference between the groups was whether print was emphasized in the book reading. Emphasizing print in reading encourages the children to pay attention to the printed letters and words.

Piasta, S. B., Justice, L. M., McGinty, A. S. and Kaderavek, J. N. (2012), Increasing Young Children's Contact With Print During Shared Reading: Longitudinal Effects on Literacy Achievement. *Child Development*, 83: 810–820.

Teachers in the manipulation group were trained to make specific print references while reading. For example, they could point to a letter and ask the child what it was or ask the child to point to the words as they were read. Teachers in the comparison group were told to read as they normally would. The results revealed that the children who were required to pay attention to print had better word reading, spelling and comprehension skills than did children in the comparison group. This was true even 1 or 2 years following the intervention of print emphasis in shared reading. These results are very important because the authors observed, as have others, that teachers, parents, and caregivers do not normally ask the child to attend to the print of picture books.

Piasta, S. B., Justice, L. M., McGinty, A. S. and Kaderavek, J. N. (2012), Increasing Young Children's Contact With Print During Shared Reading: Longitudinal Effects on Literacy Achievement. *Child Development*, 83: 810–820.

McInnis Dissertation

- Written Word Learning
- Toddlers 2;1 to 2;10 (years;months)
- Learning
 - Print and Morphophonemic words
 - Within Subject experiment
 - Counterbalanced words across subjects
 - PHONEMIC AWARENESS AND SIGHT WORD READING IN TODDLERS Dissertation Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College
 - By Alicia McInnis
 - August 2008

Print Only

Same Initial Letter

Distinct initial Letter

Letter-Name Words

fire

fire

Noun



fire

Noun



hill

Adjective, Verb



open

eat

eat

Noun



fish

Verb



sit

Verb



eat

Test Stimuli
MPH = MorphoPhonic

	<u>Group 1</u>		<u>Group 2</u>	
	<u>MPh</u>	<u>Print</u>	<u>MPh</u>	<u>Print</u>
Verbs	Help	sit	Sit	Help
	Pull	keep	Keep	Pull
	Eat	open	Open	Eat
	Stop	play	Play	Stop
Nouns	sheep	bed	Bed	sheep
	home	fish	Fish	home
	Day	hill	Hill	day
	Fire	milk	Milk	fire

McInnis Dissertation

- Procedure
 - Showed Words
 - 3 times per week for six weeks, or a total of 18 sessions
 - See Procedure
 - Test Words
 - “Say the word on this card,” or “Tell me this word.”

Procedure for teaching words

In each 15-20 minute session, the examiner talked about each word as it was presented. When a MorphoPhonic word was introduced, the examiner pointed to the initial letter on face of the Phonic Faces character and talked about the name of the character, which corresponds with the initial letter and the how the character makes the first sound. The remainder of the word was then discussed with reference to the picture (meaning) and the component letters (form). Features of the superimposed pictures were pointed to and talked about. In addition, the examiner pointed back-and-forth between the MorphoPhonic word and the printed word on the card.

Procedure for teaching words

The print only words were introduced by pointing to the initial letter of the printed word, and discussing the name of the initial letter and the corresponding sound associated with it. The remainder of the word was then examined for component letters. For both treatment conditions (MorphoPhonic words and Print Only words), the children were asked to make/ imitate the 50 sound associated with the initial letter of the word. The group also discussed other words that are initialized by the same sound. In addition, for both conditions the words were acted out to reinforce the meaning. In the remaining time, age-appropriate language-literacy games were played, such as Matching, Go Fish, Find-a-Word and Act-a-Word, using the stimulus words.

Procedure for teaching words

At the completion of each session, a daily probe was administered in a group format. Each child was presented with two MorphoPhonic cards and two Print Only cards and asked to say the words on the cards. However, this data was not used in the analysis of this study.

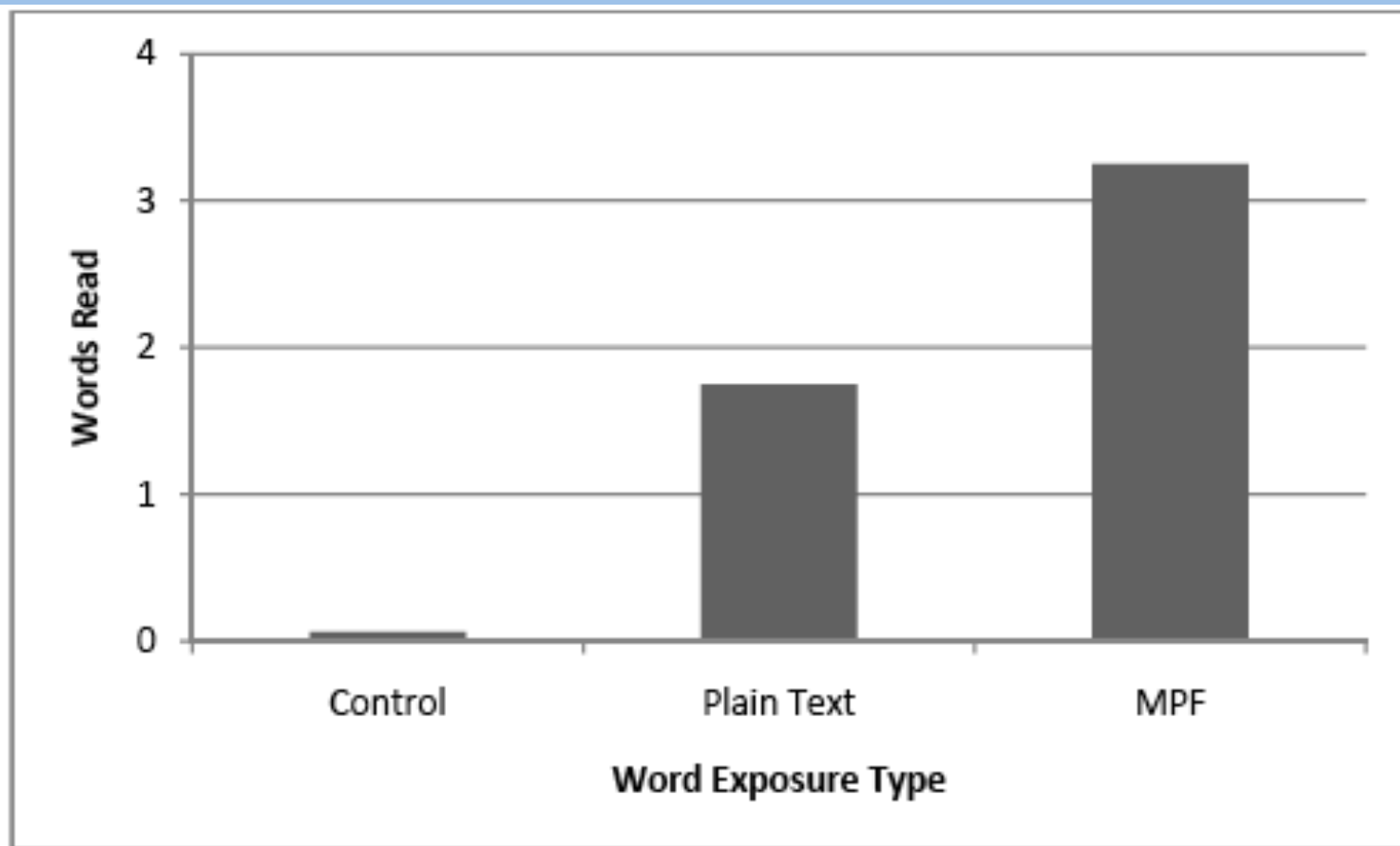


Figure 5. Comparison of the total number of words correctly identified for words not taught (control) and words taught using print only (plain text) and with MorphoPhonic pictures.

McInnis Dissertation

- Potential Problems
- Time on Task
 - Might differ between the two presentation conditions
- Basically a Decoding Study
- Hasn't Been Published
- What we have learned
 - Two-year-olds can learn written words
 - Should attempt it with even younger children

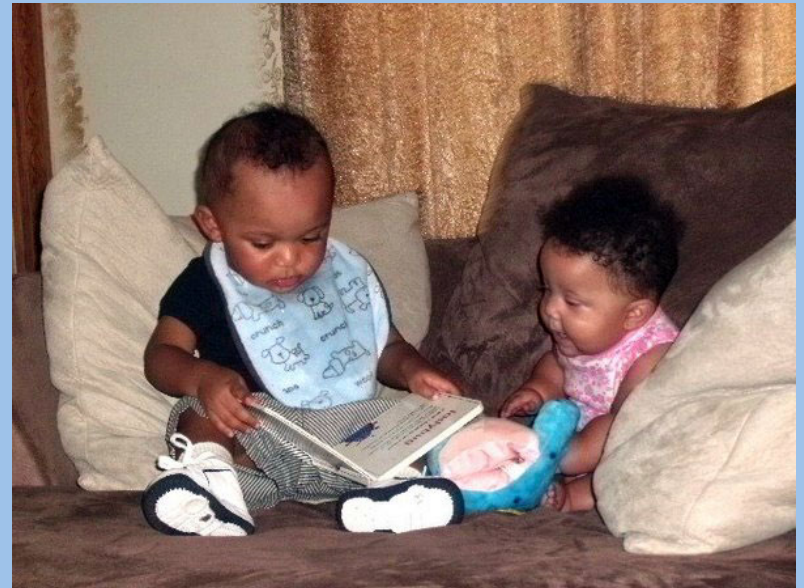
Acquiring Literacy Naturally

- Difficult to test directly
 - How prove kids acquire speech naturally simply with speech input?
- Establish kids have fundamental skills
 - Analogous to speech research
- Research Agenda
 - Visual capacity
 - Letter and letter processing
 - Written word processing

What's Needed for Literacy?

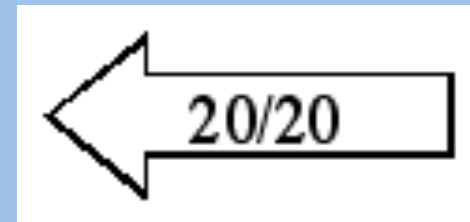
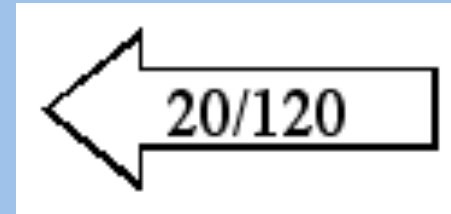
Written Language!

- See Things
- Signal analysis
- Learn Categories
- Learn Letters and
- Constraints



© 2009 www.PowerBibles.com

Babies can see more than you might think!



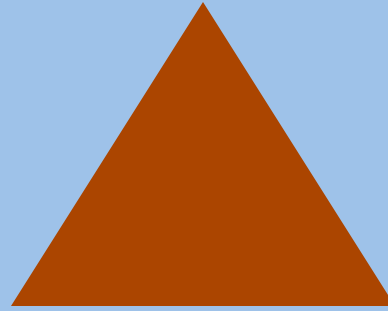
1 month 20/120

4 months 20/60

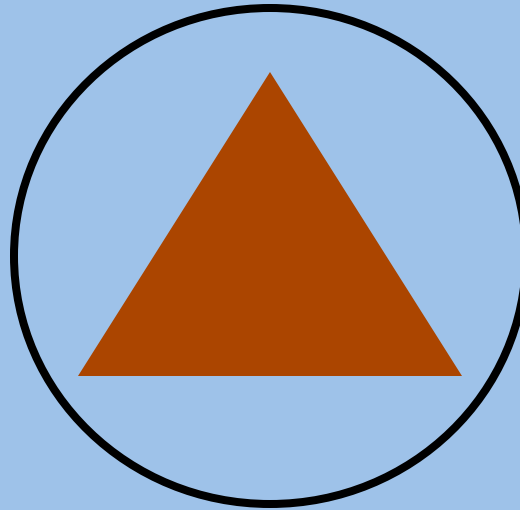
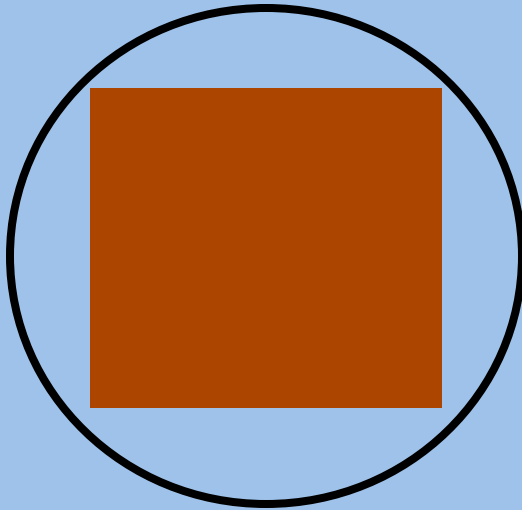
8 months 20/30 <http://www.ski.org/>

[Vision/babyvision.html](http://www.ski.org/Vision/babyvision.html)

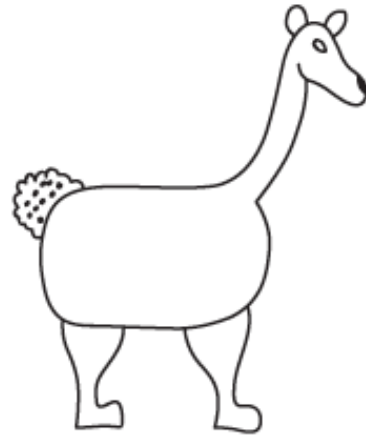
One-Month Old Infants Can See



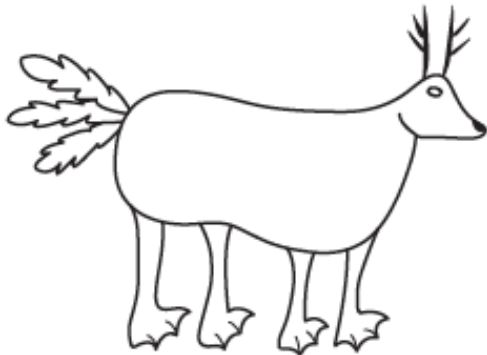
Two-Month Old Infants Can See



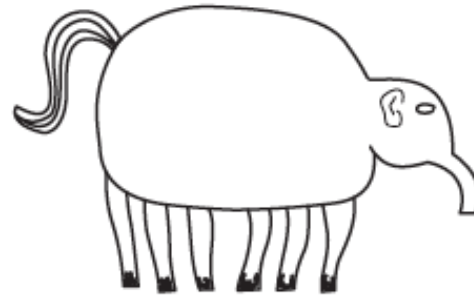
Babies can categorize objects.



12221



21112



33333

Younger and Cohen 1983

Babies

- Association Engines
- Learn Statistical Constraints
 - Speech
 - Music
 - Objects
- Letters?
 - Nature of letter stimuli
 - Proposed experiments

Classic Study

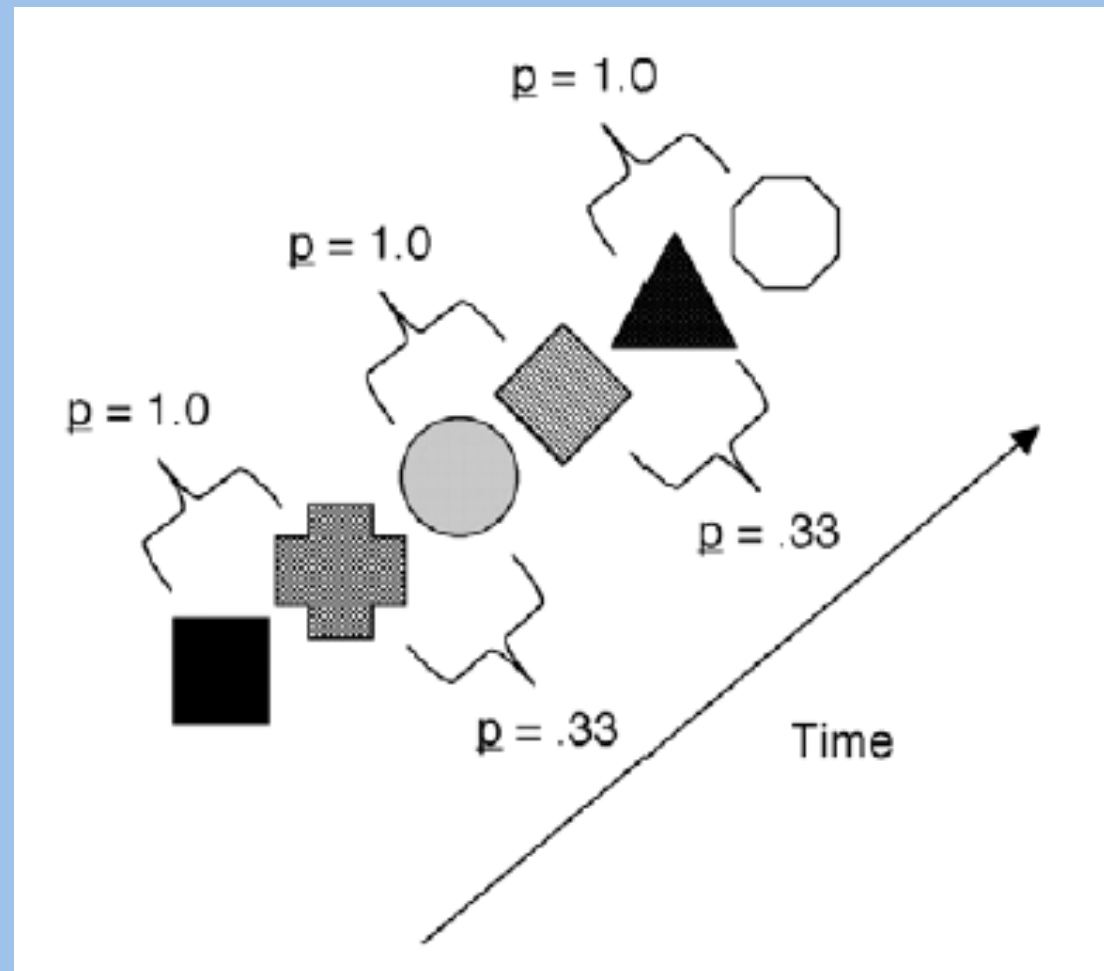
- 3-month-old infants
- Taught to kick leg to move mobile of blocks
 - Showing letter L
- Then presented mobile of blocks
 - Showing letter T
 - No transfer of kicking
- Indicated infants noticed difference between L and T

Adler, S. A., & Rovee-Collier, C. (1994). The memorability and discriminability of primitive perceptual units in infants. *Vision Research*, 34, 449-459.

Babies

- Association Engines
- Learn Statistical Constraints
 - Speech
 - Music
 - Objects

Kirkham, N. Z., Slemmer, J. A., & Johnson, S. P. (2002). Visual statistical learning in infancy: evidence for a domain general learning mechanism. *Cognition* 83, B35–B42.



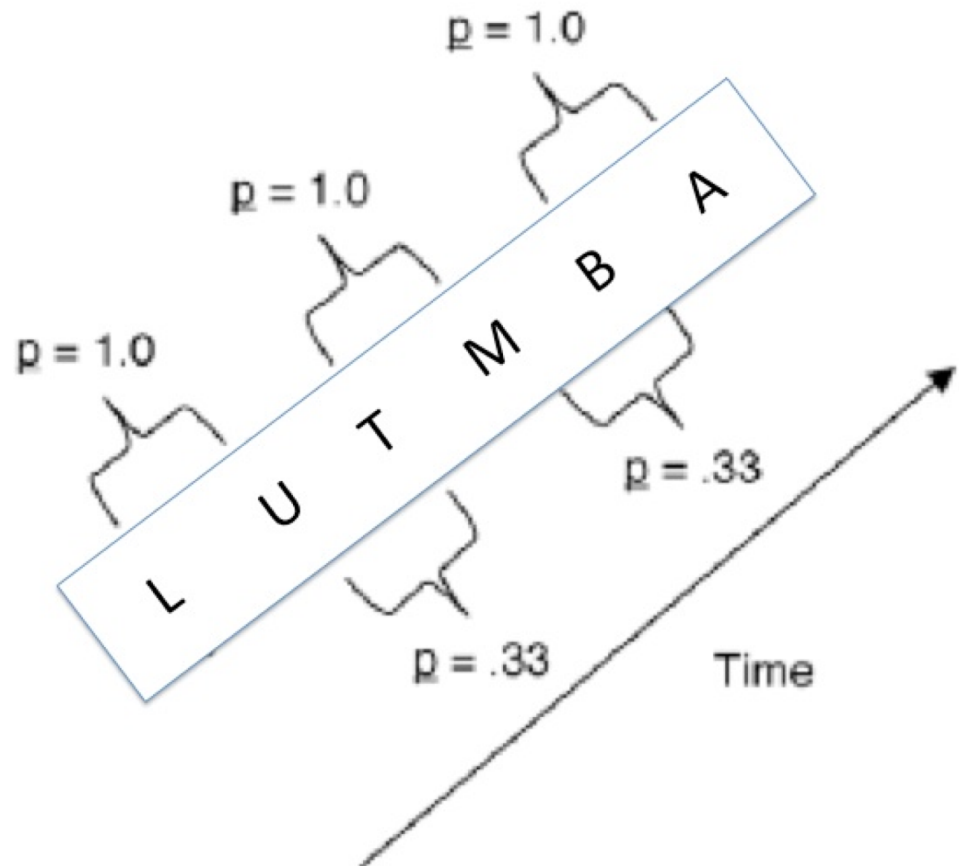
Object Study

- 2-month-old infants and older
- Habituated to sequence of objects
 - Based on looking pattern
- Presented new sequence
 - Obtained change in looking pattern
 - Showed a novelty preference
 - For all infants

Research Proposal

- Statistical Learning
 - Habituation Experiment with Letters

temporal
relation
between
single
letters



Motivation for Study

- Success with objects
- Analysis of babies visual world
- Topographical analysis
 - See Changizi analysis

Properties of Letters

- Number of Strokes
- Topography
 - surface shape and features
- Letters Mirror Visual World
 - Pastoral
 - Architecture
 - Only a subset of shapes are used

Number of strokes per letter in English (from Changizi and Shimojo, 2005)

(a)

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z



A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z



3, 3, 1, 2, 4, 3, 2, 3, 3, 2, 3, 2, 4,
3, 1, 2, 2, 3, 1, 2, 1, 2, 4, 2, 3, 3

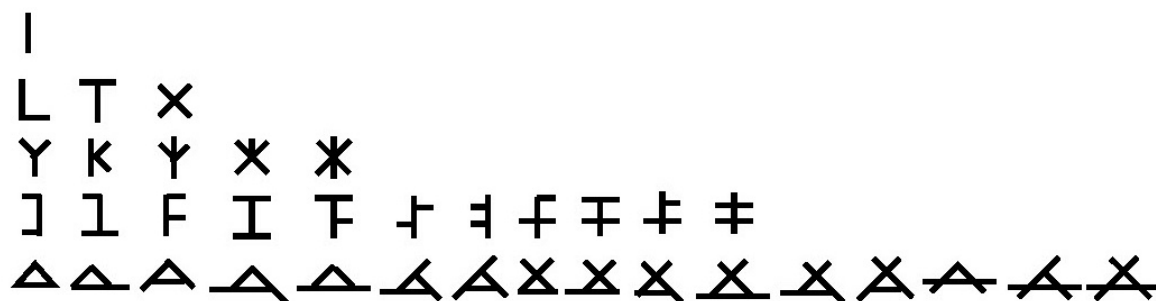
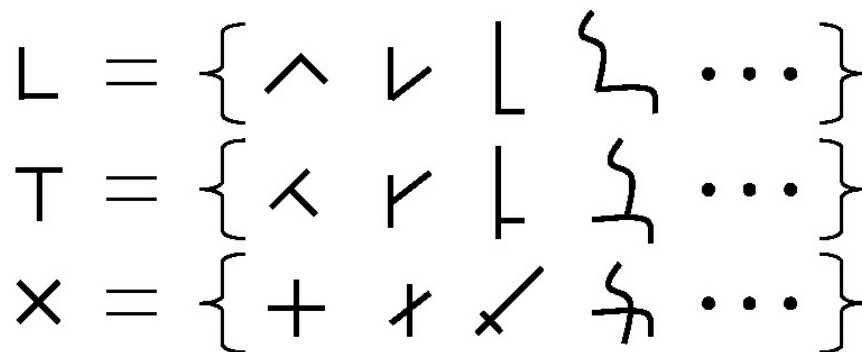
Changizi (2009) provided a detailed analysis of the topological characteristics of letters from a wide range of non-pictorial signs and alphabets. These topological properties describe the manner in which the separate strokes intersect or join with other strokes. Only a subset of possible topographical shapes is used and, most impressively, the shapes of alphabets conform to the contours of objects found in our natural environments across many geographic settings. It thus appears that alphabet forms are created to replicate those properties of our surroundings that our visual system evolves to efficiently perceive them. Thus, we expect that our target population will be able to perceive and discriminate letters of the written language.

$L = \{ \wedge \vee \perp \text{hook} \dots \}$
 $T = \{ \sphericalangle \Upsilon \top \text{hook} \dots \}$
 $X = \{ + \times \cancel{\times} \text{hook} \dots \}$

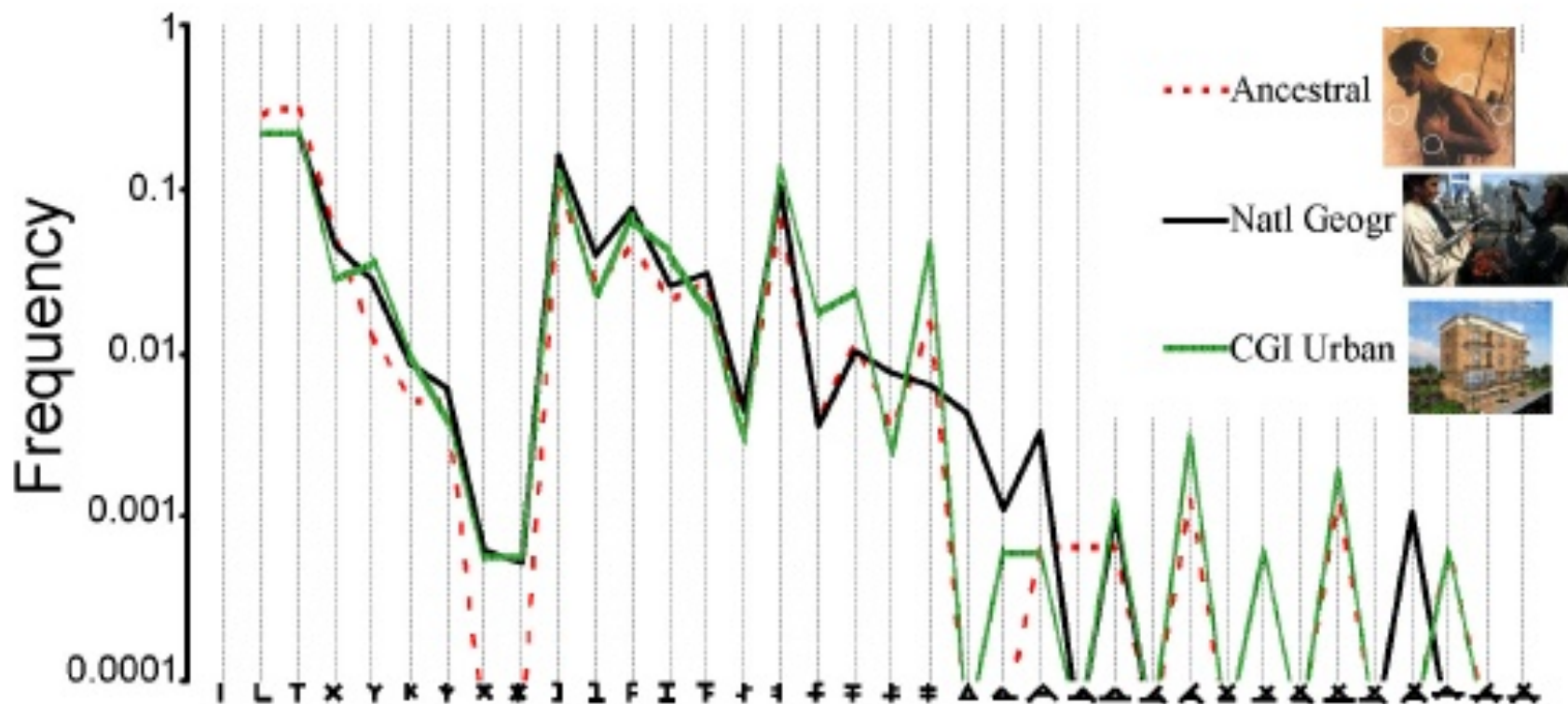
|
 L T X
 Y K Y * *
 J I F I T † ‡ † ‡ † ‡
 Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ

(From Changizi, 2005, 2009)

The upper part of the figure illustrates the notion of topological shape. The lower part shows the set of topological shapes which can be drawn with three or fewer straight lines, and these are the ones considered in the analysis. Our analysis was confined to three-segment shapes because our earlier research had discovered that phonemic writing systems tend to have about 3 strokes per character, no matter the number of characters in the writing system.



(From Changizi, 2005, 2009)



The topological shapes found in nature are highly robust, due to the fact that this notion of shape is so robust. We see the same signature above whether measuring from ancestral images, miscellaneous rural National Geographic images, or computer-generated images in an urban setting. All that appears to matter is that the natural scenes possess opaque objects strewn about in three dimensions.

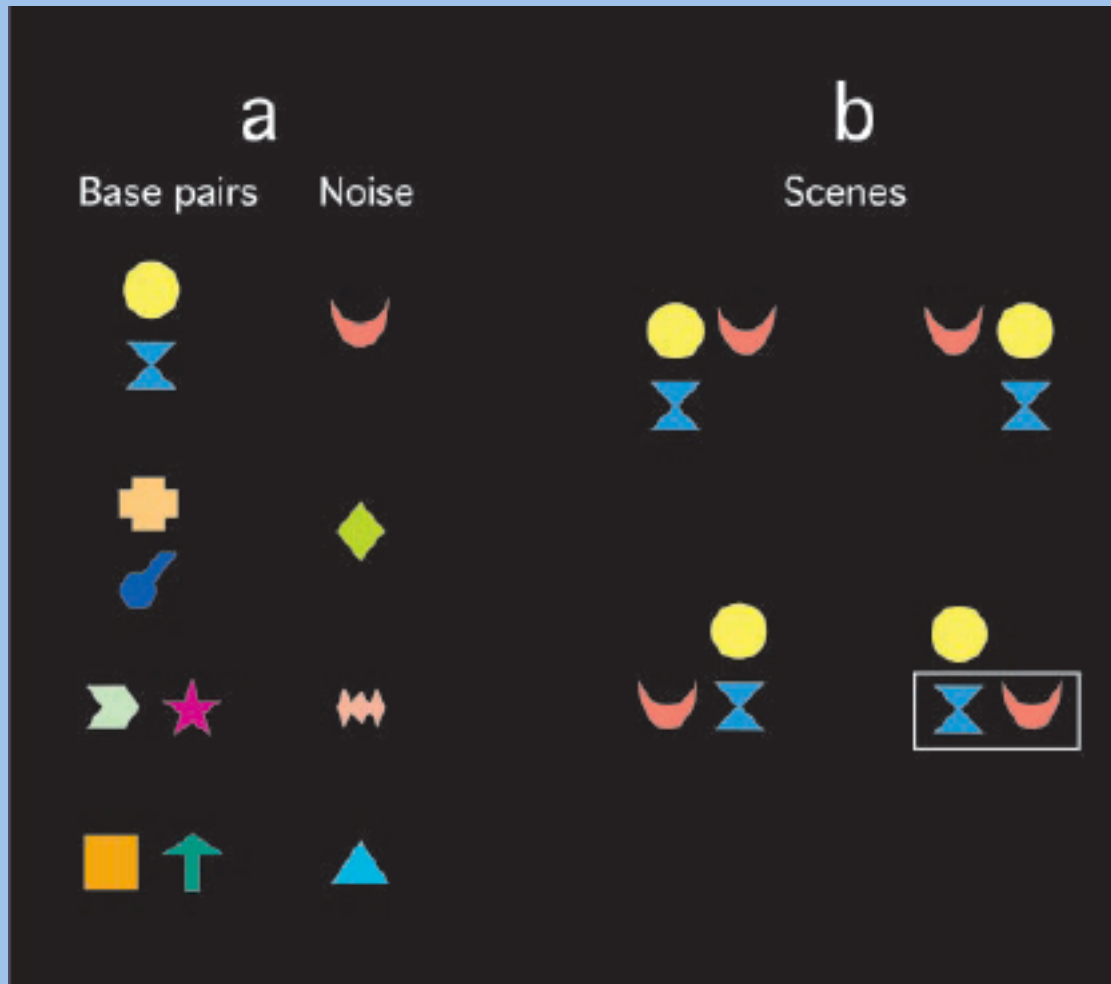
Can Infants Discriminate and Recognize Letters and Their Temporal Statistical Structure?

- 8-month-old infants and older
- Habituate to sequence of letters
 - Based on looking pattern
- Present new sequence
 - Look for change in looking pattern

Proposed Study 1 Details

- 8-month-old infants and older
- Child sits on parent's lap
 - Parent has eyes closed
- Sequence presented; 1 second for each letter
 - Expanding image during presentation
 - Trial ends when infant looks away for 2 seconds or after 1 minute presentation
- After habituation, test trials
 - Same or new sequence
 - Blind observers record infant's eye fixations
 - Determine if difference in looking pattern

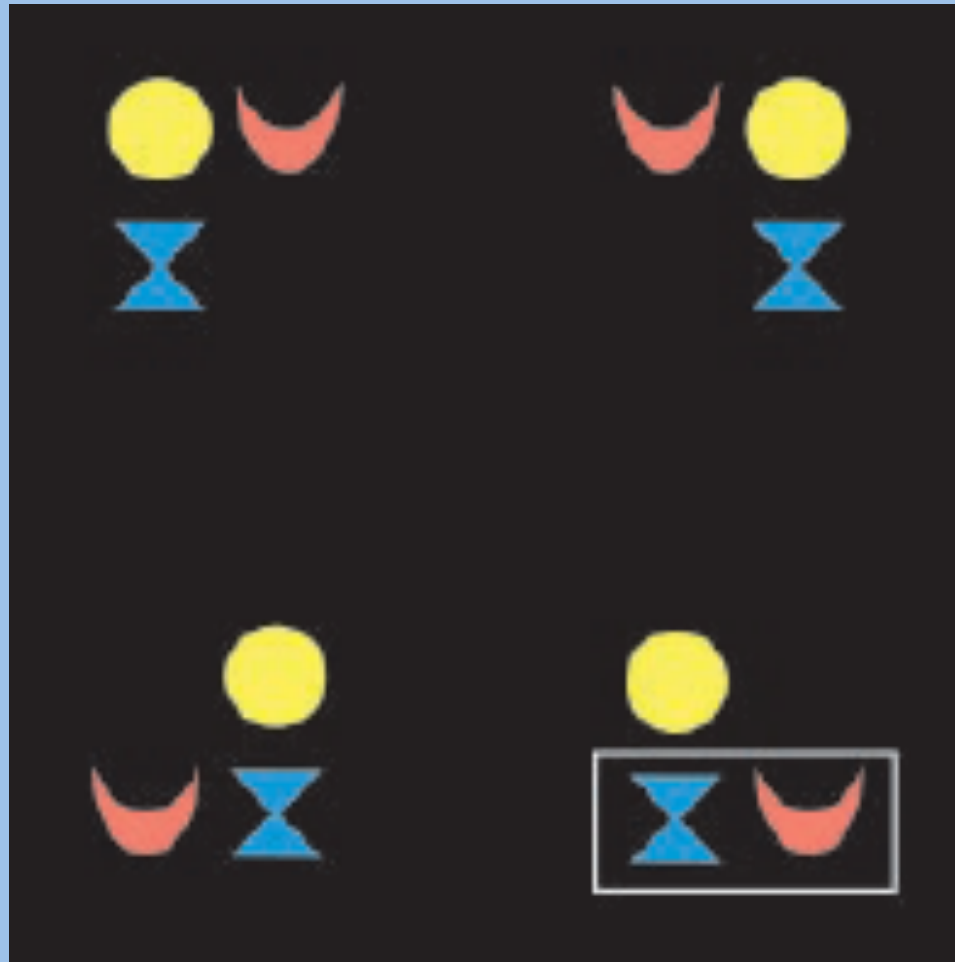
Can babies learn visual feature combinations?



habituation paradigm with 9-month-old infants

Fiser, J., & Aslin, R. N. (2002). Statistical learning of new visual feature combinations by infants. *Proceedings of the National Academy of Sciences*, 99, 15822–15826.

Can babies learn visual feature combinations?



habituation paradigm with 9-month-old infants
Fiser and R. N. Aslin 2002

Fig. 1. Stimulus elements and scenes used in the experiments. (a) *The twelve* shapes were grouped into four base pairs and four noise elements, with each noise element appearing with only one base pair. **(b) *The four possible scenes*** created by one base pair and its noise element. In Experiment 1, all four scenes were presented during habituation

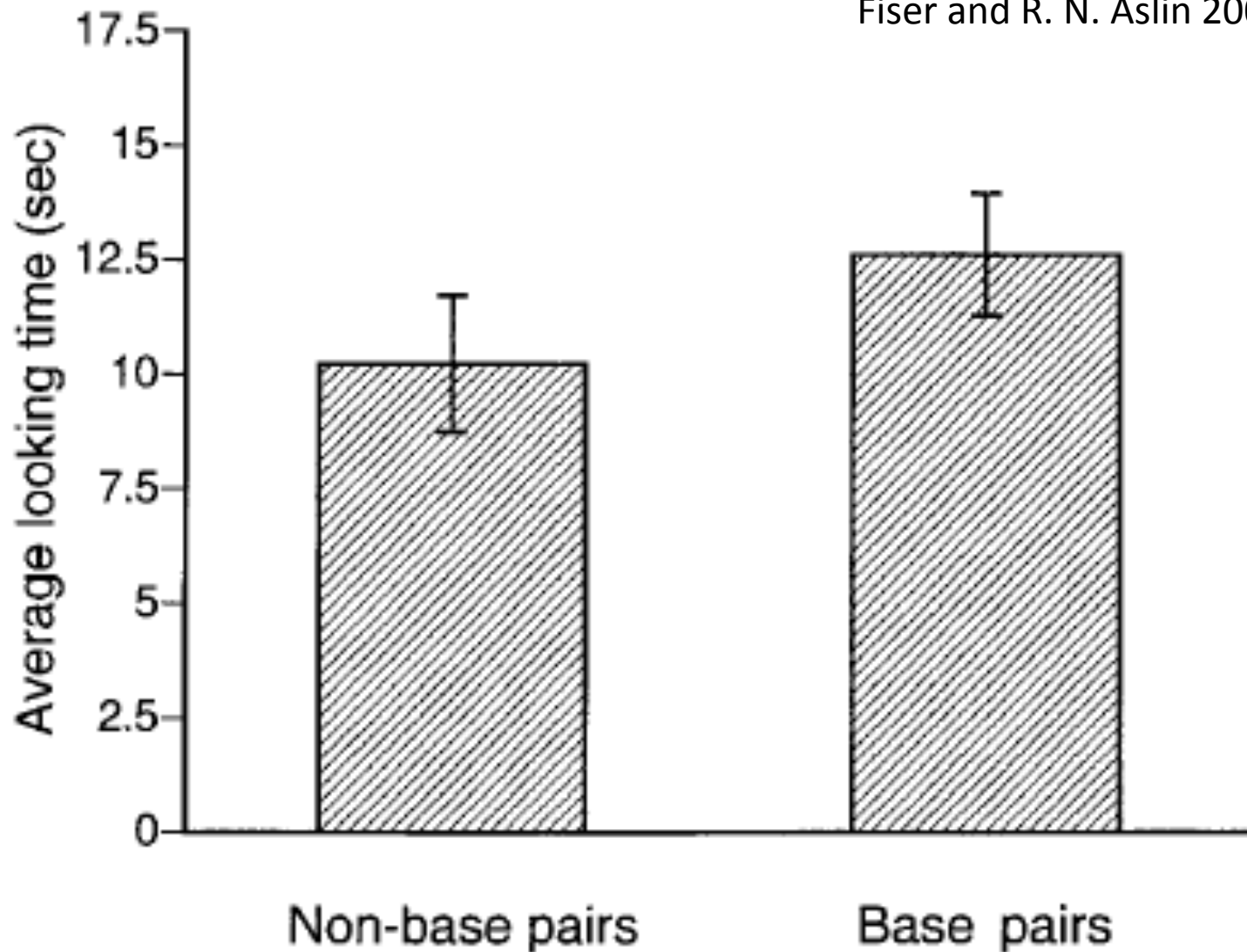


Fig. 2. Results of Experiment 1. There was a very strong looking preference for base pairs over non-base pairs, suggesting that infants noticed the higher cooccurrence of elements within the base pairs.

experiment tests infants' sensitivity to the spatial relation between the letters.

Table 1. Tests infants' sensitivity to the spatial relation between the letters. Illustration of the Base Pairs, Noise Letter, the Targets (3-Letter Sequences), and the Novel Pairs used in the proposed experiment. The two letters in the Base Pairs occurred together in the Targets, whereas the two letters in the Novel Pairs never occurred in the same spatial sequence in the Targets.

Base Pairs	Noise	Targets	Novel Pairs
BA	C	CBA, BAC	BC, CA, AB
DE	K	DEK, KDE	KE, DK, ED
GO	F	GOF, FGO	GF, FO, OG
MU	S	MUS, SMU	MS, SU, UM

Can Infants Discriminate and Recognize Letters and Their Spatial Statistical Structure?

- 8-month-old infants and older
- Child sits on parent's lap
 - Parent has eyes closed
- Sequence of Targets presented; 2.5 second for each letter
 - Expanding image during presentation
 - Trial ends when infant looks away for 2 seconds or after 1 minute presentation
- After habituation, test trials
 - Same or new base pairs
 - Blind observers record infant's eye fixations
 - Determine if difference in looking pattern

Motivations of Study

we ask whether infants extract the statistical regularity that one letter is always presented in the same spatial relation to another letter (e.g., in the case of Targets CBA and BAC, the letter A always appears to the right of the letter B; Table 1). After being habituated to the Targets, the infant will be tested with Base and Novel Pairs. Following the above example, the Base Pair BA occurs in the Targets CBA and BAC, whereas the Novel Pair BC does not. To respond differently to Base and Novel Pairs, the infant must be sensitive to the individual letters and their spatial occurrence.

Potential Limitation of Study

- Holistic processing, not letter processing
 - See target as whole, not its component letters
 - Template matching
- Solution
 - Disrupt global shape

Base Pairs	Targets	Novel Pairs
BA	CBA BAC	BC CA
BA	CBA BAC	Bc cA
dE	DEK kDE	KE dK
DE	DEK KDE	kE DK

Illustration of examples of the Targets and test items in which the size of the letters will be randomly varied to test a template matching hypothesis