



reachoutandread.org

March 5, 2012

### Testimony Regarding HB 5350 – Achieving Universal Literacy by Grade Three

My name is Christine Garber and I am the Connecticut Program Director for Reach Out and Read. Reach Out and Read is an evidence-based, national, nonprofit organization that promotes early literacy and school readiness in pediatric exam rooms by giving new books to children and educating parents about the importance of reading aloud. We serve nearly 3.9 million children nationally which includes over 35,000 children in our state.

Reach Out and Read CT is a proud member of the Connecticut Early Childhood Alliance. Reach Out and Read is both thrilled and thankful to see a bill addressing the serious literacy challenges we face here in Connecticut. There is no question that we must achieve universal literacy by grade three, the age in which children transition from “learning to read” to “reading to learn.” However, we believe that in order to achieve universal literacy by grade three, we must begin at birth with high-quality early care and education. **Therefore, on behalf of Reach Out and Read, I would like to strongly encourage you to include provisions in HB 5350 to support programs that promote literacy from birth, rather than starting at kindergarten.** Why? Well, the brain starts developing on day one.

What is early literacy?

Early literacy is what children know about reading before they can actually read. In the past, literacy, meaning reading and writing, language and talking, and understanding, were viewed as separate cognitive processes, which developed in a set sequence;

- children first learned to understand
- then to speak
- then, much later, could be taught to read and then to write

As a result, formal literacy instruction began in school when children were “ready,” and little consideration was given to foundational literacy skills or to the importance of children’s books and reading aloud in the home. (*Why We Do This; the importance of early literacy*)

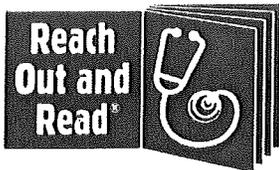
However, new research now tells us that early literacy is a continuous developmental process which includes listening, speaking, reading, and writing, and begins **prior** to formal instruction in reading. It also develops in real-life settings. (*Why We Do This; the importance of early literacy*)

Furthermore, it is now understood that literacy development:

- Begins very early in life
- Is very much dependent on environmental issues

**Given this new body of research, we must adjust not only our view of early literacy development, but also our programs that support early literacy development, in accordance to this new research. We can no longer begin literacy support and development at kindergarten, it is far too late.**

We can look at literacy development the same way we look at language development. Important language development takes place before children actually begin talking, and the child’s environment and caretakers play vital



reachoutandread.org

roles in encouraging precursors of speech and language. In the same way, young children are not formally taught early literacy skills; these skills emerge when the right kind of stimulation is present in their environment. The development of literacy skills through early experiences, along with exposure to books and stories, is critically linked to children's later success in learning to read. (*Why We Do This; the importance of early literacy*)

When children are exposed to books and reading, they develop early literacy skills including:

- basic book-handling abilities
- interpreting pictures,
- following the plot of a story
- associating meaning with the printed word

These early literacy skills become part of the bigger picture of the developmental process of literacy. (*Reading aloud to children: the evidence, 2008*)

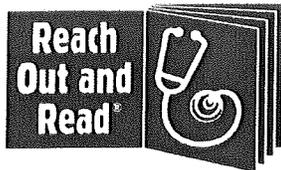
Let's take a look at the architecture of the early brain.

There is a large body of research that shows there is rapid brain development in children from birth through 5, especially in those first 3 years. We now know that the architecture of the brain is shaped by very early experiences. These early life experiences are translated into neuronal connections, which in turn influence child development. Children are born with all their neurons already formed, however the synapses between these neurons are established after birth, peaking at age 3. By age 15, half of these synapses are lost through pruning of unused neural connections due to lack of environmental exposure whereas those synaptic pathways that are stimulated are strengthened. If we want to develop strong readers, we need to encourage and facilitate positive early experiences so that the synaptic pathways are stimulated and strengthened. (*Reach Out and Read: evidence based approach to promoting early child development, 2010*)

So how do we do this?

We must start at birth by educating and engaging parents. **A 1985 National Commission on Reading study reported that reading aloud to children is the single most important activity for literacy development and eventual reading success.** It exposes children to language and vocabulary that they would not have otherwise been exposed to. It also cultivates those important bonding and nurturing experiences that children need in order to learn and thrive. However, currently fewer than half of parents (48%) in the United States read to their young children daily. This, in turn, translates into 35% of our nation's children entering kindergarten without the basic language skills they need to learn to read. (*National Academy of Education, 1985*) And those children who fall behind in first grade have a one in eight chance of ever catching up to grade level without extraordinary efforts. (*Juel 1994; Clay 1979*)

Studies show that children entering kindergarten may have as much as an eight year gap in vocabulary - even before they begin school. That is because a child who has not been read aloud to may have the limited vocabulary of a 2-year-old, while a child who has been read aloud to every day may have the vocabulary of a 10-year-old. The average middle income child has 1200 hours of being read aloud to, compared to 25 hours for low income children. Accordingly, A typical middle-class 5 year old is able to identify 22 letters and sounds of the alphabet compared to just 9 for a low-income child who hears 30 million fewer words while living in an environment of adversity and toxic stress which, in childhood, is linked to damaging the developing brain architecture. (*Hart & Risley, 1996*)



reachoutandread.org

Given all this supporting data, it should be painfully clear that in order to reach universal literacy by third grade, we must provide early literacy supports to children and their parents prior to when children enter kindergarten. We must reach children from birth. But how do we do this?

Reach Out and Read is one part of the solution. Reach Out and Read offers unparalleled access to children and their parents from birth, even those hard to reach, high risk children.

By partnering with pediatricians, Reach Out and Read leverages the trusted relationship between doctors and parents to develop critical early reading skills in children. Reach Out and Read takes place in the exam room during the ten standard well-child visits from six months through age five, reaching children and educating parents during those early critical years of rapid brain development.

Moreover, through our presence in hospitals, clinics, and health centers, we reach children who do not have access to early education programs and therefore most need our services. Nearly 90% of all young children see a child health provider at least annually for a check-up, while less than one third are in any childcare setting, the next most common contact with a formal service system.

14 independent studies, all published in medical journals, say Reach Out and Read works. Not only does Reach Out and Read gain access to the high risk children (and their parents), those participating children enter kindergarten better prepared to succeed, with larger vocabularies, stronger language skills, and a six-month developmental edge over their peers. There is more extensive published research available supporting the Reach Out and Read model than for any other psychosocial intervention in general pediatrics.

Additionally, our model is fiscally responsible as our team of pediatricians volunteer their services to deliver our program. Accordingly, allocating funds upfront to Reach Out and Read is far less costly than providing extra services to school aged children trying to catch up to grade level. It is "preventative literacy care" if you will. Endorsed by the American Academy of Pediatrics, Reach Out and Read incorporates literacy and early reading skills into the definition of child health.

Attached please find further evidence supporting not only Reach Out and Read, but also the need to support literacy development from birth. I hope this large body of research will provide the evidence you need to revise HB 5350 to support universal literacy by grade three **beginning at birth**, rather than starting at kindergarten. By supporting literacy development from birth, we will enable our children to enter kindergarten ready and prepared to learn to read rather than positioning them to play "catch up" which is how our current literacy supports position them.

"Some people there are who, being grown, forget the horrible task of learning to read. It is perhaps the greatest single efforts that the human mind undertakes, and he must do it as a child." (*John Steinbeck*) Let's not be those types of grown-ups. Let's remember that, "The desire to read is not born in a child. It is planted – by parents and teachers..." (*Jim Trelease – The new Read Aloud Handbook*) Let's start early and give our children and families the tools they need to be successful.

On behalf of the children of Connecticut, thank you again for broaching this very important issue.

Christine Garber  
Connecticut Program Director  
[Christine.garber@reachoutandread.org](mailto:Christine.garber@reachoutandread.org)  
(203)980-6430

## Reach Out and Read: evidence based approach to promoting early child development

Barry Zuckerman<sup>a</sup> and Aasma Khandekar<sup>b</sup>

<sup>a</sup>The Joel and Barbara Alpert Professor and Chair, The Department of Pediatrics, Boston University School of Medicine and Boston Medical Center and <sup>b</sup>Division of Developmental and Behavioral Pediatrics, Boston University School of Medicine and Boston Medical Center, Boston, Massachusetts, USA

Correspondence to Barry Zuckerman, MD, Boston Medical Center, 771 Albany Street, Dowling 3509 South, Boston, MA 02118, USA  
Tel: +1 617 414 7424; fax: +1 617 414 3833;  
e-mail: Barry.Zuckerman@bmc.org

Current Opinion in Pediatrics 2010, 22:000–000

### Purpose of review

This article describes the evidence about why reading aloud to children is important to help them develop the language and early reading skills necessary for school readiness.

### Recent findings

This information supports the value of Reach Out and Read; physicians advising parents to read aloud.

### Conclusion

Reach Out and Read should be implemented in health care sites serving low-income children.

### Keywords

child development, primary care prevention, Reach Out and Read

Curr Opin Pediatr 22:000–000  
© 2010 Wolters Kluwer Health | Lippincott Williams & Wilkins  
1040-8703

### Introduction

In the 1980s, clinical observation revealed that many parents in the primary care clinic at Boston City Hospital were not reading to their young children and did not have children's books at home. Parents gave multiple reasons, including no children's book stores in the inner city, no experience – their parents did not read to them, especially those raised in other countries – the high cost of books, or that reading was not a pleasurable experience. In response, in 1989 a few doctors started giving their patients books and their parents advice on reading aloud [1\*]. Nineteen years later, in 2008, doctors in over 4000 clinics and practices gave approximately 5.7 million new books and reading aloud advice to over 3.5 million children in all 50 states. Reach Out and Read anticipatory guidance moved beyond traditional parent education of telling parents what to do, to creating real time learning experiences by modeling developmentally appropriate 'reading' strategies (e.g. pointing, naming, asking questions) and then giving a book to take home to implement the recommendation. This paper will review the problem being addressed by Reach Out and Read, the contribution of the interplay of early experience and brain development to language and early reading, the importance of parents reading aloud, and the opportunity for pediatricians to impact this critical activity.

### The problem

Low literacy among American adults is a severe and pervasive problem in the United States. Approximately 20% of Americans are functionally illiterate, reading below

a fifth grade level, which is inadequate to cope with everyday demands. Minorities are also overrepresented in this group; 39% identified themselves as Hispanic and 20% identified themselves as Black [2]. However, this is just the tip of the iceberg; an additional 30% of adults cannot read at an eighth grade level. These figures have important health, economic and social consequences.

This adult problem, like many others, starts in childhood; approximately 35% of disproportionately low-income American children lack the basic language skills needed to learn to read when they enter kindergarten, ultimately leading to school failure, truancy, and drop outs, which in turn leads to higher risk for early pregnancy, drug and alcohol use, illegal activity and poor health literacy. One of the most studied and important contributors to reading readiness is exposure to words and subsequent vocabulary [3]. Large social class differences are reported in children's exposure to oral language and their vocabularies. Hart and Risley [4] reported that, at the age of 3 years, children in professional families heard an average of 2153 words per hour whereas children in working-class families heard 1251 words per hour and children in welfare families heard only 616 words per hour. This led to enormous differences in children's vocabularies. At age 3, children in professional families had an observed cumulative vocabulary of 1100 words, while children in working class families had an observed vocabulary of 750 words and children in welfare families had an observed vocabulary of just above 500 words.

Parents who were professionals not only talked more, but they also used more complex words and provided a

greater richness of nouns, modifiers and verbs. They also spent a lot of time and effort asking their children questions, and affirming and expanding their responses [4]. Welfare parents, on the contrary, spent less time talking and used more imperatives and prohibitions; 'look at that', 'do not do that', etc.

Children acquire about 860 words per year from age one to the end of second grade, or about 2.4 words per day, resulting in 6000 words. Unfortunately, the variability is significant; the bottom 25% of children average only approximately 1.6 words per day, resulting in only having 4000 words by the end of the second grade. Low-income children are also much less likely to be exposed to these new and unusual words compared with frequently used and common words, which foster later language development [5].

Although reading aloud to young children promotes language and prereading skills [6,7], a recent national survey in the United States found that 16% of parents of children aged 3 years do not read at all with their children, and 23% do so only once or twice a week [8]. Reading is even less among low-income children or those whose mothers have less than a high school education. A typical middle-class child enters first grade having been read to for approximately 1000 h, compared with 25 h for low-income children [9]. Children starting school with lower levels of experience with books and reading become poorer readers [10].

---

### Understanding the role of brain development in reading aloud

Much of the new understanding of the developing brain in the early years of life emphasizes the translation of early experiences into neuronal connections, which in turn may influence later child development. Children are born with all their neurons already formed. However, synapses between these neurons are in large part established and elaborated after birth, reaching a peak by 3 years of age. Half of these synapses are lost by age 15 through the 'pruning' of unused neural connections due to lack of environmental exposure, whereas those synaptic pathways that are stimulated are strengthened.

At birth children's brains are sensitive to all language, especially in the first 6 months; newborns and even fetuses can discriminate their mother's voice from the voice of a stranger [11,12]. Infant-directed speech increases blood flow to the frontal lobe of the brain [13]. Infants progress beyond voice discrimination to discriminating among sounds of almost any language before 6 months. By 6–12 months, the brain begins to become more sensitive to the sounds of their home language, and over time they can lose the ability to

discriminate sounds in other languages if they are not exposed to them [14]. The synaptic connections are strengthened by the sounds heard and are lost (pruned) when not exposed. For example, individuals who have spent their first decade hearing Asian languages in which the phonemes *r* and *L* are interchangeable are unable to differentiate those sounds [15]. Positron emission tomography (PET) scans have shown that the *r* and *L* sounds are decoded in separate parts of the brain of an English-speaking person, but these sounds are processed in the same part of the brain of someone in whose native language these phonemes are not differentiated [16].

The evolution of the 'reading brain' required brain wiring to go beyond processing written symbols that represent concrete objects, such as animals or fire, to strengthening previously unused connections to process letters (circles and lines) to meaningful symbols with associated sounds [17]. This evolutionary step of brain development is illustrated in an imaging study showing limited neural activity in response to seeing a pseudo-word such as MBLI. However, when presented with the same letters that make up a real word (LIMB), maximal activity is elicited in the visual area, leading to stimulation of a whole network of processes and regions in the temporal lobe (auditory and language-based processes including comprehension), parietal lobe (language) and association areas that take up half the cortex [18].

Another example of the developmental nature of experience and brain development is the difference in the ease of acquiring a second language in the early years compared with adolescence. If a child learns two languages in early childhood, he will speak both languages with sophisticated grammatical construction and accent. If a second language is learned in high school or college, even proficient speakers generally do not have as complete a mastery of grammatical construction or accent as early speakers or native speakers. Furthermore, PET scans have shown that, when a child grows up learning two languages, all language activity is found in the same place in the brain. Children who learn a second language at a later age show two foci of language activity.

One interpretation is that learning a second language later takes more effort than when language is learned at its developmentally optimal time, because it is processed and wired in a different place [19]. Acquisition of language in early childhood is captured by the expression that language is caught not taught. Acquisition of another language in later childhood or older is different and may rely much more heavily on memorization of words, rules of grammar or other processes.

Reading aloud to children beyond infancy plays an important role in preparing children to read. It is a

pleasurable activity that promotes the development of language and other emergent literacy skills [20–23], which in turn helps children get ready for school [20,22]. Children learn basic book skills; recognizing letters, understanding that print represents the spoken word, learning how to hold a book, turning the page and starting at the beginning [24–26]. Reading aloud is also associated with learning print concepts [25], exposing children to written language, which is different from spoken language [27], as well as story structures (e.g., stories have a beginning, middle and end) and literacy conventions such as syntax and grammar, which are essential for understanding texts [28].

Reading aloud also promotes phonological awareness (the ability to manipulate the sounds of spoken language [9,29]) necessary for learning to read. Many alphabet books, for example, contain the letter name accompanied by objects whose names begin with the critical sound such a D, shown with pictures of dog, deer, and doctor. When parents stress the initial sounds in these words when reading with their children, they are teaching awareness of initial phonemes or shared phonemes across words [30]. There are important differences in letter knowledge between children from middle-class and lower-class families. Four-year-olds from middle-class families know an average of 54% of the letter names and 5-year-olds know 85% of the letters [31] compared with low-income children, who know on average about four letters at age 4 and who learn an additional five while enrolled in Head Start [30,32]. Children learn the meaning of new words during bookreading interactions with their parents [33].

The most effective reading style, *dialogic or interactive reading* [34], which involves asking questions, providing feedback and letting the child become the narrator of the story, can be taught [35]. Children whose parents received training in dialogic reading had significantly better expressive language skills postintervention 9 months later than children whose parents did not use dialogic reading [36]. The effectiveness of reading aloud interventions is systematically reviewed in a recent report from the National Early Literacy Panel (NELP) [37].

Culture influences parents' attitudes about literacy and reading aloud to children. In some cultures, reading is an activity of teachers when a child enters school and not part of parenting. Older siblings, however, may read books to younger children. Even where parents do not read to their children, they expose children to language by singing songs, reciting nursery rhymes and other rhyming games and story telling, talking and conversation, especially at meal time. For example, Spanish-speaking parents tend to engage in fewer home-learning activities such as reading or singing to their children

compared with their white counterparts. They also have fewer reading materials in the home. Hispanic families, however, engage their children in 'explanatory talk' during dinner or stories [38].

Oral storytelling in African-American homes is more common than reading aloud and is used to preserve a cultural identity [39,40]. Also when reading, low and middle socio-economic status African-American mothers label pictures for the child to imitate, and 'stick to the text', as opposed to white middle-class mothers, who frequently ask questions about the text [41].

### The opportunity for pediatricians

Reach Out and Read is based on over 30 years, progressive emphasis in pediatrics on child development and behavior. The reframing of the scope of pediatric practice under the construct of 'new morbidities', the influential 1987 report from the Task Force on Pediatric Education [42,43] and influential leadership of Julius Richmond, MD, T. Berry Brazelton, MD, Morris Green, MD and Robert Haggerty, MD contributed to this emphasis. In 2009, the American Academy of Pediatrics added Early Brain and Child Development as a major focus for the future.

Reach Out and Read is designed to operate in the special circumstances of the medical setting and consists of three linked interventions: the pediatrician (or other pediatric primary care giver) gives each child a book purchased with public and private dollars at each health supervision visit from 6 months to 5 years of age. It is important to note that the doctor gives the book as part of the visit. This is not a book giveaway in which the child takes a book on the way into or out of the office. The books are chosen to be developmentally and culturally appropriate, and as appealing as possible, with brightly colored pictures; board books are available for young infants, and bilingual books are available where appropriate, and, where possible, the pediatrician gives the parent developmentally appropriate anticipatory guidance about how best to enjoy the book with the child, advising, for example, that it is normal for a 6-month-old to mouth the book immediately, but that the baby will enjoy having the parent point to pictures and offer names, or helping a parent understand that a 2-year-old may have a short attention span, or may want to hear the same book over and over. Clinicians also emphasize that reading aloud is fun and stimulates language development, and literacy-enriched waiting rooms include a range of enhancements ranging from volunteer readers in clinic waiting rooms who read aloud to children while they are waiting for their visits (thereby modeling techniques of reading aloud for parents), book shelves with books, and small chairs and tables so children can look at books by themselves or with their mother, posters, videos, etc.

**Table 1 SAFER strategies for literacy guidance**

S	Show the child the book early in the visit (do not wait until the end) Share (look at or read) the book with the child yourself, modeling for the parent
A	Ask the parent about reading aloud ('Have you started looking at books with Jane yet?') Assess the child's development and the child-parent relationship
F	Give feedback about what you have observed the child do Give feedback about parents' attitudes and interactions with the child
E	Encourage the parent to read aloud daily to the child Explain the benefits
R	Refer (to the library or family and adult literacy programs) Record in the chart what you did

Reproduced with permission from [44].

The distinction between a book-giveaway program ('take a book on the way out') and a clinical intervention of modeling and advice by the physician is emphasized to physicians receiving training in Reach Out and Read. Although brief (30 seconds to two minutes), engaging a parent and child with a book is reported by pediatricians to be a pleasurable and important teachable moment. Specific clinic-based strategies [44] for best practice are seen in Table 1.

We discovered that giving books to children changed the whole pediatric visit experience for young children from one of fear to one of pleasurable anticipation. Similarly, observing different capacities of children with books at different ages stimulates pediatricians to think in a more developmental framework (e.g., when do children recognize letters or hold a book right side up, how many objects or animals can they point to or name, and when do they do so?). The clinician modeling reading aloud with a child provides parents with an opportunity to observe another adult with their child and to see that sharing a book involves verbal responsiveness, which is very important [45] to infants. For example; in response to seeing the young child looking at an object or picture book, a clinician can model by making a sound like 'Ba', the clinician might respond 'that is a baby' and, for older children, asking questions, pointing out pictures, and responding to the child's interest. The clinician can also

demonstrate, model and/or observe other age-appropriate skills and parent-child interaction as part of developmental surveillance (Table 2). Even parents who are illiterate can and do point to and name pictures in books, thus creating the same language and positive emotional environment as literate parents.

### Evidence of effectiveness

All published studies on the effectiveness of ROR using different outcomes, including blinded direct assessment of language and the home, and from different investigators and sites are remarkably consistent, showing positive benefits [46-58].

### Parent behavior

Parents who received ROR had a higher likelihood of reporting looking at books with their child or naming 'looking at books' as a reported favorite activity [47]. Similar findings were obtained from both a clinic for residents [48] and one serving primarily Hispanic families. In the latter clinic, implementing literacy advice and giving books utilizing bilingual materials resulted in a 10-fold increase in the odds of parents reading to their child three or more times per week [49]. Another study, involving a home observation, demonstrated that more ROR clinic encounters are associated with a richer home literacy environment [56]. Finally, a multicenter assessment of Reach Out and Read, at 19 clinical sites in 10 states, found increased odds of reading aloud, reading at bedtime, and increased ownership of picture books in parents who were exposed to Reach Out and Read compared with those not exposed [57].

### Language outcomes

In addition to parental behavior change, investigators began to examine the critical question of the potential effects of Reach Out and Read on children's development. Does giving a book, along with advice about the importance of sharing books, at well child visits actually translate into improved language and literacy skills? In a prospective

**Table 2 Age-specific child and parent behaviors with books for physicians, modeling and/or observing**

	Child behaviors	Parent behaviors
6-12 months	Reaches for book Puts books in mouth Looks at pictures	Follows baby's eyes
12-18 months	Points when asked 'where?' Makes sound for some pictures Joint attention	Follows baby's eyes Lets child control book Asks 'where is' questions
24 months	Names familiar pictures Fills in words to familiar stories Recites parts to well known stories Joint attention	Asks 'what's that?' Relate books to child's experience
3 years and older	Can re-tell familiar stories Begins to recognize some letters	Ask 'what's happening here?' Let child tell story

study of low-income families, after an average of three visits, parents read to their toddlers more frequently and reported increased enjoyment of book reading. The increased book reading was associated with higher scores on tests of expressive and receptive vocabulary, even for words not in the books being distributed [50].

Another study found that an increased number of ROR pediatric visits is associated with higher receptive and expressive language scores [46]. Of note, the scores of the intervention group still fell below the national average, underscoring the underlying challenges in place for this high-risk population. In a comparison at two similar inner-city pediatric practices, the children from the ROR practice had higher scores on receptive language and on a measure of home-reading environment [53].

### Parent-physician relationship

There are also reports of other benefits from participating in Reach Out and Read, for both families and pediatric providers. Families in a continuity clinic for pediatric residents who were given early literacy-related anticipatory guidance and a book were more likely to rate their doctor as helpful, and were twice as likely to report enjoyment in reading together compared with those who were only given the anticipatory guidance. The pediatricians in this intervention group were also more likely to rate parents as receptive than those in the group that gave anticipatory guidance alone [52].

In a qualitative study from one ROR clinic serving a large Spanish-speaking immigrant population, providers encouraged parents in Spanish to 'look at books' with their children and opened an on-site children's library which not only lent out books but held story-time and provided community literacy resources in addition to giving bilingual books and advice. This clinic received 133 thank you notes spontaneously during 1 year. The notes thanked the clinic for the books and for running the library, expressed benefits such as motivating children to read and to come to the clinic, and revealed positive perceptions of the clinic staff, for example 'respect for the family' [58].

### Reach Out and Read: critical components for success

Reach Out and Read is a relatively simple, inexpensive and low-technology intervention, which is implemented in over 4000 clinical sites reaching 32% of children below the poverty line in the United States. There are 32 regional coalitions nationwide that help raise funds and provide training and support for local sites. Reach Out and Read has received federal funding for almost 10 years with additional support coming from 12 states and private individual and corporate donors. There are special

coalitions for American Indians and military families. ROR or adapted versions are practiced in over 11 countries from Italy, Israel and Ireland to Africa and El Salvador.

The following critical factors contributed to ROR's successful growth [1\*]: first, it was an innovation to address a problem identified in primary care of low-income children. Second, the innovation was simple and made common sense. Third, support and dissemination occurred at a grass-roots level. The 'early adapting physicians' and physician champions were passionate about the importance of helping children have books in their home and parents reading to them. Not surprisingly, reading to their children was a specially valued activity of these physicians, and their support had a strong base in equity between their children and their patients. Fourth, data was generated to support its effectiveness. Fifth, communication about the intervention through published articles, Grand Rounds, continuing medical educating courses, and stories in pediatric media made it possible to reach early adaptors. Sixth, nonphysician community volunteers helped provide needed service and donors, and public officials, specifically First Lady Hillary Clinton and Senator Ted Kennedy, provided leadership to ensure federal and philanthropic funds to help purchase books.

### Conclusion

Reach Out and Read represents a special effort in which evidence about the importance of reading aloud to young children was applied to pediatric practice. The future includes further expansion to reach all high-risk low-income young children, quality improvement efforts to ensure advice and books are given by physicians to all children under 5 years at their well child visits, and finally the adaptation and evaluation of related evidence-based strategies to promote more effective reading aloud, interactive reading, designated books emphasizing rhymes to enhance learning sounds, as part of Reach Out and Read to enhance effectiveness of children learning to read.

### Acknowledgement

This work is supported in part from the Maternal and Child Health Bureau (MCHB) Training Grant.

### References and recommended reading

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

Additional references related to this topic can also be found in the Current World Literature section in this issue (pp. 000-000).

- 1 Zuckerman B. Promoting early literacy in pediatric practice: twenty years of Reach Out and Read. *Pediatrics* 2009; 124:1660-1665. This article summarizes the development, dissemination and data relating to Reach Out and Read.
- 2 US Department of Education. National Assessment of Adult Literacy (NAAL); 2003. Retrieved 12 February 2010, from [nces.ed.gov/naal/kf\\_demographics.asp](http://nces.ed.gov/naal/kf_demographics.asp). [Accessed 12 February 2010]

## 6 Invited commentary

- 3 Lonigan CJ. Emergent literacy skills and family literacy. In: Wasik BH, editor. *Handbook of family literacy*. Mahwah, NJ: Lawrence Erlbaum Associates; 2004. pp. 57–82.
- 4 Hart B, Risley T. *Meaningful differences in the everyday lives of American children*. Baltimore: Brookes Publishing; 1995.
- 5 Biemiller A. Size and sequence in vocabulary development: implications for choosing words for primary grade vocabulary. In: Hiebert EH, Kamil ML, editors. *Teaching and learning vocabulary*. Mahwah, NJ: Lawrence Erlbaum Associates; 2005. pp. 223–242.
- 6 De Jong PF, Leseman PPM. Lasting effects of home literacy on reading achievement in school. *Journal of School Psychology* 2001; 39:389–414.
- 7 Fletcher KL, Reese E. Picture book reading with young children: a conceptual framework. *Dev Rev* 2005; 25:64–103.
- 8 Young KT, Davis K, Schoen C, et al. Listening to parents: a national survey of parents with young children. *Arch Pediatr Adolesc Med* 1998; 152:255–262.
- 9 Adams MJ. *Beginning to read*. Cambridge, MA: MIT Press; 1990.
- 10 Morrow L. Home and school correlates of early interest in literature. *J Educ Res* 1983; 76:221–230.
- 11 Mehler J, Bertoncini J, Barriere M. Infant recognition of mother's voice. *Perception* 1978; 7:491–497.
- 12 Kisilevsky BS, Hains SM, Lee K, et al. Effects of experience on fetal voice recognition. *Psychol Sci* 2003; 14:220–224.
- 13 Saito Y, Aoyama S, Kondo T, et al. Frontal cerebral blood flow change associated with infant-directed speech (IDS). *Arch Dis Child Fetal Neonatal Ed* 2007; 92:113–116.
- 14 Kuhl PK. Early language acquisition: cracking the speech code. *Nat Rev Neurosci* 2004; 5:831–843.
- 15 Werker JF, Tees RC. Cross-language speech perception: evidence for perceptual reorganization during the first years of life. *Infant Behav Dev* 1984; 7:49–63.
- 16 Chugani HT, Phelps ME, Mazziotta JC. PET study of human brain functional development. *Ann Neurol* 1987; 22:487–497.
- 17 Wolfe M. *Proust and the squid: the story and science of the reading brain*. New York, NY: HarperCollins Publisher; 2007. pp. 24–50.
- 18 Pugh K, Sandak R, Frost S, et al. *Neurobiological Investigations of Skilled and Impaired Reading*. In: Dickinson D, Neuman S, editors. *Handbook of Early Literacy Research, Volume 2*. New York, NY: The Guilford Press; 2006. pp. 64–74.
- 19 Kim KHS, Relkin NR, Lee KM, et al. Distinct cortical areas associated with native and second languages. *Nature* 1997; 388:171–174.
- 20 Ezell HK, Justice LM. *Shared storybook reading*. Baltimore, MD: Brooks Publishing; 2005.
- 21 Sénéchal M, LeFevre J. Parental involvement in the development of children's reading skill: a five-year longitudinal study. *Child Dev* 2002; 73:445–460.
- 22 Snow CE, Burns S, Griffin P, editors. *Preventing reading difficulties in young children*. Washington, DC: National Academy Press; 1998.
- 23 Storch SA, Whitehurst GJ. The role of family and home in the developmental course of literacy in children from low-income backgrounds. In: Britto PR, Brooks-Gunn J, editors. *New directions in child development: the role of family literacy environment in promoting young children's emerging literacy skills*. San Francisco, CA, US: Jossey-Bass/Pfeiffer; 2001. pp. 53–71.
- 24 Bus AG, van Ijzendoorn MH, Pellegrini AD. Joint book reading makes for success in learning to read: a meta-analysis on intergenerational transmission of literacy. *Review of Educational Research* 1995; 65:1–21.
- 25 Snow CE, Ninio A. The contracts of literacy: what children learn from learning to read books. In: Teale WH, Sulzby E, editors. *Emergent Literacy: Writing and Reading*. Norwood, NJ: Ablex; 1986. pp. 116–138.
- 26 Vivas E. Effects of story reading on language. *Language Learning* 1996; 46:189–216.
- 27 Mason J, Allen JB. A review of emergent literacy with implications for research and practice in reading. *Review of Research in Education* 1986; 13:3–47.
- 28 Cochran-Smith M. *The making of a reader*. Norwood, NJ: Ablex; 1984.
- 29 Lonigan CJ. Conceptualizing phonological processing skills in prereaders. In: Dickinson DK, Neuman SB, editors. *Handbook of early literacy research*, vol. 2. New York, NY: The Guilford Press; 2006. pp. 77–100.
- 30 Ehri LC, Roberts T. The roots of learning to read and write: acquisition of letters and phonemic awareness. In: Dickinson DK, Neuman SB, editors. *Handbook of early literacy research*, vol. 2. New York, NY: The Guilford Press; 2006. pp. 113–134.
- 31 Worden P, Boettcher W. Young children's acquisition of alphabet knowledge. *Journal of Reading Behavior* 1990; 22:277–295.
- 32 US Department of Health and Human Services. *Strengthening Head Start: What the evidence shows*, 2003. Retrieved 14 February 2008 from <http://aspe.hhs.gov/hsp/StrengthenHeadStart03/index.htm>. [Accessed 14 February 2008]
- 33 Isbell R, Sobol J, Lindauer L, Lowrance A. The effects of storytelling and story reading on the oral language complexity and story comprehension of young children. *Early Childhood Education Journal* 2004; 32:157–163.
- 34 Whitehurst GJ, Falco FL, Lonigan CJ, et al. Accelerating language development through picture book reading. *Dev Psychol* 1988; 24:552–559.
- 35 McNaughton S. *Patterns of emergent literacy*. New York, NY: Oxford University Press; 1995.
- 36 Arnold DH, Lonigan CJ, Whitehurst GJ, Epstein JN. Accelerating language development through picture book reading: replication and extension to a videotape training format. *J Educ Psychol* 1994; 86:235–243.
- 37 National Institute for Literacy. *Developing Early Literacy: Report of the National Early Literacy Panel*. Washington, DC: National Institute for Literacy; 2008.
- 38 Flores G, Tomany-Korman SC, Olson L. Does advantage start at home? Racial and ethnic disparities in health-related early childhood home routines and safety practices. *Arch Pediatr Adolesc Med* 2005; 159:158–165.
- 39 Heath SB. *Ways with words*. Cambridge, UK: Cambridge University Press; 1983.
- 40 Vernon-Feagans L. *Children's talk in communities and classrooms*. Cambridge, MA: Blackwell; 1996.
- 41 Hammer CS. Come sit down and let mama read: Book reading interactions between African American mothers and their infants. In: Harris, Kamhi, Pollock, editors. *Literacy in African American communities*. Lawrence Erlbaum Associates; 2001.
- 42 Haggerty RJ, Roughman KJ, Pless IB, editors. *Child Health and the Community*. New York, NY: John Wiley and Sons; 1975.
- 43 Task Force on Pediatric Education. *The Future of Pediatric Education*. Evanston, IL: American Academy of Pediatrics; 1978.
- 44 Needlman R, Klass P, Zuckerman B. Reach out and get your patients to read. *Contemporary Pediatrics* 2002; 19:51–69.
- 45 Tamis-LeMonda CS, Bornstein MH, Baumwell L. Maternal responsiveness and children's achievement of language milestones. *Child Dev* 2001; 72:748–767.
- 46 Mendolsohn AL, Mogilner LN, Dreyer BP, et al. The impact of a clinic-based literacy intervention on language development in innercity preschool children. *Pediatrics* 2001; 107:130–134.
- 47 Needlman R, Fried LE, Morley DS, et al. Clinic-based intervention to promote literacy: a pilot study. *Am J Dis Child* 1991; 145:881–884.
- 48 High P, Hopmann M, LaGasse L, Linn H. Evaluation of a clinic-based program to promote book sharing and bedtime routines among low-income urban families with young children. *Arch Pediatr Adolesc Med* 1998; 152:459–465.
- 49 Golova N, Alario AJ, Vivier PM, et al. Literacy promotion for Hispanic families in a primary care setting: a randomized, controlled trial. *Pediatrics* 1999; 103:993–997.
- 50 High PC, LaGasse L, Becker S, et al. Literacy promotion in primary care pediatrics: can we make a difference? *Pediatrics* 2000; 105:927–934.
- 51 Sanders LM, Gershon TD, Huffman LC, Mendoza FS. Prescribing books for immigrant children: a pilot study to promote emergent literacy among the children of Hispanic immigrants. *Arch Pediatr Adolesc Med* 2000; 154:771–777.
- 52 Jones VF, Franco SM, Metcalf SC, et al. The value of book distribution in a clinic-based literacy intervention program. *Clin Pediatr (Phila)* 2000; 39:535–541.
- 53 Sharif I, Reiber S, Ozuah PO. Exposure to Reach Out and Read and vocabulary outcomes in inner city preschoolers. *J Natl Med Assoc* 2002; 94:171–177.
- 54 Silverstein M, Iverson L, Lozano P. An English-language clinic-based literacy program is effective for a multilingual population. *Pediatrics* 2002; 109:e76.
- 55 Theriot JA, Franco SM, Sisson BA, et al. The impact of early literacy guidance on language skills of 3-year-olds. *Clin Pediatr* 2003; 42:165–172.
- 56 Weitzman CC, Roy L, Walls T, Tomlin R. More evidence for Reach Out and Read: a home-based study. *Pediatrics* 2004; 113:1248–1253.
- 57 Needlman R, Toker KH, Dreyer BP, et al. Effectiveness of a primary care intervention to support reading aloud: a multicenter evaluation. *Ambul Pediatr* 2005; 5:209–215.
- 58 Byington CL, Hobson WL, Olson L, et al. The good habit of reading (*El Buen Habito de la Lectura*): parental reactions to an enhanced Reach Out and Read program in a clinic for the underserved. *J Healthcare Poor Underserved* 2008; 19:363–368.

# Reading aloud to children: the evidence

E Duursma,<sup>1</sup> M Augustyn,<sup>2</sup> B Zuckerman<sup>2</sup>

Promoting healthy child development lies at the heart of paediatric practice, yet a major challenge facing the field is applying evidence based standards. However, the evidence is clear as regards reading aloud to children. Ample research demonstrates that reading aloud to young children promotes the development of language and other emergent literacy skills,<sup>1-4</sup> which in turn help children prepare for school.<sup>3, 5</sup>

## READING ALOUD AND CHILDREN'S EMERGENT LITERACY AND LANGUAGE SKILLS

Reading aloud to children or shared book-reading has been linked to young children's emergent literacy ability, which can be defined as the skills or knowledge that children develop before learning the more conventional skills of reading and writing<sup>6-8</sup> which affect children's later success in reading.<sup>9</sup>

During shared bookreading, children learn to recognise letters, understand that print represents the spoken word, and learn how to hold a book, turn the page and start at the beginning.<sup>10-12</sup> Shared bookreading is also associated with learning print concepts<sup>11</sup> and exposing children to the written language register, which is different from spoken language,<sup>13</sup> as well as story structures (eg, stories have a beginning, middle and end) and literacy conventions such as syntax and grammar which are essential for understanding texts.<sup>14</sup> These emergent literacy skills are important for later success in reading.<sup>2, 15</sup>

## PHONOLOGICAL AWARENESS AND ALPHABET KNOWLEDGE

Phonological awareness (the ability to manipulate the sounds of spoken language<sup>16-18</sup>) is another important prerequisite for learning to read. To read words, children need to know the rules for translating print into meaningful

sounds.<sup>8, 16</sup> For example, preschoolers' sensitivity to alliteration and rhyme at age 4-5 contributed to progress in reading and spelling at age 6-7.<sup>19</sup> Children's knowledge of nursery rhymes at age 3-4 is related to detecting alliteration and rhyme at ages 4-7.<sup>20</sup> Many parents naturally promote awareness of sound patterns by emphasising rhyming words and patterns when reading to a child.<sup>21</sup> When children do well at detecting and manipulating syllables, rhymes and phonemes, they tend to learn more quickly to read.<sup>15, 19, 22</sup>

Children acquire sensitivity to different sounds in a specific order, although stages tend to overlap.<sup>23</sup> Children can learn about phonemes or sounds more or less informally by learning to name letters and by recognising which phoneme is critical in the name.<sup>24</sup> Many alphabet books, for example, contain the letter name accompanied by pictures of objects whose names begin with the critical sound, such as D, for example a dog, deer or doctor. When parents stress the initial sounds in these words while reading with their children, they are teaching awareness of initial phonemes or shared phonemes across words.<sup>24, 25</sup> Since children who have difficulty with phonological awareness can develop reading difficulties,<sup>1, 26</sup> parents might help to prevent these difficulties by exposing children to a wide variety of literacy materials and helping them become aware of the relationship between letters and sounds.

In addition to being aware of sounds, children also need to recognise the role that alphabet letters play and that letters have different sounds. It is easier to learn these letter-sound relationships once children know at least some alphabet letters and are able to recognise words that start with the same phoneme.<sup>27</sup> While shared bookreading promotes children's alphabet knowledge,<sup>10</sup> most parents focus on the meaning of the story and not the print.<sup>28</sup> Also, while knowing the names of letters is not itself related to reading ability, it is knowing the sound of letters (eg, the letter 'b' sounds like 'ba') that is important.

There are important differences in letter knowledge between children from middle class and lower class families. Four-year-old

children from middle class families knew an average of 54% of the letter names and 5-year-old children knew 85% of the letters.<sup>29</sup> However, 4- and 5-year-old children from low-income families who enter programs such as Head Start know on average four letters and learn an additional five while enrolled in the program.<sup>24, 30</sup> Alphabet and counting books for young children promote greater focus on the print.<sup>10</sup>

## READING ALOUD AND LANGUAGE DEVELOPMENT

Studies demonstrate a relationship between oral language skills such as vocabulary, syntactic (the way in which linguistic elements such as words are combined to form sentences) and semantic (focus on the meaning of words or sentences) processes, and narrative discourse processes such as memory, storytelling and comprehension,<sup>9</sup> and reading ability.<sup>31</sup> All of these contribute to word recognition and reading comprehension.<sup>32, 33</sup>

Children's oral language skills can be stimulated by parent-child literacy activities such as shared bookreading.<sup>34</sup> Children learn the meaning of new words during bookreading interactions with their parents.<sup>35</sup> Reading aloud familiarises children with the language found in books<sup>36</sup> and stimulates vocabulary growth.<sup>37, 38</sup> Books contain many words, especially the more sophisticated words that children are unlikely to encounter frequently in spoken language.<sup>39</sup> Children's books contain 50% more rare words than prime-time television or even college students' conversations.<sup>40</sup> Shared bookreading can stimulate more verbal interaction between child and parent, and therefore children's language development is likely to profit more from reading aloud than from toy play or other adult-child interactions.<sup>12, 41</sup> In addition to new vocabulary, children are exposed to the more complex language adults use interacting with children around a book.<sup>11, 42, 43</sup>

Children with greater vocabulary knowledge and understanding of spoken language tend to have less trouble with reading.<sup>6, 31</sup> Large social class differences have been reported in children's exposure to oral language and their vocabularies. Hart and Risley reported that at age 3, children in professional families heard an average of 2153 words per hour, while children in working class families heard 1251 words per hour and children in welfare families heard only 616 words per hour.<sup>44</sup> This led to enormous differences in children's vocabularies. At age 3,

<sup>1</sup> Reach Out and Read National Center, Boston, MA, USA; <sup>2</sup> Department of Pediatrics, Boston University School of Medicine, Boston, MA, USA

**Correspondence to:** Barry Zuckerman, Department of Pediatrics, Boston University School of Medicine, One Boston Medical Center Place, Dowling 3 South, Boston, MA 02118, USA; [barry.zuckerman@bmc.org](mailto:barry.zuckerman@bmc.org)

children in professional families had an observed cumulative vocabulary of 1100 words, while children in working class families had an observed vocabulary of 750 words and those in welfare families of just above 500 words. In professional families, parents not only talked more but also used more different words and provided a greater richness of nouns, modifiers and verbs. Parents spent a lot of time and effort asking their children questions, affirming and expanding their responses and encouraging their children to listen and notice how words relate and refer in order to prepare their children for a culture focusing on "symbols and analytic problem solving" (see Hart and Risley,<sup>44</sup> p 133). On the other hand, parents on welfare spent less time talking while they more frequently initiated topics and used more imperatives and prohibitions. These parents were more concerned with established customs such as obedience, politeness and conformity. Working-class families showed a mixture of the two cultures using imperatives and prohibitives while using rich language to label, relate and discuss objects.<sup>44</sup>

Shared bookreading provides children with opportunities to learn vocabulary from books as well as the use of decontextualised language (the use of language to communicate new information to those who have little experience with the context of the information).<sup>45 46</sup> Since this task involves cognitive and linguistic demands, it tends to be more challenging for children.<sup>5</sup> The positive effects of having been read to from an early age continue to be observable in the elementary school years.<sup>9 12</sup> The age at which parents begin reading to their children is correlated with children's language development; children who are read to from an early age tend to have higher scores on language measures later on.<sup>47 48</sup>

### READING ALOUD AS A SHARED EXPERIENCE

An added dimension of reading aloud is that it involves parents and other important adults to the child in a focused interaction. Early parent-child relationships influence children's engagement in literacy activities. Mothers with securely attached children tend to more frequently provide a rich and interactive way of reading to their children than mothers of insecurely attached children.<sup>10 49-51</sup> Children not only acquire knowledge about narratives but also learn about their own personal narrative when sharing a book with an adult, something that is important for their self-esteem.

Bookreading can play an important role in wake and sleep patterns by making bookreading part of bedtime routines. Sharing books with children can also help them learn about peer relationships, coping strategies, building self-esteem and general world knowledge.

Reading aloud likely promotes joint attention, which has many potential benefits related to reading,<sup>52</sup> such as enhancing receptive language by asking children to point, touch or show during bookreading or expressive language by asking children questions about the text.<sup>5</sup>

### FACTORS INFLUENCING QUANTITY AND STYLE OF SHARED BOOKREADING

Similar to child health problems, certain "risk" factors such as socioeconomic status, race/ethnicity and parental education can affect children's development of emergent literacy and oral language skills. The National Center for Education Statistics (NCES), for example, found that children in families with incomes below the poverty threshold are less likely to show signs of emergent literacy skills such as pretending to read and write.<sup>53</sup> A total of 28% of children aged 3-5 years who were not living in poverty were able to recognise all the letters of the alphabet, while only 10% of children living in poverty were able to do so. In addition, 45% of children not living in poverty showed three or more signs of emerging literacy, while only 19% of children living in poverty did so.<sup>53</sup>

Associated with these lower levels of emergent literacy skills is less exposure to bookreading and print. Children from low-income families often participate less frequently in shared bookreading than children from higher socioeconomic groups.<sup>54 55</sup> According to the Federal Interagency Forum on Child and Family Statistics, 64% of families whose incomes were at or above the poverty level read to their preschoolers on a daily basis compared to 48% of families below the poverty level.<sup>56</sup>

Children in low-income families often have less access to printed materials in the home,<sup>54</sup> which likely impairs children's early language and literacy development and later reading achievement.<sup>48</sup> The 2007 Nation's Report Card on reading showed that children from low-income families had lower reading scores in grade 4 and grade 8 than their peers from middle class families.<sup>57</sup> When children are poor readers at the end of first grade the probability that they will remain poor readers by the end of fourth grade has been reported to be as high as 0.88.<sup>58</sup>

The National Research Council's Committee on the Prevention of Reading Difficulties in Young Children stated that most reading difficulties can be prevented by ensuring that all children, in particular those at risk for reading difficulties, have access to early childhood environments that promote language and literacy development and encourage those skills needed to learn to read.<sup>3</sup> It is essential to start promoting those skills needed to prepare for school early on by, for example, having parents read to their children.<sup>3</sup>

Low-income parents often have lower levels of education. The link between maternal education and frequency of shared bookreading is well documented. Mothers with higher levels of education are more likely to read frequently to their children than mothers with lower levels of education.<sup>59 60</sup> In addition to social economic status (SES) which is based on family income, education and occupation, other factors such as race/ethnicity and language spoken at home play a role in parental bookreading practices. Hispanic non-English speaking mothers are less likely to read to their children compared to white, African-American or Hispanic English-speaking mothers.<sup>61 62</sup>

### QUALITY OR STYLE OF SHARED BOOKREADING

It is important for parents to keep children's personal interests and motives in mind when trying to get children interested in books.<sup>63 64</sup> When children's encounters with literacy are pleasant, they are more likely to develop a positive disposition towards reading frequently and broadly.<sup>63</sup> Children who experience shared reading from an early age tend to be more interested in reading at age 4 and 5 than children who receive shared bookreading when they are older.<sup>63</sup>

It is not only the reading itself that is important – the type of conversations adults and children have during shared bookreading, as well as the emotional quality of the interactions and the discussions related to print are even more important.<sup>65</sup> It is not sufficient to simply read a text aloud in order to encourage children to learn from being read to. When parents are supportive when interacting with their children around books, this affects how children engage with books.<sup>66</sup>

The style of reading, more than the frequency, impacts children's early language and literacy development.<sup>67</sup> White middle class parents tend to use a more interactive style when reading to their children. Working class non-white parents, on the other hand, tend to focus

## Leading article

more on labelling and describing pictures during bookreading.<sup>68, 69</sup> These differences in reading styles can impact children's development of language and literacy-related skills.

Two parental styles of reading were identified as having beneficial effects on child vocabulary and print skills: the describer style and the performance-oriented style. A describer style focuses on describing the pictures during reading and a performance-oriented style focuses on discussing the meaning of the story after completion.<sup>70</sup> Children with initial lower levels of vocabulary profited more from the describer style, while children with higher initial vocabulary levels profited most from the performance-oriented style.<sup>70</sup>

Whitehurst *et al* developed an intervention program called dialogic reading to promote children's language development.<sup>38, 71</sup> Adults are taught specific techniques that can be used during shared bookreading. These techniques focus on asking questions, providing feedback and letting the child become the narrator of the story.<sup>38, 71</sup> Children whose parents received training in dialogic reading had significantly better expressive language skills, used longer and more utterances, and had lower frequency of single words than children whose parents did not use dialogic reading. These differences between the groups remained even 9 months after the training.<sup>38</sup>

One of the most powerful pieces of shared reading is what happens in the pauses between pages and after the book is closed. The use of "decontextualised" or non-immediate talk and active engagement has proven to be particularly beneficial for children's language enhancement.<sup>70, 72-74</sup> Non-immediate talk is talk that goes beyond the information in the text or the illustrations, for example, to make connections to the child's past experiences or to the real world (eg, "you like ice cream"), or to offer explanations (eg, "he cried because he was sad"), including explanations of word meanings (eg, "a piglet is a baby pig"). Mothers' use of non-immediate talk while reading to their preschoolers was related to children's later performance on measures of vocabulary, story comprehension, definitions and emergent literacy.<sup>73</sup> Engaging in book discussions that include non-immediate talk gives children the opportunity to understand and use the more sophisticated words required to make predictions, to describe the internal states of the characters and to evaluate the story.<sup>73</sup> It also provides the opportunity for children to learn to talk about

their own feelings. Children's early language and literacy development benefits more from actively engaging the child during shared bookreading than by simply reading the text.<sup>70, 75</sup>

### A CHALLENGE FOR PAEDIATRIC CLINICIANS

What are the implications of the importance of parents reading aloud to their children's development for child health clinicians? "Reach Out and Read (ROR)", founded at Boston City Hospital in 1989, promotes early childhood development by promoting reading aloud. In response to the small percentage of low-income parents reading to their children, ROR was created to involve child health clinicians by having them give new books to children and advice to parents about the importance of reading aloud as part of well child care. In an early study among inner city parents receiving ROR, researchers found that parents who had been given a children's book during a previous visit were four times more likely to report looking at books with their children or that looking at books was a favourite activity.<sup>76</sup> Among Spanish-speaking immigrant families, those who had been exposed to ROR reported a doubling in the rate of frequent book sharing, defined as reading aloud 3 or more days per week.<sup>77</sup> In the largest study to date of this program, in a national sample (multi-site evidence from 19 clinical sites in 10 states) of parents of children age 6-72 months, implementation of ROR programs was associated with increased parental support for reading aloud.<sup>78</sup> Most importantly, two studies show increased language development.<sup>79, 80</sup>

Health practitioners who do not have access to ROR can help families by asking them about bookreading in the family, and by telling parents about the benefits and joy of sharing a book with their child. In addition, they can demonstrate ways of reading that are particularly beneficial to young children (eg, connecting the book with the child's world, making predictions).

### SUMMARY

Reading aloud to young children, particularly in an engaging manner, promotes emergent literacy and language development and supports the relationship between child and parent. In addition it can promote a love for reading which is even more important than improving specific literacy skills.<sup>81</sup> When parents hold positive attitudes towards reading, they are more likely to create opportunities for their children that promote

positive attitudes towards literacy<sup>82</sup> and they can help children develop solid language and literacy skills. When parents share books with children, they also can promote children's understanding of the world, their social skills and their ability to learning coping strategies. When this message is supported by child health professionals during well child care and parents are given the tool, in this case a book, to be successful, the impact can be even greater. This effect may be more important among high risk children in low income families, who have parents with little education, belong to a minority group and do not speak English since they are less likely to be exposed to frequent and interactive shared reading.

**Competing interests:** All authors are paid consultants to Reach Out and Read.

Accepted 25 February 2008

Published Online First 13 May 2008

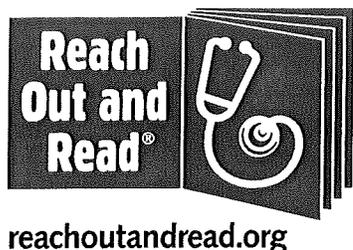
*Arch Dis Child* 2008; **93**:554-557.

doi:10.1136/adc.2006.106336

### REFERENCES

1. Adams MJ. *Beginning to read*. Cambridge, MA: MIT Press, 1990.
2. Sénéchal M, LeFevre J. Parental involvement in the development of children's reading skill: a five-year longitudinal study. *Child Dev* 2002; **73**:445-60.
3. Snow CE, Burns S, Griffin P. *Preventing reading difficulties in young children*. National Academy Press: Washington, DC, 1998.
4. Storch SA, Whitehurst GJ. The role of family and home in the developmental course of literacy in children from low-income backgrounds. In: Britto PR, Brooks-Gunn J, eds. *New directions in child development: the role of family literacy environment in promoting young children's emerging literacy skills*. San Francisco, CA: Jossey-Bass/Pfeiffer, 2001:53-71.
5. Ezell HK, Justice LM. *Shared storybook reading*. Baltimore, MD: Brookes Publishing, 2005.
6. Lonigan CJ. Emergent literacy skills and family literacy. In: Wasik BH, ed. *Handbook of family literacy*. Mahwah, NJ: Lawrence Erlbaum Associates, 2004:57-82.
7. Teale WH, Sulzby E. Emergent literacy as a perspective for examining how young children become writers and readers. In: Teale WH, Sulzby E, eds. *Emergent literacy: writing and reading*. Norwood, NJ: Ablex, 1986:vii-xxv.
8. Whitehurst GJ, Lonigan CJ. Child development and emergent literacy. *Child Dev* 1998; **69**(3):848-72.
9. NICHD Early Child Care Research Network. Pathways to reading: the role of oral language in the transition to reading. *Dev Psychol* 2005; **41**(2):428-42.
10. Bus AG, van Ijzendoorn MH, Pellegrini AD. Joint book reading makes for success in learning to read: a meta-analysis on intergenerational transmission of literacy. *Rev Educ Res* 1995; **65**:1-21.
11. Snow CE, Ninio A. The contracts of literacy: what children learn from learning to read books. In: Teale WH, Sulzby E, eds. *Emergent literacy: writing and reading*. Norwood, NJ: Ablex, 1986:116-38.
12. Vivas E. Effects of story reading on language. *Lang Learn* 1996; **46**(2):189-216.
13. Mason J, Allen JB. A review of emergent literacy with implications for research and practice in reading. *Rev Res Educ* 1986; **13**:3-47.
14. Cochran-Smith M. *The making of a reader*. Norwood, NJ: Ablex, 1984.
15. Lonigan CJ, Burgess SR, Anthony JL. Development of emergent literacy and early reading skills in

- preschool children: evidence from a latent-variable longitudinal study. *Dev Psychol* 2000;**36**:596–613.
16. **Lonigan CJ.** Conceptualizing phonological processing skills in prereaders. In: Dickinson DK, Neuman SB, eds. *Handbook of early literacy research*. Vol 2. New York: Guilford Press, 2006:77–100.
  17. **Stanovich KE.** Speculations on the causes and consequences of individual differences in early reading acquisition. In: Gough P, Ehri L, Treiman R, eds. *Reading acquisition*. Hillsdale, NJ: Lawrence Erlbaum, 1992:307–42.
  18. **Vellutino FR, Scanlon DM.** Phonological coding, phonological awareness, and reading ability: evidence from longitudinal and experimental study. *Merrill Palmer Q* 1987;**33**:321–63.
  19. **Bryant PE, MacLean M, Bradley LL, et al.** Rhyme and alliteration, phoneme detection, and learning to read. *Dev Psychol* 1990;**26**(3):429–38.
  20. **MacLean M, Bryant PE, Bradley LL.** Rhymes, nursery rhymes, and reading in early childhood. *Merrill Palmer Q* 1987;**33**:255–81.
  21. **Silvén M, Niemi P, Voeten MJM.** Do maternal interaction and early language predict phonological awareness in 3- to 4-year-olds? *Cogn Dev* 2002;**17**:1133–55.
  22. **Wagner RK, Torgesen JK, Rashotte CA.** The development of reading-related phonological processing abilities: new evidence of bi-directional causality from a latent variable longitudinal study. *Dev Psychol* 1994;**30**:73–87.
  23. **Anthony JL, Lonigan CJ, Driscoll K, et al.** Phonological sensitivity: a quasi-parallel progression of word structure units and cognitive operations. *Reading Res Q* 2003;**38**(4):470–87.
  24. **Ehri LC, Roberts T.** The roots of learning to read and write: acquisition of letters and phonemic awareness. In: Dickinson DK, Neuman SB, eds. *Handbook of early literacy research*. Vol 2. New York: Guilford Press, 2006:113–34.
  25. **Byrne B, Fielding-Barnsley R.** Evaluation of a program to teach phonemic awareness to young children. *J Educ Psychol* 1991;**83**:451–5.
  26. **Stanovich KE.** Explaining the differences between the dyslexic and the garden-variety poor reader: the phonological-core variable-difference model. *J Learn Disabil* 1988;**21**:590–612.
  27. **McGee LM, Richgels DJ.** *Designing early literacy programs: strategies for at-risk preschool and kindergarten children*. New York: Guilford Press, 2003.
  28. **Yaden DB, Smolkin LB, Conlon A.** Preschoolers' questions about pictures, print conventions, and story text during reading aloud at home. *Reading Res Q* 1989;**24**(2):188–214.
  29. **Worden P, Boettcher W.** Young children's acquisition of alphabet knowledge. *J Reading Behav* 1990;**22**:277–95.
  30. **U.S. Department of Health and Human Services.** Strengthening head start: what the evidence shows. 2003. Available from <http://aspe.hhs.gov/hsp/StrengthHeadStart03/index.htm> [accessed 9 April 2008].
  31. **Share DL, Jorm AF, MacLean R, et al.** Sources of individual differences in reading acquisition. *J Educ Psychol* 1984;**76**:1309–24.
  32. **Catts HW, Fey ME, Zhang X, et al.** Language basis of reading and reading disabilities: evidence from a longitudinal investigation. *Sci Stud Reading* 1999;**3**(4):331–61.
  33. **Vellutino FR, Scanlon DM, Small SG, et al.** The linguistic bases of reading ability: converting written to oral language. *Text* 1991;**11**:99–133.
  34. **De Jong PF, Leseman PPM.** Lasting effects of home literacy on reading achievement in school. *J School Psychol* 2001;**39**(5):389–414.
  35. **Isbell R, Sobol J, Lindauer L, et al.** The effects of storytelling and story reading on the oral language complexity and story comprehension of young children. *Early Child Educ J* 2004;**32**(3):157–63.
  36. **Purcell-Gates V.** Lexical and syntactic knowledge of written narrative held by well-read-to-kindergartners and second graders. *Res Teaching English* 1988;**22**:128–60.
  37. **Ninio A.** Joint bookreading as multiple vocabulary acquisition device. *Dev Psychol* 1983;**49**:445–51.
  38. **Whitehurst GJ, Falco FL, Lonigan CJ, et al.** Accelerating language development through picture book reading. *Dev Psychol* 1988;**24**:552–9.
  39. **Sénéchal M, LeFevre JA, Hudson E, et al.** Knowledge of storybooks as a predictor of young children's vocabulary. *J Educ Psychol* 1996;**88**(3):520–36.
  40. **Hayes DP, Ahrens MG.** Vocabulary simplification for children: a special case of 'motherese'? *J Child Lang* 1988;**15**:395–410.
  41. **Wells G.** Language and learning in the early years. *Early Child Dev Care* 1983;**11**:69–77.
  42. **Fletcher KL, Reese E.** Picture book reading with young children: a conceptual framework. *Dev Rev* 2005;**25**:64–103.
  43. **Snow CE, Nathan D, Perlmann R.** Assessing children's knowledge about book-reading. In: Galda L, Pellegrini A, eds. *Play, language and stories: the development of children's literate behavior*. Norwood, NJ: Ablex, 1985:167–81.
  44. **Hart B, Risley T.** *Meaningful differences in the everyday lives of American children*. Baltimore: Brookes Publishing, 1995.
  45. **Dickinson DK, Snow CE.** Interrelationships among pre-reading and oral language skills in kindergartners from two social classes. *Early Child Q* 1987;**29**:104–22.
  46. **Wasik BA, Bond MA.** Beyond the pages of a book: interactive book reading and language development in preschool classrooms. *J Educ Psychol* 2001;**93**(2):243–50.
  47. **DeBaryshe BD.** Joint picture-book reading correlates of early oral language skill. *J Child Lang* 1993;**20**:455–61.
  48. **Payne A, Whitehurst GJ, Angell A.** The role of home literacy environment in the development of language ability in preschool children from low-income families. *Early Child Res Q* 1994;**9**:427–40.
  49. **Bus AG, van Ijzendoorn MH.** Mother-child interactions, attachment, and emergent literacy: a cross-sectional study. *Child Dev* 1988;**59**:1262–72.
  50. **Bus AG, van Ijzendoorn MH.** Mothers reading to their 3-year-olds: the role of mother-child attachment in becoming literate. *Reading Res Q* 1995;**30**(4):998–1015.
  51. **Bus AG, van Ijzendoorn MH.** Affective perspectives and school psychology. *J School Psychol* 1997;**35**(1):47–60.
  52. **Karass J, VanDeventer MC, Braungart-Rieker JM.** Predicting shared parent-child book reading in infancy. *J Fam Psychol* 2003;**17**(1):134–46.
  53. **Nord CW, Lennon J, Liu B, et al.** *Home literacy activities and signs of children's emerging literacy: 1993 and 1999 (NCES 2000-026)*. Washington, DC: US. Department of Education, 1999.
  54. **Feitelson D, Goldstein Z.** Patterns of book ownership and reading to young children in Israeli school-oriented and nonschool-oriented families. *Reading Teacher* 1986;**39**(2):924–30.
  55. **McCormick CE, Mason JM.** Intervention procedures for increasing preschool children's interest in and knowledge about reading. In: Teale WH, Sulzby E, eds. *Emergent literacy: writing and reading*. Norwood, NJ: Ablex, 1986:90–115.
  56. **Federal Interagency Forum on Child and Family Statistics.** *America's children: key national indicators of well-being, 2005*. Washington, DC: US. Government Printing Office, 2005.
  57. **Lee J, Grigg W, Donahue P.** *The Nation's Report Card: Reading 2007 (NCES 2007-496)*. Washington, DC: US. Department of Education, 2007.
  58. **Juel C.** Learning to read and write: a longitudinal study of children from first through fourth grades. *J Educ Psychol* 1988;**80**:437–47.
  59. **Kuo AA, Franke TM, Regalado M, et al.** Parent report of reading to young children. *Pediatrics* 2004;**113**(6):1944–51.
  60. **Lyttinen P, Laasko M, Poikkeus A.** Parental contributions to child's early language and interest in books. *Eur J Psychol Educ* 1998;**13**:297–308.
  61. **Raikes H, Pan BA, Luze G, et al.** Mother-child bookreading in low-income families: predictors and outcomes during the first three years of life. *Child Dev* 2006;**77**(4):924–53.
  62. **Yarosz DJ, Barnett WS.** Who reads to young children: identifying predictors of family reading activities. *Reading Psychol* 2001;**22**:67–79.
  63. **Baker L, Scher D, Mackler K.** Home and family influences on motivation for reading. *Educ Psychol* 1997;**32**:69–82.
  64. **Dickinson DK, Tabors PO.** Early literacy: linkages between home, school, and literacy achievement at five. *J Res Child Educ* 1991;**6**:30–46.
  65. **Snow CE.** Enhancing literacy development: programs and research perspectives. In: Dickinson DK, ed. *Bridges to literacy: children, families, and schools*. Cambridge, MA: Basil Blackwell, 1994:267–72.
  66. **Bus AG.** Social-emotional requisites for learning to read. In: van Kleeck A, Stahl SA, Bauer EB, eds. *On reading books to children: parents and teachers*. Mahwah, NJ: Lawrence Erlbaum Associates, 2003:3–15.
  67. **Reese E, Cox A, Harte D, et al.** Diversity in adults' styles of reading books to children. In: Van Kleeck A, Stahl SA, Bauer EB, eds. *On reading books to children: parents and teachers*. Mahwah, NJ: Lawrence Erlbaum Associates, 2003:37–57.
  68. **Heath SB.** What no bedtime story means: narrative skills at home and school. *Lang Soc* 1982;**11**:49–76.
  69. **McNaughton S.** *Patterns of emergent literacy*. New York: Oxford University Press, 1995.
  70. **Reese E, Cox A.** Quality of adult book reading affects children's emergent literacy. *Dev Psychol* 1999;**35**(1):20–8.
  71. **Arnold DH, Lonigan CJ, Whitehurst GJ, et al.** Accelerating language development through picture book reading: replication and extension to a videotape training format. *J Educ Psychol* 1994;**86**(2):235–43.
  72. **Beals DE, De Temple JM, Dickinson DK.** Talking and listening that support early literacy development of children from low-income families. In: Dickinson DK, ed. *Bridges to literacy: children, families and schools*. Cambridge, MA: Blackwell, 1994:19–40.
  73. **DeTemple J, Snow CE.** Learning words from books. In: van Kleeck A, Stahl SA, Bauer EB, eds. *On reading books to children: parents and teachers*. Mahwah, NJ: Lawrence Erlbaum, 2003:16–36.
  74. **Zevenbergen AA, Whitehurst GJ.** Dialogic reading: a shared picture book reading intervention for preschoolers. In: van Kleeck A, Stahl SA, Bauer EB, eds. *On reading books to children: parents and teachers*. Mahwah, NJ: Lawrence Erlbaum, 2003:177–202.
  75. **Sénéchal M, Thomas E, Monker J-A.** Individual differences in 4-year-olds' ability to learn new vocabulary. *J Educ Psychol* 1995;**87**:218–29.
  76. **Needman R, Fried LE, Morley DS, et al.** Clinic-based intervention to promote literacy. A pilot study. *Am J Dis Child* 1991;**145**(8):881–4.
  77. **Sanders LM, Gershon TD, Huffman LC, et al.** Prescribing books for immigrant children: a pilot study to promote emergent literacy among the children of Hispanic immigrants. *Arch Pediatr Adolesc Med* 2000;**154**(8):771–7.
  78. **Needman R, Toker KH, Dreyer BP, et al.** Effectiveness of a primary care intervention to support reading aloud: a multicenter evaluation. *Ambul Pediatr* 2005;**5**(4):209–15.
  79. **Mendelsohn AL, Mogilner LN, Dreyer BP, et al.** The impact of a clinic-based literacy intervention on language development in inner-city preschool children. *Pediatrics* 2001;**107**(1):130–4.
  80. **Sharif I, Reiber S, Ozuah PO.** Exposure to Reach Out and Read and vocabulary outcomes in inner-city preschool children. *J Natl Med Assoc* 2002;**94**:171–7.
  81. **Arnold DS, Whitehurst GJ.** Accelerating language development through picture book reading. A summary of dialogic reading and its effects. In: Dickinson DK, ed. *Bridges to literacy: children, families, and schools*. Cambridge, MA: Basil Blackwell, 1994:103–28.
  82. **Sonnenschein S, Baker L, Serpell R, et al.** Parental beliefs about ways to help children learn to read: the impact of an entertainment or a skills perspective. *Early Child Dev Care* 1997;**127**:111–118.



## Reach Out and Read: The Evidence

Research shows that when pediatricians promote early literacy according to the Reach Out and Read model, there is a significant effect on parental behavior, beliefs, and attitudes towards reading aloud, as well as improvements in the language scores of at-risk young children who participate. These effects have been found in ethnically diverse low-income families, in all areas of the country, regardless of parental literacy.

The body of published research supporting the efficacy of the Reach Out and Read model is more extensive than for any other psychosocial intervention in general pediatrics.

### The following studies have been published in peer-reviewed medical journals:

STUDY	MAIN FINDINGS
<b>Needlman et al.</b> 1991	Parents who had received a book as part of Reach Out and Read were <b>more likely to report reading books with their children, or to say that reading was a favorite activity.</b> The benefits of Reach Out and Read were larger for families receiving Aid to Families with Dependent Children.
<b>High et al.</b> 1998	Parents whose children (under 3 years) had received books and educational materials during well-child visits were more likely than parents in a control group to report that they shared books with their children, and to cite <b>sharing books as a favorite activity or a child's favorite activity.</b>
<b>Golova et al.</b> 1999	Hispanic parents whose children had received bilingual books, educational materials, and literacy-promoting anticipatory guidance were <b>more likely to report reading books with their child at least three days per week (66% vs. 24%),</b> and that <b>reading books was one of their three favorite things to do with their child (43% vs. 13%)</b> than parents in a control group. Parents participating in the Reach Out and Read-model intervention also tended to have more books in the home (for children and adults).
<b>High et al.</b> 2000	Families participating in the Reach Out and Read model were more likely to read to their children (4.3 vs. 3.8 days per week), and their <b>toddlers' receptive and expressive vocabulary scores were higher,</b> even when adjusting for parental education, foreign-born, and language proficiency.
<b>Sanders et al.</b> 2000	Hispanic parents participating in Reach Out and Read were more likely to report reading to their children compared to non-Reach Out and Read parents. <b>When parents read more frequently to their children, they were also more likely to read frequently themselves.</b>
<b>Jones et al.</b> 2000	<b>Parents participating in Reach Out and Read were more likely to rate their child's pediatrician as helpful</b> than those not participating in Reach Out and Read. <b>Pediatricians in the Reach Out and Read group were more likely to rate parents as receptive</b> than those in the non-Reach Out and Read group. Mothers in the Reach Out and Read group were two times more likely to report enjoyment in reading together with their child than those in the non-Reach Out and Read group.
<b>Mendelsohn et al.</b> 2001	High-risk urban families participating in Reach Out and Read read more frequently to their children. Children exposed to Reach Out and Read had higher receptive language scores (mean: 94.5 vs. 84.8) and expressive language scores (mean: 84.3 vs. 81.6). <b>Increased exposure to Reach Out and Read led to larger increases in language scores (receptive and expressive).</b>
<b>Sharif et al.</b> 2002	Children participating in Reach Out and Read had higher receptive vocabulary scores (mean: 81.5 vs. 74.3). They also had higher scores on the Home Literacy Orientation (measured reading to child and number of books in the home) than children not participating in Reach Out and Read.
<b>Silverstein et al.</b> 2002	<b>English and non-English speaking families who participated in the Reach Out and Read model increased their weekly bedtime reading, and more parents reported reading as their own or their child's favorite activity.</b> For non-English speaking families the number of children's books in the home also increased as a result of the Reach Out and Read model.
<b>Theriot et al.</b> 2003	Among children age 33 to 39 months attending a well-child clinic in Louisville, KY, expressive and receptive language scores were significantly associated with both the number of Reach Out and Read-enhanced well-child visits they had attended, and with the number of books purchased for them by their parents. <b>This finding supports a "dose effect" for the Reach Out and Read intervention: the more Reach Out and Read, the higher the score.</b>

STUDY	MAIN FINDINGS
<b>Weitzman et al.</b> 2004	In a study using direct observation of children's homes, <b>parents were more likely to read aloud to their children and enjoy reading together</b> when their families had more encounters with the Reach Out and Read program.
<b>Needlman et al.</b> 2005	In a multicenter study, families exposed to Reach Out and Read were <b>more likely to report reading aloud at bedtime, to read aloud three or more days per week, mention reading aloud as a favorite parenting activity, and own 10 or more children's books.</b>
<b>Byington et al.</b> 2008	This qualitative study examined the thank-you notes sent to staff at a Reach Out and Read clinic by Hispanic families. <b>Families expressed thanks for the books received, as well as the literacy advice given by doctors and nurses.</b> Many families believed that the books and advice promoted the habit of reading, and demonstrated respect the staff held for the families and their children.
<b>King et al.</b> 2009	Successful implementation of the Reach Out and Read Program was related to the culture of the clinic. Staff at clinics that struggled to implement Reach Out and Read found their jobs burdensome and reported lacks in communication. <b>Staff at successful Reach Out and Read sites worked as a team and expressed strong commitments to their communities.</b>

## References:

1. Needlman R., Fried L.E., Morley D.S., Taylor S., Zuckerman B. "Clinic-based intervention to promote literacy. A pilot study." *American Journal of Diseases of Children* 1991; 145, p. 881–884.
2. High P., Hopmann M., LaGasse L., Linn H. "Evaluation of a clinic-based program to promote book sharing and bedtime routines among low-income urban families with young children." *Archives of Pediatrics and Adolescent Medicine* 1998; 15, p. 459–465.
3. Golova N., Alario A.J., Vivier P.M., Rodriguez M., High P.C. "Literacy promotion for Hispanic families in a primary care setting: A randomized controlled trial." *Pediatrics* 1998; 103, p. 993–997.
4. High P.C., LaGasse L., Becker S., Ahlgren I., Gardner A. "Literacy promotion in primary care pediatrics: can we make a difference?" *Pediatrics* 2000; 104, p. 927–934.
5. Sanders L., Gershon T.D., Huffman L.C., Mendoza F.S. "Prescribing books for immigrant children." *Archives of Pediatrics and Adolescent Medicine* 2000; 154, p. 771–777.
6. Jones V.F., Franco S.M., Metcalf S.C., Popp R., Staggs S., Thomas A.E. "The value of book distribution in a clinic-based literacy intervention program." *Clinical Pediatrics* 2000; 39, p. 535–541.
7. Mendelsohn A.L., Mogiler L.N., Dreyer B.P., Forman J.A., Weinstein S.C., Broderick M., Cheng K.J., Magloire T., Moore T., Napier C. "The impact of a clinic-based literacy intervention on language development in inner-city preschool children." *Pediatrics* 2001; 107(1), p. 130–134.
8. Sharif I., Rieber S., Ozuah P.O. "Exposure to Reach Out and Read and vocabulary outcomes in inner city preschoolers." *Journal of the National Medical Association* 2002; 94, p. 171–177.
9. Silverstein M., Iverson L., Lozano P. "An English-language clinic-based literacy program is effective for a multilingual population." *Pediatrics* 2002; 109, p. e76.
10. Theriot J.A., Franco S.M., Sisson B.A., Metcalf S.C., Kennedy M.A., Bada H.S. "The impact of early literacy guidance on language skills of 3-year-olds." *Clinical Pediatrics* 2003; 42, p. 165–172.
11. Weitzman C.C., Roy L., Walls T., Tomlin R. "More evidence for Reach Out and Read: A home-based study." *Pediatrics* 2004; 113, p. 1248–1253.
12. Needlman R., Toker K.H., Dreyer B.P., Klass P., Mendelsohn A.L. "Effectiveness of a primary care intervention to support reading aloud: a multicenter evaluation." *Ambulatory Pediatrics* 2005; 5, p. 209–215.
13. Byington C.L., Hobson W.L., Olson L., Torres-Nielsen G., Winter K., Ortiz K.A., Buchi K.F. "The good habit of reading (el buen habito de la lectura): Parental reactions to an enhanced Reach Out and Read program in a clinic for the underserved." *Journal of Health Care for the Poor and Underserved* 2008; 19, p. 363–368.
14. King T.M., Muzaffar S., George M. "The role of clinic culture in implementation of primary care interventions: The case of Reach Out and Read." *Academic Pediatrics* 2009; 9 (1), p. 40–46

**For more information, contact the Reach Out and Read National Center**

56 Roland Street ■ Suite 100D ■ Boston, MA 02129-1243 ■ T 617-455-0600 ■ F 617-455-0601 ■ E info@reachoutandread.org