



Literacy Promotion: An Essential Component of Primary Care Pediatric Practice: Technical Report

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Early literacy promotion in pediatric primary care supports parents and caregivers in reading with their children from birth, offering counseling in interactive, developmentally appropriate strategies and providing developmentally and culturally appropriate and appealing children's books. This technical report reviews the evidence that reading with young children supports language, cognitive, and social-emotional development. Promoting early literacy in pediatric primary care offers a strengths-based strategy to support families in creating positive childhood experiences, which strengthen early relational health. An increasing body of evidence, reviewed in this report, shows that clinic-based literacy promotion, provided with fidelity to an evidence-based model, has benefits for children, for parents and caregivers, and for pediatric physicians and advanced care providers as well. Reading with young children supports early brain development and the neural "reading network," and improves school readiness. High-quality literacy promotion is especially essential for children who face disparities and inequities because of social factors, systemic racism, and socioeconomic risk. All families benefit from high-quality and diverse books and from developmentally appropriate guidance supporting interactions around books and stories. Thus, literacy promotion can be a universal primary prevention strategy to strengthen families and support healthy development. Partnerships at community, local, and state levels offer opportunities for integration with other programs, services, and platforms. Literacy promotion in primary care pediatric practice, recognized by the American Academy of Pediatrics as an essential component since 2014, has become increasingly common. There are successful models for public funding at federal, state, county, and municipal levels, but sustainable funding, including payment to pediatric physicians and advanced care providers, remains a need so that the benefits of pediatric early literacy promotion and the joys of books and shared reading can truly be offered on a population level.

abstract

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INTRODUCTION

This technical report reviews the research supporting the accompanied American Academy of Pediatrics (AAP) policy statement on literacy promotion¹ with recommendations from the AAP, making the case that promoting early literacy is an essential component of pediatric primary care practice. That statement lays out the central importance of reading with young children, starting from birth, as a way of building, strengthening, and supporting positive language-rich interactions with parents and caregivers. Shared reading in the developmentally critical early years of life supports children's cognitive and language development—and their social-emotional development as well—building early relational health and positive stable relationships through language and story-based routines incorporated into children's days (and bedtimes).

Being read to is directly tied to school readiness skills, which in turn can influence children's educational and economic trajectories. If we can support parents' and caregivers' reading with young children, we support them in creating a richer home environment and in building more positive experiences into daily family life. These experiences support and strengthen the foundational nurturing relationships, which shape children's developmental trajectories and build their resilience. These particular positive experiences, built around books, reading aloud, and interactive “dialogic” reading, which encourages reciprocal interactions between parents and children to enhance the value of reading aloud,^{2,3} are rich in many ways, from storytelling, sequence, vocabulary, and syntax, to physical closeness, comfort, and security. They build both brains and bonds, contributing to cognitive, social-emotional, and underlying neurobiological development, helping children improve school readiness skills and strengthening the positive associations that contribute to a love of learning.¹

Pediatricians providing pediatric primary care have unparalleled access to families with young children during these early years of life. By incorporating early literacy promotion into health supervision visits, they can apply an evidence-based approach, which builds on parental strengths and skills, supports parent self-efficacy, and helps families ensure that positive childhood experiences are built into the routines of children's daily lives from the very beginning. This interactive and individualized supportive evidence-based literacy promotion is sometimes confused or conflated with programs designed purely for book distribution or simple 1-way messaging; such programs can complement a primary care-based approach but not substitute for it.^{4,5} Studies of clinic-based strategies for early literacy promotion have shown that this guidance and support is positively received by parents.⁶ It results in positive feelings about

books and reading together, in increased shared reading, and in improved language skills in young children.^{7,8}

Literacy promotion as a component of pediatric primary care has become relatively widespread over the past 3 decades, largely because of the successful scaling of the Reach Out and Read (ROR) program, but it is still a relatively new arena for pediatricians. The 2014 AAP policy statement supporting literacy promotion in primary care strengthened awareness and implementation and also helped spur additional research, reflection, advocacy, and collaborative initiatives, all of which will be reviewed in this report and in the revised policy statement. This technical report will endeavor to present the evidence that:

- Literacy promotion in the setting of pediatric primary care is an effective intervention, increasing the frequency of shared reading in homes with young children, promoting language development as well as social-emotional development in young children, and supporting nurturing parent-child relationships and self-efficacy in parents and caregivers.
- Literacy promotion, thus, offers an avenue for supporting brain development during critical windows of high neural growth and plasticity in early childhood underlying multiple developmental domains.
- Literacy promotion in pediatric primary care is a strengths-based and evidence-based universal primary prevention strategy for supporting parents and fostering healthy cognitive and social-emotional development through the relationships and positive childhood experiences (PCEs), which can also buffer and mitigate toxic stress.
- It is crucial that literacy interventions be delivered at the highest possible level of quality to children and families at risk because of social drivers of health, systemic racism, socioeconomic risk, and other barriers and inequalities that perpetuate cycles of poverty and marginalization.

This report will review the evidence that through literacy promotion, pediatric primary care physicians, and advanced care providers can address essential issues in young children's lives and promote healthy brain development during a time when nurturing experiences are formative, with benefits across the child's life course by reviewing the evidence that:

- Shared reading can play a critical role in children's early development, school readiness, and educational trajectories, supporting essential skills that develop in the years before formal instruction begins in school, reflecting the home environment as an expression of the foundational early relationships with parents and caregivers.

- Shared reading can offer opportunities for interactions that can incorporate stories and images that support cultural pride and identity development.
- Shared reading is supported by evidence from the neurobiology of reading and the development of a functional “reading network,” which demonstrates the strong influence of shared reading on emergent literacy skills in young children.
- Diverse books provide opportunities for all children and offer children a range of stories and images that reflect their own families and expose them to the wider world around them.
- The effectiveness of shared reading can be enhanced by strategies such as dialogic reading, an approach developed by Whitehurst and Zevenbergen and others, that actively involves the child through verbal prompts and responses,^{2,3} which increase interactions and dialogue around books.
- The AAP has recognized literacy promotion, a universal primary prevention strategy, as an essential component of primary care for all children since the publication of the 2014 policy statement on this topic, as support for early relationships is critically important, both in the presence and absence of adverse childhood experiences (ACEs). Screening for family psychosocial stressors and social drivers of health (ie, secondary prevention), although critically important, is not sufficient to support early child development and school readiness, including early literacy.
- There are children and families at additional risk of reading problems or facing additional barriers, including children at medical risk, and screening for these concerns as early as possible has potential to inform additional supports (tertiary prevention) needed for these children going forward.

Finally, this report will consider the effects on clinics and clinicians of literacy promotion, and the priorities for advocacy, funding, and structure:

- Clinic-based literacy promotion has benefits, including improved satisfaction for clinic staff and practitioners, as well as for families.
- Enhancements to literacy promotion can reinforce the supports offered to families and build strong partnerships at community, local, and state levels, offering opportunities for integration with other programs and platforms.
- Literacy promotion in primary care has examples of successful funding at the federal, state, and county levels, with models that can be followed in different settings and locations.

FRAMING: READING AND LIFE TRAJECTORIES

Reading and Early Development

Mastering reading is essential for children’s school success—and in turn, school success shapes so many choices and opportunities that play out across childhood and into adult life. Proficient reading, as we will discuss below, reflects the integration of visual, language, and other brain networks to form a functional reading network that would otherwise not exist, as children expand their communication skills to include written language.⁹ Learning to read—like learning to speak and understand—draws on the special opportunities offered by the developmental windows of childhood and the ways that early relationships, the home environment, and the stimulation of interaction mesh with neurodevelopment and social-emotional skills to yield a complex—and triumphant—new skill for life. But many children struggle as readers. In 2019, 66% of the fourth graders in the United States were reading at or above a basic grade level of reading achievement, but only 35% of them were at the level considered “proficient,” and that was before the disruptions of the coronavirus disease 2019 (COVID-19) pandemic; reading scores for 2022 showed significant declines.¹⁰

Emergent literacy is the developmental continuum beginning in infancy and continuing through formal instruction, culminating in the child learning to read with fluency and comprehension.^{11,12} During this time, component knowledge, skills, and attitudes accrue and are reinforced through reading experiences.¹³ In addition to genetics (eg, dyslexia), medical factors (eg, chronic conditions affecting neurodevelopment and/or reading opportunities)¹⁴ influence this process, as does a child’s home literacy environment (HLE), which describes resources, routines, and interactions supporting reading at home.¹⁵ Some aspects of the HLE directly relate to children’s books: the presence of children’s books in the home, the frequency and quality of shared reading, and the family attitudes toward reading. Additional aspects of the HLE do not feature children’s books per se, yet nonetheless support development of pre-reading capacities: developmentally appropriate toys, pretend play, teaching, and verbal interactions. Because emergent literacy begins at birth, interventions starting early in life coinciding with this span of high neural plasticity can be particularly powerful. An eco-bio-developmental (EBD) model of emergent literacy during early childhood highlighting underlying neurobiology was recently proposed,¹⁶ incorporating these factors and a suggested approach in pediatric practice.

Children who have difficulty with academic progress are often brought to pediatric care for evaluation and assistance.¹⁷ For many children, struggles with reading proficiency and educational achievement more generally can be traced back to issues with their skills and capacities

as they are entering kindergarten and early elementary school. These include both those skills and capacities specific to language and reading (emergent literacy skills), and additional capacities related to self-regulation and social-emotional development, which are critical for learning and for functioning in school settings. In an analysis of the 2016 National Survey of Children's Health, 58.8% of American children were not ready to enter kindergarten on the basis of composite "Healthy and Ready to Learn" criteria,¹⁸ facing gaps and struggles in one or more domains as they begin formal education. There is a risk that these children may experience that phase of education, from the very beginning, as tinged with frustration, filled with expectations they will struggle to meet, and shadowed by a sense of impending failure.

Reading and Poverty/Equity

Disparities in early child development and school readiness contribute to health inequities and social injustice, skewing the trajectories of many children from very early in their lives. In the United States, 40% to 50% of children in households with income that is low or below the poverty line are considered unready in one or more domains at school entry,^{19–21} compared with less than 25% for families with moderate or high income. After school entry, before the COVID-19 pandemic only 35% of fourth graders and 34% of eighth graders were performing at the "proficient" level based on the 2019 National Assessment of Educational Progress (NAEP), and the disruptions of the pandemic have led to increased reading difficulties and widening disparities. In the 2022 NAEP results, 37% of fourth graders were reading below the "basic" level (up from 34% in 2019), and only 33% were at or above the "proficient" level (down from 35% in 2019).¹⁰

In fourth grade, 47% of children in lower-income²⁰ households (based on eligibility for the National School Lunch Program) read below grade level compared with 19% in moderate- or high-income households.²² These disparities continue in eighth grade, with 40% and 17%, respectively, reading below grade level. Disparities in early child language development can be identified early, as documented in a small but influential study by Hart and Risley²³ and subsequently confirmed across multiple studies examining varying populations and using multiple methods.²⁴ Disparities have also been identified globally, with 39% of children less than 5 years of age (219 million) in low- and middle-income countries²⁵ considered at high risk of developmental struggles.

Poverty and socioeconomic status have also been linked to differences in brain development, including brain regions in the left hemisphere that support language and literacy (eg, superior temporal lobe), limbic areas critical for emotional regulation (hippocampus, amygdala), and regions supporting general cognition

and executive functions (prefrontal cortex).^{26,27} A range of mechanisms, including epigenetics, environmental toxins, and life stress, have been discussed as factors related to poverty, which may have an impact on brain structure and development.²⁸

Families with limited economic resources who are caring for young children—and a disproportionate number of such families in the United States live in poverty—face many barriers to reading together. These include increased life stress on parents and, more particularly, time stress for those juggling multiple jobs, as well as more limited access to books, reflecting both financial resources and the differential availability of bookstores and libraries,²⁹ not to mention safe neighborhoods. Disparities in parental education, including learning difficulties that have not been addressed, and disparities in parent mental health that have not been addressed because of mental health care access barriers, also affect the home literacy environment.³⁰ Parents who themselves struggle with reading must contend with the stigma associated with low adult literacy and often with the personal history of negative school experiences.^{31,32} Socioeconomic disparities are reinforced by structural racism, which restricts access to resources, such as housing and education based on race. As a result, racially and ethnically minoritized children in the United States are more likely to live in poverty than white children. In 2018, nearly one-third of American Indian/Alaskan Native children lived in poverty.^{33,34} Among children younger than 5 years in 2020, nearly one-third of African American children and a quarter of Hispanic children lived below the poverty threshold compared with one-tenth of white children.³⁵ Thus, antipoverty legislation can help address factors that contribute to social drivers of lower literacy and educational disparities and that can, in turn, limit economic potential and perpetuate intergenerational poverty.

Despite these links, income does not fully account for race-based gaps in early reading. Data from large, nationally representative samples of kindergarteners from 1998 to 2010 show decreases in the income-based reading gap but no significant decreases in the Black-white reading gap and insufficient data to assess the Hispanic-white reading gap.³⁶ Moreover, despite adjustments for poverty and other demographic factors, parents of young minoritized children had fewer children's books (average of 30 fewer among African Americans and 20 fewer among Latinos) and less often read daily to their young child compared with white parents.³⁷

These early indicators are critically important because gaps in school readiness and subsequent reading challenges are associated with long-term adverse outcomes related to educational achievement, high school graduation, health and mental health, and financial position and broad well-being.³⁸ As described below, children's early

developmental experiences, in turn, shape them neurodevelopmentally, with effects that can be measured through neuroimaging. These long-term adverse consequences of early developmental experiences, together with the much higher cost of remediation and addressing those problems even in elementary school, strongly suggest the need for “primary prevention”—that is, for finding ways to foster healthy development of the skills that will help all children learn and flourish.

Early Relational Health: A Foundation for Development, Learning, and Life Trajectories

An EBD framework has been applied in a variety of contexts in early childhood, including emergent literacy, to highlight the complex interplay of genetic, neurobiological, and environmental factors³⁹ in society, in the community, in the family, and in the child, which generates varying degrees of risk and resilience.^{16,40,41} In this framework, early relational health, defined as the interplay of positive parenting practices, a supportive environment, and nurturing, responsive parent-child relationships, represents a foundation for PCEs that support early child development across multiple domains and promote school readiness. Positive, interactive parenting activities, including reading aloud, pretend play,⁴² and reciprocal conversation during daily routines support early child development and increase the prospect of school readiness across domains and eventual success in reading. Reading with young children, the focus of this technical report, is especially important because the adult-child interactions around books, which are critical for cognitive and social-emotional development and school readiness, involve positive language-rich interactions drawing on enriched vocabulary.^{43,44} When parents read picture books with their young children, there is opportunity for question-and-answer, picture naming, games, rhyming, and other verbal give-and-take, in the setting of physical closeness, mutual attention, and affection. Furthermore, reading aloud is an activity that both parents and their children enjoy and can easily incorporate into their daily lives; therefore, an intervention supporting, encouraging, and facilitating effective reading aloud to young children represents a potentially powerful primary prevention strategy, building on early relational health to enhance early child development, school readiness, and subsequent educational achievement.

Increasing the proportion of children whose parents read to them at least 4 days a week is now a Healthy People 2030 objective monitored through the annual National Survey of Children’s Health. Yet, reading 4 or more days a week with children 5 years and younger dropped from 58.3% in the 2016 to 2017 National Survey of Children’s Health data to only 54.9% in 2018 to 2019, although this increased somewhat to 55.5% after the pandemic in 2021 to 2022.⁴⁵

Reading aloud is more likely when families understand how important it can be for fostering early development and school readiness,⁴⁶ when they have a sense of motivation and self-efficacy related to reading aloud, when they have the skills for effective reading aloud (see section on dialogic reading, below), and when they have more available resources, including children’s books.⁴⁷ Conversely, when parents and caregivers have limited literacy and health literacy, defined as the degree to which they are able to find, understand, and use information and services to inform health-related decisions and actions,⁴⁸ the lower probability of shared reading within the family may be part of a larger picture in which children are at increased risk for adverse health and developmental outcomes. The stigma that attaches to low adult literacy may make it particularly difficult for these parents and caregivers to ask for guidance or to incorporate suggestions about reading aloud. At the same time, barriers to shared reading can come from family stressors,⁴⁹ such as parent mental illness including depression and anxiety, and parents’ own history of trauma and ACEs, from the experience of interpersonal racism and discrimination, from economic stresses, from low social support, and from family discord, all of which limit parental time and energy. These barriers can be exacerbated by community and societal factors, such as the lack of safety and access to libraries or the lack of diverse and culturally appropriate books. These barriers, which may reflect issues of structural racism and poverty, can interfere with positive parenting activities in general. The more stress that adults are facing in their own lives, in their own health and mental health, and in their communities, the more difficult it can be to carry out the always challenging job of being a parent.

Neurobiology of Reading and the “Reading Network”

Reading, in an evolutionary timescale, is a relatively new cultural invention. Reading skills are tested and measured in school, but literacy development is founded on skills that develop before school, in the first years of life, as part of “emergent literacy.”¹² As children learn to read, they become gradually more adept at recognizing marks on a page as letters (or characters, depending on the language) and then words, which they connect with visual images from pictures and/or experiences, which are enhanced by emotional responses, and together provide a sense of meaning for the story.^{9,12} But there is no genetically programmed brain network that allows them to conduct this complex function. Instead, brain areas and networks that evolved to serve more primary purposes, including language and vision, but also attention and executive functions, must be recruited and integrated to form what we can view as a “reading network.”^{50,51} To yield a “typical” reader, component brain circuits

must be structurally normal, must develop adequately (eg, language development during early childhood), and must be connected to function efficiently through reading practice.⁹

Shared reading is a potentially rich source of constructive stimulation to assist this neurobiological process and is most formative during early childhood when the brain is growing rapidly and is exquisitely sensitive to experiences.^{16,52-54} Thus, the best way to “build” a reading network that would otherwise not exist is through shared reading.

Biomarkers of emergent literacy development have been described using MRI and other imaging modalities in both preschool-aged⁵⁵ and school-aged children.^{56,57} These include both structural measures—gray matter cortical thickness, white matter organization and maturation—and functional measures—neural activation during reading-related tasks. Biomarkers for *oral language*—vocabulary, syntax, semantics—which is the foundation for emergent literacy, have been extensively studied and classically involve superior temporal gyrus (STG; ie, Wernicke’s area), inferior frontal gyrus (IFG; ie, Broca’s area), and inferior parietal (angular gyrus; multimodal association) cortical areas.⁵⁸ These areas are connected by a major white matter tract, the arcuate fasciculus,⁵⁹ whose development and myelination is highly responsive to receptive and expressive language stimulation—that is, listening to speech and practicing speech, which are both encouraged during shared reading.^{3,60} The same brain structures and systems are involved in the development of phonological awareness, the ability to perceive and work with the component sounds of spoken language, but this skill is also highly influenced by genetics.^{61,62} Children begin to demonstrate phonological awareness around the age of 2.5 years, starting with larger sound units, such as rhymes, and then developing awareness of individual phonemes, the smaller distinct units of sound, such as “puh” (*P*) and “buh” (*b*).^{63,64}

For reading to develop, in addition to language, children need to master visual skills, which require the specialization of a region of the inferior occipital-temporal (fusiform) cortex that has been termed the visual word form area (VWFA).⁶⁵ Training the VWFA to recognize print⁶⁶ while forming neural connections with language areas (eg, for letter sounds)⁶⁷ enables children to recognize letters and words more quickly using a visual pathway along the ventral aspect of the brain, rather than a slower, dorsal phonological pathway, which is involved in “sounding out” words phoneme by phoneme.⁶⁸ Indeed, VWFA activity during MRI reading tasks has been found to predict subsequent reading abilities in children.^{69,70} Shared reading is a potent means to expose children to print and “tune” the VWFA⁶⁵ because printed letters are paired with their sounds, building children’s ability to connect the two, or *letter-sound knowledge*,⁷¹

so that children reach the critical milestone described as “breaking the alphabet code.”⁶³

Executive (eg, processing speed, working memory) and attention (eg, “top-down” focus) skills and networks provide vital support for visual-language integration (eg, processing speed, working memory), fueling emergent literacy, and strongly predict reading readiness and outcomes.⁷²⁻⁷⁸ Joint attention, a critical early skill involving prefrontal and limbic areas, begins to manifest in late infancy and allows the caregiver and child to attend to shared experiences, such as book reading.⁵⁸

Altogether, a “typical” pattern for the emerging reading network includes neural activation during reading-related tasks such as story listening in young children^{79,80} and reading in older children,⁸¹ increased cortical thickness in language, VWFA and association areas,^{55,56,82} and maturation and myelination of connecting white matter tracts.⁸³⁻⁸⁵ Each of these markers lateralizes to the left hemisphere with greater ability and efficiency.⁸⁶⁻⁸⁹ By contrast, biomarkers of reading difficulties can involve hypoactivation, underdevelopment, and/or nonlateralization of these areas and white matter tracts.^{61,90} For example, reading difficulties are common in children with oral language delays, for which children from economically and socially disadvantaged backgrounds are at outsized risk,^{91,92} with less lateralization of these areas a likely mechanism.⁹³ Hypoactivation of visual-language areas is also an established biomarker of dyslexia, with a variety of genetic mechanisms linked to neural development proposed.⁹⁴

Understanding emergent literacy through an EBD model¹⁶ reminds us that the process may be subject to disruption through problems and barriers affecting varied neurobiological domains. For example, although environmental disparities have a major impact on the language network and subsequent reading abilities, the AAP policy statement on learning disabilities, dyslexia, and vision estimated that approximately 80% of those with learning disabilities have dyslexia, a primary reading disorder, with a genetic basis affecting both phonological and visual processing of written language.⁹⁵

Chronic illness may lead to the understimulation and/or disruption of one or more of the brain networks necessary for emergent literacy development (eg, language, attention), contributing to reading difficulties.⁹⁶ In addition to neurodevelopmental disorders, such as trisomy 21 or autism,⁹⁷ reading difficulties can also stem from deficits in cognitive skills that accompany other common diagnoses, where they may not be typically expected, including prematurity, hearing loss, asthma, cancer, congenital heart disease, kidney disease, epilepsy, and sickle cell disease.⁹⁸ Potential mechanisms include direct effects on neural circuits that are part of the emerging “reading network,” challenges such as neurovascular ischemia or insults, toxin exposure (eg, chemotherapy), or ill-defined neurodevelopmental differences.⁹

Indirect mechanisms include home and/or school routines disrupted by frequent medical appointments or hospitalizations, particularly during early childhood.^{99–102} Extended time in the hospital and associated family stress¹⁰³ may also displace shared reading.

Just as children who face risks connected to social drivers of health (eg, underresourced HLE) may need additional supports around reading development, so may children at medical risk. Indeed, biomedical risk and social risk may be linked; children in poverty, children exposed to environmental toxins, and children in communities exposed to racism all face higher medical risks, ranging from chronic conditions such as asthma to the risks of suboptimal medical care.²⁰

Given the complex neurobiology and dependence on EBD factors, it has recently been suggested that emergent literacy be considered a distinct (fifth) domain of child development for pediatricians to monitor as children grow.¹⁰⁴ The logic behind this formulation includes: (1) the functional reading network has been well-described providing insights into biomarkers of reading abilities and difficulties; (2) emergent literacy can be assessed along a trajectory that is distinct from language and communication (where it is currently grouped), with well-defined normal ranges for component skills; and (3) foundational skills such as language and concepts of print emerge well before children enter kindergarten and begin formal instruction, presenting opportunities for early screening and interventions to improve outcomes.

Pediatric Literacy Promotion as Primary Prevention Supporting Early Development and School Readiness

Young children develop resilience through strong early relationships and PCEs, so population-level approaches to reducing disparities in early child development and school readiness start with supporting parents and caregivers and strengthening those essential early relationships. Literacy promotion is, thus, universal primary prevention, supporting positive language-rich daily interactions that strengthen parent self-efficacy and build stable and nurturing relationships.

However, primary prevention is certainly not sufficient for all families; literacy promotion is most effective when paired with systematic identification of children's exposure to family psychosocial stressors and additional family stressors ("secondary prevention"), and tailored support to address those stressors and needs through clinical, educational, and social services ("tertiary prevention"). Such stressors can disrupt development, but the mere absence of stressors is not enough to ensure healthy development; children need the presence of positive interactions and positive experiences to develop and thrive. And for children experiencing family stressors, the presence or absence of nurturing relationships and positive experiences makes a tremendous difference in

whether those adverse experiences are buffered and mitigated. In fact, a recent study demonstrated that children exposed to PCEs, despite the presence of 4 or more ACEs, showed evidence of healthy social-emotional development at a rate greater than children with no ACEs but also no PCEs; this developing research suggests that support for positive parenting strategies such as shared reading, and for early relationships and PCEs, has the potential to buffer families substantially against the effects of ACEs.^{105,106}

Primary prevention through pediatric health care, supporting PCEs, complements the many efforts underway within this platform for both secondary and tertiary prevention, initiatives that focus on the identification and treatment of families with specific stressors, or with exposure to ACEs. Primary prevention supports parent and caregiver strengths to build foundational relationships from the beginning for all children.

Although there is increasing recognition of the need for primary prevention programs seeking to enhance early child development and school readiness, including through promotion of shared reading, population-level access remains a barrier before school entry and especially during the birth to 3-year period. For example, although home visiting programs, such as Nurse Family Partnership, Parents as Teachers, and Healthy Families America, and hybrid (home + center-based) programs, such as Early Head Start, have had significant federal funding (eg, through the Maternal, Infant, and Early Childhood Home Visiting program), such programs currently serve only a very small fraction of those who could benefit.¹⁰⁷

Pediatric primary care has that universal reach. The US health insurance system currently serves most children,^{108–110} and 90% of children younger than 4 years had at least annual visits¹¹¹ in the pre-pandemic period. Although the COVID-19 pandemic has affected well-child visit utilization, current data do show evidence of trends toward returning to pre-pandemic levels.^{112,113} Pediatric primary care is, therefore, uniquely positioned to deliver this type of early childhood intervention because of: (1) population-level reach in a near-universal, nonstigmatizing setting; (2) regular contact with children and families through routine visits (especially from birth to 3 years) and added visits for acute and chronic medical problems (ie, asthma, obesity); (3) existing infrastructure and staff so that interventions are cost-effective (as little as 1% of the cost of home visiting); (4) potential for building on and working with pediatric medical home and other health care transformation initiatives (eg, New York State's "First 1000 Days"); and (5) synergy with parent health-care goals related to development and behavior.

Pediatric physicians and advanced care providers ideally can serve as trusted messengers who can recommend and support early childhood interventions with the

families for whom they care. At the same time, pediatric primary care must acknowledge and address instances that fall short of high-quality care for all¹¹⁴⁻¹¹⁷ to build and sustain a trust-based partnership between pediatricians and families. A redoubled commitment to primary prevention in early childhood provides a critical opportunity for this interrelated professional development and community partnership.

Further, as Nobel Laureate Economist James Heckman has argued,¹¹⁸ and as he charged the AAP in his keynote address at the 2007 AAP National Conference and Exhibition,¹¹⁹ programs that invest in children at the earliest ages have the highest rates of return. By initiating support at birth for reading aloud, modifying the home literacy environment to be richer and more conducive to shared reading, and advising parents about enjoyable and playful book-related strategies that will increase their children's language and early literacy skills within the context of their critically important foundational relationships with their parents and caregivers, pediatric providers can leverage their unique opportunity to influence children in the very early years of life and create important long-term relationships with families.

CLINIC-BASED STRATEGIES

Young children's literacy development happens, for the most part, in the home and in the setting of early relationships; the most effective interventions to strengthen and support the trajectory of literacy development, therefore, support those relationships and enhance that home environment. Early literacy promotion based in pediatric primary care can achieve this by building on the primary care commitment to helping families support healthy cognitive, emotional, and behavioral development through regular health supervision visits, deploying anticipatory guidance, screening for a variety of conditions, including social drivers of health, and offering care coordination. This has been highlighted by the work of the Center for the Study of Social Policy in an initiative supported by the Pediatrics Supporting Parents funding group, which evaluated nearly 70 programs with established or emerging evidence of effectiveness of supporting social and emotional development and/or the parent-child relationship and recognized that "pediatric well-child visits present a unique opportunity for supporting parents in nurturing their children's social and emotional development and relational health."¹²⁰ The list was winnowed to 13 programs based on the populations served, strength of evidence, and fit with the existing well-child visit system; among these programs studied closely by the Center for the Study of Social Policy was ROR.

Reach Out and Read Model

Reach Out and Read is a national, over-3-decade-old program based in primary care medical homes serving

children that promotes early literacy and strong parent-child relationships.⁸ The program stresses strengths-based anticipatory guidance and modeling in the exam room. During each health supervision visit from birth to 5 years, the pediatrician offers a new, developmentally appropriate, culturally respectful, and high-quality book directly to the child, taking the opportunity to observe the child's interaction with the book and to encourage comment from the parent. The ROR model encourages pediatricians to remark on the developmental significance of what is unfolding, and offers opportunities for further conversation, inquiry, and guidance around household routines related to books and shared reading. Training materials emphasize the use of the ROR book in the examination room as a developmental surveillance tool and modeling to support developmentally appropriate interactive dialogic reading strategies. The reading strategies offered, like the books given, are thus tailored to the child's individual trajectory, recognizing that not all children develop "typically." Parents whose native language is not English can be supported in reading and telling stories in their own languages. Parents who may struggle with literacy can be encouraged to "look at books" with their children and tell stories about the pictures. Discussions with parents in the context of ROR can also provide an opportunity to refer families for adult and family literacy services available in the community. Books in foreign languages, both monolingual and bilingual, as well as wordless books, are available for clinical sites to adjust the book supply to the needs of the population served.

Thus, the goal is to leverage these powerful—but episodic—well-child visits toward producing improvements in the home literacy environment, supporting daily interactive parent-child reading activities, and building on their potential in children's lives.¹²¹ Literacy promotion centers around books and shared reading, a bond-building 2-generation activity; thus, this approach goes beyond reading and incorporates relational health, population health, and encouraging PCEs, intended to enhance the developmental trajectory. Taking full advantage of the book in the examination room—that is, quality implementation of ROR, including developmentally appropriate anticipatory guidance and modeling—also offers clinicians the opportunity to look at a child's development, to assess the child's educational readiness, and to evaluate the relational health of the family. In this way, the pediatrician accrues numerous perspectives regarding child and family well-being.¹²²

The ROR model has a very strong evidence base showing efficacy when the model is followed, detailed below. Administrators, medical directors, and funders can emphasize the importance of this evidence base before implementation and should maintain quality control and

fidelity to the evidence-based model after implementation, as with any evidence-based medical intervention.

Evidence for Effectiveness of Reach Out and Read

ROR is the most widely studied and disseminated model of literacy promotion in the child's medical home. Multiple studies demonstrate the efficacy of the ROR model across key domains, including early relational health and early child development and school readiness. Indeed, recent systematic reviews have found that pediatric literacy promotion delivered in primary care to children in the first 3 years of life has been repeatedly demonstrated to have a positive effect on developmental outcomes.^{123,124} These studies show benefits across diverse families, including those at risk for reasons of poverty, as well as across the US population broadly. This growing body of evidence draws on well-designed studies utilizing multiple methodologies, including randomized controlled trials. Finally, these studies have been conducted with both English- and Spanish-speaking parents, including recent immigrant populations.⁸

1. **Early relational health:** Parents participating in ROR demonstrate more positive attitudes toward books and reading, which translates directly to increased shared reading behaviors and enhanced early relational health.^{46,125} Increased frequency of reading together—and enhanced parental satisfaction in the activity—means these positive interactions are occurring more regularly and that those experiences center on language and physical contact (that is, “lap time”), building and reinforcing safe stable nurturing relationships. In their original study of ROR, Needlman and colleagues documented a 50% increase in reading as a favorite activity (and a tripling for families with the lowest income) among families receiving ROR.^{7,126} Numerous studies have confirmed this finding and documented increased shared reading activities.^{127–132} This includes a randomized controlled trial (RCT [see below]) that showed nearly a tripling of the proportion of families reading at least 3 days a week, from 24% in control families to 66% in intervention families. A recent study by Jimenez et al further demonstrated the critical importance of anticipatory guidance and modeling contributing to these effects and reinforced that book delivery alone was not sufficient.⁵
2. **Early child development and school readiness:** Multiple studies have shown enhancement in early child development and school readiness. Although earlier studies focused primarily on language development, there is now emerging support for additional impacts on cognition, self-regulation, and social-emotional development. In an RCT conducted in Rhode Island by High and colleagues, intervention families showed a near

50% increase in receptive vocabulary and a near doubling in expressive vocabulary.¹³⁰ Two aspects of this study are especially important: first, the increase in vocabulary was even more pronounced for words in the picture books that were provided, showing a direct link between the content of those books and the words that children learned. Second, the increase in vocabulary took place between 18 and 25 months of age, demonstrating impacts at exactly the age when vocabulary growth typically accelerates.

A subsequent study in New York City by Mendelsohn, Mogilner, and colleagues demonstrated impacts that extended into the preschool period, with children in a clinical site in which ROR had been implemented having a 6-month developmental increase in receptive vocabulary (average age approximately 4 years) and a 3-month advance in expressive vocabulary.¹³¹ Children in the 2 clinics had highly comparable sociodemographic characteristics, analyses accounted for potential confounding factors, and a dose-effect was demonstrated, with children who had more contacts demonstrating larger increases in their vocabulary. A study by Sharif and colleagues further confirmed enhancements in language among families in the Bronx.¹²⁸ Recently, an RCT of a group model adapted in part from ROR in Brazil (Universidade do Bebê [UBB], see below) demonstrated impacts on both IQ and language development.¹³³ Studies of this group adaptation further demonstrated enhancements in self-regulation (attention and impulse control),¹³⁴ which mediated impacts on cognitive and language outcomes and were, in turn, mediated by intervention impacts on shared reading, including an observed measure of reading quality. At the same time, studies of an ROR enhancement, PlayReadVIP (formerly Video Interaction Project, see below), demonstrated impacts on social-emotional development, including reductions in both hyperactive behaviors and attention problems, with significant implications for learning at school entry.^{135,136}

3. **Diverse families, settings, and practices:** Benefits of ROR have been demonstrated across a broad range of families, including for families immigrating to the United States and for families with limited English proficiency. Silverstein et al found that providing ROR was effective for non-English-speaking families, even when books in the families' primary language were not available¹²⁹; with ROR, these families were more than twice as likely to report shared reading as a favorite activity and showed a 50% increase in bedtime reading frequency. (ROR programs support reading with children in families' primary language as a best practice, and as the program has become widely disseminated, children's books in the relevant languages have become much more available and accessible.)

Furthermore, there is strong evidence that ROR is effective regardless of family characteristics that otherwise might be considered barriers. For example, literacy support continues to be effective even for families with low caregiver literacy,^{137,138} on the basis of findings from 2 separate RCTs of the UBB group model adapted from ROR in Brazil. Furthermore, a number of studies have shown benefits extending beyond primary care. For example, the same RCT in Brazil documented impacts in the context of delivery of this adapted model in groups in early child care and education settings, while other studies have demonstrated efficacy in the Special Supplemental Nutrition Program for Women, Infants, and Children, home visiting, and in military settings.^{139–141}

4. Population-level impacts: Population level impacts were first demonstrated in a multicenter study of 19 primary care sites in 10 states.¹⁴² In that study, both frequency of shared reading and numbers of books in the home were increased among families assessed after initiation of ROR in comparison to families assessed before initiation. The sites represented a broad range of geographic diversity across the United States, as well as racial and ethnic diversity, and all findings were based on models that adjusted for key potential covariates. This was further noted in a 6-year-long study in 427 clinics in North and South Carolina that found a significant positive association between caregivers' exposure to ROR and increased caregiver reading frequency and utilization of interactive reading styles, consistent across all 6 years studied.⁷ Such changes in parent practices have been credited when analyses of population-level data from the Early Childhood Longitudinal Studies-K and the NAEP have indicated reductions in income and to some extent race and ethnicity-related disparities and school readiness.^{36,143} Analysts cited as important increases in parent awareness of and engagement in activities such as reading aloud because of programs like ROR (cited by name in *The New York Times*).¹⁴⁴

5. Complementary, additive benefits across the early childhood policy landscape: Recent studies have provided strong evidence for ROR as providing additive value above and beyond that of other programs being currently offered. For example, Canfield et al found that ROR exposure was associated with increased impact on shared reading beyond that of public library utilization, with added value across frequency, quality, and diversity of book sharing.¹⁴⁵ The ROR model, delivered with fidelity, emphasizes the importance of relationship-based and skills-supporting assessment, modelling, and coaching in addition to book distribution. A 2020 meta-analysis documented greater impact of ROR compared with programs consisting primarily of book distribution in isolation.⁴ Taken together, these studies strongly support a

central role for ROR in providing relationship-based early literacy support as a critical component within the broad range of public health policies currently underway to support early child development, school readiness, and health equity.

In summary, these studies demonstrate effects of ROR across a broad range of the most important outcomes in early relational health, early child development, and early school readiness. Furthermore, they demonstrate impacts across a broad range of families with population-level effects and strongly support significant added value in the context of the early childhood policy landscape. Cumulatively, these demonstrate that ROR has the strongest evidence-base of any early literacy program that has been developed or implemented to date.

IMPORTANCE OF BOOK DIVERSITY

One possible explanation of the observed race-based reading gap is the limited number of children's books that depict diverse characters and cultural themes. Of the 3450 US-published children's books received by the Cooperative Children's Book Center in 2022, 15% were about African American people, 11.7% were about Asian people, 8.6% were about Latino people, and 2.5% were about Indigenous people.¹⁴⁶ This reflects an improvement in the number of diverse books published in recent decades but does not reflect collections in schools and libraries that notably lack diversity.^{147,148} Despite increases in quantity, certain groups remain underrepresented in children's literature, including Latino people, who represent the largest minoritized population in the United States.^{149–151} Representation also varies by subgroup, as more picture books with Mexican American characters and themes have been documented than those with other Latino and Hispanic characters and themes.^{152–154} Thus, the lack of availability of high-quality diverse books can serve as yet another barrier and generate disparities in reading experience for children from communities already at higher risk because of structural racism.

Beyond quantity, structural racism limits the quality of diverse children's books through stereotyped text and illustrations. A study of children's board books published from 2003 to 2008 reported many inauthentic and monolithic representations of the few characters of color identified.¹⁵⁵ Similarly, scholars report that too many children's books engage in repeated narratives that amount to microaggressions, including stereotyping, caricature, and marginalization of African Americans.¹⁵⁶ Among Latino people, stereotyping may vary by subgroup, as one study found it less severe among K through 3 Mexican American characters and themes compared with Puerto Rican characters and in males compared with females.^{152–154,157–160} Stereotypes have similarly been documented for Jewish and Muslim

children.^{161–163} Oversimplification remains problematic in depictions of American Indian culture that too frequently feature feathers and animal clothing¹⁶⁴ and in depictions of Asian culture largely featuring chopsticks and fans.¹⁶⁵ This is a disservice to minoritized children, who ultimately access fewer books that accurately mirror their experiences; it also deprives every child of the full potential of children's books to access accurate representations of diverse cultural groups.^{166,167} For all groups, inaccurate cultural representations can misinform developing minds and contribute to biases.¹⁶⁸

At ROR programs, books are often ordered site by site—as clinics generally know their patient populations best—but they are generally drawn from curated book lists and catalogs, reflecting efforts by the National Center to find high-quality and diverse books and to obtain bulk discounts. The ROR book committee, working with the AAP Section on Minority Health, Equity, and Inclusion and the AAP Council on Early Childhood Early Literacy Committee, has developed a joint booklist.¹⁶⁹ These book recommendations, along with the tips in *Using Books to Talk About Race and Racism*, reflect an ongoing commitment to engage in and encourage change at a systemic level.¹⁷⁰

Structural racism may be addressed through policies and practices that accurately reflect cultural diversity in children's literature.¹⁷⁰ In doing so, shared reading can support cultural pride reinforcement. Studies show that more authentic stories more deeply engage children of diverse backgrounds.¹⁷¹ In a study by McNair and colleagues, parents formally introduced to African American children's literature responded with a great appreciation for high-quality literature, passed this information on to others, and—most importantly—increased the amount of time they spent reading aloud to their children.¹⁷² This cultural preference has been less clear among Latino children.^{173,174}

Families whose home language is not English face additional barriers; multilingual books of high quality are not always available, and parents may worry that their children should be learning English in preparation for school and may need support and reinforcement about the value of reading (and indeed, of speaking) with their children in their native language. Scholarship on bilingual children and shared reading in the preschool years has been relatively limited,¹⁷⁵ but children with richer language exposure and more advanced language and pre-literacy skills in their home language are more easily able to master the English language and literacy skills on school entry, with complex cross-linguistic effects still the subject of active research.¹⁷⁶ Some studies have shown the positive effects of strong early home language learning on school achievement visible into middle school.¹⁷⁷ Parents should be encouraged and supported to read and

tell stories with their children in the languages in which they are most comfortable, and ideally, books should be available that support storytelling traditions. This helps children's language development in ways that will be relevant for later classroom learning, strengthens early relational health, can help maintain children's proficiency in their families' primary languages, and may help families build identity and cultural pride.

Clinic-based literacy promotion programs need a robust and diverse supply of books to be given to children, with attention to the languages spoken by the clinic population, and if necessary, with wordless books to stimulate storytelling in families for whom the correct language is not available. A clinic can also provide multicultural book-related materials in the primary care setting, including not only any standing supply of used books available in the waiting room but also posters and book-related displays. This offers an opportunity to reinforce the messages emphasizing and supporting the importance of reading with children, and at the same time, to provide positive images in which children can see themselves and their families reflected. All parents should be encouraged to look at books with their children in ways that feel most comfortable and natural to them, and clinics need book choices available that support those practices by offering families books that they will find appealing, that they will feel reflect their own families, and that are stories they would like to tell and to have their children hear. Because the goal is to support parental strengths and parental voices, the right language is essential. The availability of high-quality and truly diverse books is, thus, an essential component of a clinic-based literacy promotion program and directly tied to the likelihood that parents will continue reading with their children on a regular basis.

EVIDENCE FOR BENEFITS OF SHARED READING

Skill Building

There are 4 major stages typically involved in children's learning to read: (1) joy, comfort, and affection become associated with reading when parents make time to read, share, and talk about books with their young children and as children reach for, touch, explore, and even taste their books; (2) decoding is the next step in learning to read, when children learn letters and their sounds and then begin to string them together into words while developing their phonological and phonemic awareness; (3) developing fluency is the next skill level, when children begin to read smoothly and with prosody; and (4) comprehension and expansion of the child's vocabulary is the highest level skill in reading, when children master understanding of the printed word and so can draw inferences, follow story lines, agree or disagree with authors, and interpret and expand on what they have

read, by drawing on their own experiences. Reading with young children can help build all these skills, but the first (joy) and the last (understanding) are most strongly enhanced by frequent and regular shared reading. When children learn to love books and reading, they are motivated, even if or when learning to read is challenging for them, to work hard to master this magical skill. Successful mastery of core emergent literacy skills culminates in reading fluency and age appropriate comprehension, which is generally expected by third grade when most schoolwork is reading-based.¹⁷⁸

The most foundational reading and writing skills involve elements of language, including vocabulary, syntax, semantics, and phonological awareness.^{12,63,179} Other core skills are concepts of print,¹⁸⁰ attention, and executive functions (eg, speed of processing, error monitoring).¹⁸¹ Although reading difficulties can be linked to deficiencies in any of these, the strongest predictors of reading ability are vocabulary, phonological awareness, and processing speed.¹⁸² Some skills, such as rhyming, develop in a yes or no manner highly influenced by neurobiological genetic programs,¹⁸³ whereas others, such as vocabulary, are much more dependent on environmental and experiential factors and develop more gradually across a continuum. This interplay of genetic and environmental influences is important to recognize because even children with highly nurturing home literacy environments can experience genetically based reading challenges like dyslexia. However, constructive stimulation at home can mitigate these while reducing or even eliminating risk of those that are environmentally based such as fewer community resources.¹⁸⁴

Emergent literacy development in young children is powerfully shaped by the experiences and exposures in the child's home, including the amount and the nature of spoken language, as well as shared reading, and such activities as teaching and creative play.^{15,185,186} Shared reading can serve as a particularly important influence because it exposes children to a richer and broader range of vocabulary than they are likely to hear in everyday conversation and also to the syntax of written language, as opposed to that of spoken language. Thus, vocabulary, grammar, and narrative structure

are enriched, along with the phonological skills that are practiced when the words on the page are read aloud and repeated.^{2,187} It is especially important to support shared reading in families in which language exposure and verbal interactions are less likely to be taking place for reasons that can include social and economic stressors and inequities.⁹¹ Extensive behavioral and educational research has documented benefits of a more supportive home environment for emergent literacy development, particularly vocabulary, comprehension, and concepts of print.¹⁸⁶⁻¹⁸⁸ Further, a more stimulating home environment helps fuel a child's interest in reading, which has been found to be a strong predictor of emergent skills, controlling for socioeconomic status.¹⁵

The specific nature of the parent-child reading activities also matter greatly; higher-quality shared reading, with more verbal and nonverbal interaction, confers outsized benefits and may moderate overall effects.¹⁸⁹ Dialogic reading, which was developed to enhance reading aloud by encouraging the child's participation (acronym, PEER/CROWD, detailed below and in Table 1), has been shown to improve language, phonological awareness,¹⁹⁰ comprehension,¹⁹¹ social-emotional skills (eg, empathy),^{135,192} and attention,¹⁹³ including in children at risk for reading difficulties.¹⁹¹

Furthermore, experimental evidence suggests that early reading aloud beginning in infancy is associated with enhanced development, including vocabulary¹³⁰ as well as across domains.¹³⁷ Indeed, the early start may fuel sustained improvements in language and preliteracy skills, particularly when reading starts at an earlier age, becomes integrated into daily routines, and thereby happens more frequently.^{194,195} Proposed mechanisms in younger (preverbal) children include exposure to a wider range of word sounds, words, and syntax, teaching via labeling and pointing,¹⁹⁶ stimulation of joint attention (parent-child-book),¹⁹⁷ emotional nurturing and responsiveness,¹⁹⁵ and reinforcement of reading routine.^{1,194} At present, no structured approach to shared reading with infants and preverbal toddlers akin to dialogic reading has been formally studied, though one has been recently proposed by Hutton et al (acronym SHARE/STEP; Table 2).¹⁹⁸

PEER/CROWD Approach	Example
P rompt the child with a question or statement	What color was the dog?
E valuate the child's response	Yes, the dog was brown!
E xpand on the response	The dog was brown and furry!
R epeat the expansion and invite the child to do so	Can you say, "Brown, furry dog?"
Types of Prompts	
C ompletion of a sentence	Dogs say, _____?
R ecall content from earlier in the story	Do you remember the animal we saw in the story?
O pen-ended questions	Do you like dogs?
W h- questions	What color was the dog?
D istancing - relating parts of the story to the child's life	Who do you know that has a dog?

TABLE 2 SHARE/STEP Approach

SHARE Approach	Example
Snuggle on the parent or caregiver's lap	Snuggle on lap so child can see and touch the book
Let the baby Hold and/or explore the book	Chew, pat, or hold the book, try to turn pages
Show Affection during story reading	Positive responses, hugs, kisses
Respond to what the baby does or says	(Baby says "Buh!") That's right, it's a ball!
Enjoy the process that is right for you and your baby	Develop your own routines such as bedtime
Suggested Ways to Respond (STEP)	
Stretch word sounds (ie, child-directed <i>Speech</i>)	(Picture of puppy): "Puh-pee..."
Talk about pictures in the book	That's a puppy! It's cute and fuzzy!
Explore word sounds in fun ways	Puppy dogs say, "Woof-woof!"
Be Patient , as reading during infancy is often messy	Change of positions, different book, try again later

Early Relational Health, Social-Emotional Development, and Family Resilience

The benefits of shared reading extend well beyond children's cognitive and language development and early literacy skills, offering strategies to promote social-emotional health and family resilience, with positive effects noted for parents (and pediatric clinicians) as well as for children. Shared reading fosters, scaffolds, and even "scripts" parent-child interactions and relationships that support social-emotional development. For example, shared reading enhances warmth and sensitivity in parent-child relationships and is associated with attachment security.¹⁹⁹ At the same time, shared reading is associated with reductions in parenting stress and harsh discipline.²⁰⁰

Three recent observational studies illustrate how shared reading can support social-emotional development and underlying processes, such as self-regulation. First, cross-lagged longitudinal analyses of the Smart Beginnings cohort²⁰¹ showed that shared reading at 6 months was associated with subsequent increased warmth and reduced parenting stress at 18 months, whereas earlier warmth and parenting stress were not associated with later shared reading. Second, a study of the Fragile Families cohort²⁰⁰ demonstrated that reading aloud at 1 year was associated with reduced harsh parenting at 5 years, and that this was mediated by reduced disruptive behavior at age 3 years. Third, a recent qualitative study of Latino families with young children demonstrated that increased reading was an important source of joy and relaxation.²⁰²

Findings from a recent randomized study of PlayRead-VIP⁴⁶ provided even stronger support for causal relations by showing that shared reading (together with play) resulted in reduced hyperactive behaviors, mediated by enhanced parent coping as indicated by reduced maternal depressive symptoms and parenting stress. Further, a randomized study from Brazil¹³⁴ showed that a group model integrating elements of both ROR and PlayRead-VIP (UBB) had large impacts on self-regulation, which were mediated by overall cognitive stimulation (ie, early literacy activities considered broadly) and interactive

reading; these effects on self-regulation, in turn, mediated effects on child vocabulary, IQ, and early phonological processing.

Taken together, these studies indicate that reading aloud results in reductions in behaviors that can hurt subsequent mental health and educational trajectories and in enhancements in family resilience, including reduced parenting stress, depressive symptoms, and harsh discipline. They suggest that interactive language-rich activities that support literacy development in children during the years before formal instruction, and most notably shared reading, have a positive effect on underlying processes related to self-regulation. Thus, enhancement of these self-regulatory processes represents a key pathway by which reading aloud affects cognitive and phonological processing critical for subsequent school readiness and child reading trajectories.

At the same time, shared reading is also associated with social-emotional health because of the ways in which it enhances children's experience of language and supports their language development.²⁰³ Several studies have shown that parents talk more, use more complex speech and a wider range of vocabulary, and ask more questions during shared reading than in other settings.^{43,44} In addition, shared reading of stories and picture books can lead to talking about characters' emotions and mental states in ways that promote children's social understanding and social competence—that is, a broad range of socially adaptive behaviors, such as empathy, prosociality, and emotion regulation, behaviors that help children to achieve personal goals and build relationships.^{204,205} These associations start early; Roby et al²⁰⁶ showed that parents' tendency to engage their 6-month-old infants in reading activities (along with early pretend play) predicted children's later social competence, including prosocial behavior, empathy, imitation or play, and attention at 24 months.

Parents' use of mental-state and emotion language (eg, *think*, *remember*, *feel*) during book sharing is related to 2.5-year-olds' social competence and perspective taking abilities. Associations between parent-child shared

reading and children's social understanding have been shown concurrently in the infant, toddler, and preschool years.^{207,208} In addition, shared reading during the toddler years predicts children's social-emotional competencies at kindergarten entry.²⁰⁹

Shared reading helps children's language development and enhances vocabulary and concepts specific to motivation and emotion; children who use more references to emotions and mental-states during interactions with their peers are more likely to be accepted and have better cooperative abilities.^{203,210–212} Shared reading, thus, has a broad impact across a range of social-emotional competencies that are critical for children's school readiness, including the promotion of social understanding, social competence, self-regulation, and reduction of problematic behaviors.

Books Influence Racial and Ethnic Socialization and Pride

Readers who are children may also become more engaged in reading material that reflects their lived experience. For example, Hefflin and colleagues asked African American third-grade readers to list the most powerful aspects of African American children's literature.²¹³ They described the ability to identify with characters and events, connecting with their cultural heritage, and passing the stories on. Other scholars have evaluated this literature as a means to transfer cultural values, attitudes, and cultural pride to readers.^{170–172,214,215} In this way, multicultural children's literature supports child racial and ethnic identity and cultural practices. Fontanella-Nothom showed that preschool children can use racially conscious picture books to talk about race in a constructive, age-appropriate way, affirming their own and others' racial identities.²¹⁶ Husband offered 5 critical approaches to using multicultural picture books to teach young children about race, racism, and racial justice in a classroom context.²¹⁷ Developing self-awareness and identity is also important because, as Banks noted in discussing citizenship education, "Self-acceptance is a prerequisite to the acceptance and valuing of others."²¹⁸

It turns out that cultural socialization and the broader process—racial and ethnic socialization (RES)—are important predictors of child socioemotional development, school readiness, and health risk behaviors. Among low-income African American and Latino preschool-aged children followed for 1 year, RES—in particular, cultural socialization—was associated with improved school readiness and behavior. This finding held in the stratified analysis for African Americans but only with respect to receptive language development in Latinos.²¹⁹ Many potential explanations exist, but several scholars have looked for answers in the intersection of RES and biculturalism. Beyond this, high-quality parenting that employs a greater quantity of positive RES messages, such as cultural pride, judicious use

of preparation for bias, and minimal use of promotion of mistrust, appears to be protective of mental and behavioral health. Not only do these messages promote a key mediator influencing health outcomes—racial and ethnic identity—but they also fortify against the detrimental health effects of racism and racial discrimination.

Neurobiological Structures and Functions

Relationships between shared reading exposure and brain structure and function have been demonstrated across early childhood, and even in utero (here, fetal neural response to nursery rhymes).²²⁰ The earliest associations involve core brain regions later integrated into a functional reading network. For example, shared reading at 2 to 3 months of age has been associated with greater activity in the STG (Wernicke's area) and angular gyrus (visual-language association).²²¹ By contrast, less verbal exposure during early childhood, exemplified by shared reading, is associated with lower functional connectivity and diminished cortical surface area involving language (eg, STG) and other brain areas.²²² Parental factors also play a role by influencing the quality of shared reading experiences. Notably, lower maternal reading fluency has been associated with lower connectivity between the VWFA and other literacy-supporting areas in young children, thought to derive from lower interactivity and subsequent accessing of dialog and imagination.²²³

MRI-based studies have established linkages between HLE and structural and functional neural biomarkers in preschool-age children during a dynamic stage of brain development, complementing extensive cognitive and relational evidence. A more stimulating HLE has been associated with higher microstructural integrity of white matter tracts supporting language and other emergent literacy skills (eg, the arcuate fasciculus, which connects receptive and expressive language areas), alongside higher scores on related cognitive measures.²²⁴ In terms of brain function, children with a more stimulating HLE have been found to have stronger activation during a stories-listening functional MRI task in left-sided parietal-temporal-occipital association cortex, which supports semantic processing and imagery.²²⁵ Another functional MRI study involving video observation found that 4-year-olds whose mothers read to them more interactively had greater activation during stories-listening in the left IFG (Broca's area) and anterior temporal areas, supporting expressive language, semantic processing, and working memory.²²⁶ In a related study, children who manifested greater interest and interactivity during shared reading were found to have increased activation in right cerebellar association areas (supporting skill development), which were functionally connected to left-sided cerebral areas involved with language and executive functions, termed a "Storytime Turbocharger."²²⁷ Kindergarten-age children conducting a phonological functional MRI task showed a positive

association between HLE and activation in left IFG, right fusiform (VWFA), and right STG.²²⁸ Together, these data reinforce the importance of a stimulating HLE to promote healthy brain development during this formative stage in early childhood.

Although much remains to be learned, current evidence affirms that the HLE and shared reading have substantial, quantifiable impacts on brain structure and function in children, beginning in early infancy through school-age. This reinforces the potential of early interventions that can have positive effects on this complex neuro-integrative process during a span of maximal neural plasticity.

EFFECTIVE LITERACY PROMOTION: STRATEGIES TO ENHANCE EARLY LITERACY SUPPORT

Starting Early

When ROR was first developed and implemented, its focus was on children 6 months and older, based on developmental considerations such as joint attention and motor skills. Increasing understanding of the importance of early relational health together with increasing experiences by pediatricians exploring early literacy support in their practices earlier in infancy or prenatally ultimately led to an emerging consensus that literacy support is most powerful when it begins as early as possible. Indeed, it has become clear that the magic of interaction in story books emerges from the positive, joyful sounds of the parent's and infant's voice, vocalizations, and eye contact that are central to early relational health and especially important in early infancy.

There is emerging and increasingly strong evidence to support delivery of literacy support early in infancy and even prenatally. A recent trial found that both obstetricians and expectant mothers viewed discussion of shared reading during prenatal visits as useful, and those receiving shared reading guidance read more often in the first month postpartum, especially first-time mothers, those in poverty, and with lower literacy.²²⁹ Prenatal exposure to spoken nursery rhymes has been associated with increased fetal movement and improved newborn sleep,²³⁰ to lullabies with enhanced mother-child bonding and reduced newborn crying and maternal stress,²³¹ and to "motherese" with greater newborn response to maternal voice.²³² Observational studies have demonstrated that knowledge of cognitive and language development and plans related to shared reading beginning as early as birth are related to longer-term reading aloud and cognitive growth fostering.^{233,234} Experimental studies provide additional substantial evidence for the feasibility and impact of literacy support in the first months of life. For example, a recent RCT in Philadelphia studied initiation of ROR beginning at the first well-child visit (less than 1

week of age) and documented enhancements in shared reading through age 6 months.²³⁵ Although that study did not demonstrate longer-term benefits compared with ROR beginning at its prior standard age of 6 months, other studies have shown evidence of such impacts. For example, an RCT of PlayReadVIP (see below), an enhancement to ROR that initiated support for early literacy and early relational health beginning in the first month life, documented sustained impacts on shared reading and across multiple domains of development through the toddler and preschool periods.^{236,237} Further evidence in support of early initiation of shared reading comes from an RCT of the UBB group model in Brazil that was, in part, adapted from ROR (see above), which increased shared reading, with direct effects on child vocabulary for the highest-risk families and mediated effects on child development broadly across the sample.¹³⁷ This same study documented positive effects in a subgroup of expectant mothers for whom the intervention was delivered prenatally.¹³⁷

A number of recent studies in the United States and globally have also demonstrated both feasibility and impacts on reading aloud and language development for families with preterm infants receiving literacy support beginning in the NICU. These studies have been initiated based on a strong theoretical framework²³⁸ and strong evidence of feasibility.²³⁹ For example, a study comparing families with preterm infants before and after implementation of a reading aloud program adapted from ROR in Cincinnati demonstrated increased reading aloud during the NICU stay, with sustained effects for caregivers who had not been engaged in reading.²⁴⁰ In Toronto, twice as many parents exposed to the parent reading program in the NICU reported reading 3 or more times a week to their infants, compared with a historical control group.²⁴¹ A study in Italy demonstrated enhancement in language development for families of preterm infants receiving early literacy support in the NICU compared with families before program initiation.²⁴²

Enhancing Shared Reading Quality: Dialogic Reading

Dialogic reading is an approach originally developed for preschool-aged children to enhance verbal and social-emotional interaction between a parent or caregiver and child.^{3,243} It involves specific types of verbal prompts and responses, represented by the acronym PEER/CROWD (Table 1)³ and has been tested using various book types, including wordless books.²⁴⁴ Cited benefits include improved language,^{3,190} phonological awareness,¹⁹⁰ comprehension,¹⁹¹ oral narrative construction,²⁴⁵ attention,¹⁹³ social-emotional skills (eg, empathy),²⁴⁶ and relational factors, such as caregiver-child bonding^{135,192} and interest in reading and enjoyment.^{247,248} These accrue in a dose-dependent fashion and are greatest at younger ages and for those at risk for reading difficulties,

including medical complexity, recent immigrant status, family history of reading difficulties, and impoverished home environments.^{191,249–251} Neurobiological differences have been identified in preschool-age children whose mothers read more interactively with them, applying dialogic reading criteria.^{226,227} Dialogic reading is advocated by the AAP,¹ ROR,⁸ Head Start,²⁵² public libraries,²⁵³ and other organizations. Training families in dialogic reading can be effective in home, child care, community, and preschool settings over several weeks^{244,254–257} and can occur in small groups, video-based, and/or online modules.^{255,258–262}

A structured approach to shared reading with infants and preverbal toddlers has recently been proposed (acronym SHARE/STEP; Table 2).¹⁹⁸ Its conceptual framework involves evidence-based themes known to confer cognitive, relational, and neurobiological benefits: affection and nurturing,^{201,263,264} multisensorial exploration,^{265–267} responsiveness^{1,195,268,269} and joint attention,^{197,270} “serve-and-return” vocalization²⁷¹ and child-directed speech,^{272–276} and building parent-child interest in a fun and flexible way.^{194,277,278} The rationale for a structured approach is to help frame expectations as to what is developmentally normal during “shared” reading at this age and to empower parents who might otherwise feel anxious or discouraged to develop their own reading routines.

Encouraging Books Rather Than Screens

Digital media and screen time have been and continue to be challenging topics to address in primary care. Young children increasingly have access to multiple screens, including portable devices,²⁷⁹ and too much exposure to screens (even when the content is meant to be “educational”) can replace important positive interactions and routines, including shared reading activities, with possible negative effects on subsequent emergent literacy and social-emotional development.^{279–286} Furthermore, families have increasing access to e-books and reading apps, many with “enhanced” animated features; these are often marketed as more “convenient” than print books, and often with an implication that the technology is an improvement over the static nature of the printed page. However, compared with print books, e-books for young children have been associated with lower comprehension and attention to narrative and less shared parent-child enjoyment and engagement.^{283–285,287} At the same time, there is at least some evidence that increased positive parenting activities, including reading aloud, may be associated with reductions in screen time.²⁸⁸

Digital media—which may include e-books, along with much more—can also bring added risks in terms of the ability for the content creators to market to children, particularly when such media is “free.” This marketing can be distracting, insidious in nature, and developmentally

exploitative.²⁸⁹ Additionally, a key pathophysiological mechanism is straightforward displacement—digital media can displace reading activities, whether shared or otherwise, which reduces benefit from reading activities without replacing them with other beneficial activities.²⁸⁶

Neuroimaging studies support these studies of behavior and function by demonstrating negative associations between digital media use and children’s brain development. Higher digital media use has been associated with lower integrity of white matter tracts supporting emergent literacy skills, and also lower scores on related cognitive measures in preschool-aged children.²⁹⁰ By contrast, higher white matter integrity and emergent skills have been associated with a more nurturing HLE.²²⁴ Greater digital media use has also been associated with lower cortical thickness and sulcal depth in brain areas involved with higher-order visual processing, visual-language association, and social cognition in preschool-aged children.²⁹¹ Furthermore, recent, converging evidence shows adverse differences in processing when children are exposed to stories through digital platforms.²⁹²

To achieve understanding and learning, both story listening and reading require recruitment and cooperation of specialized brain networks. During early childhood, stories can be presented in various formats, including audiobooks, physical picture books, e-books, and animated videos. A series of MRI studies by Hutton et al have described differences in engagement (functional connectivity) of brain networks supporting language, visual processing (pictures, imagery), attention, and learning during these different formats in preschool-aged children.^{292,293} Functional connectivity was most balanced between these networks when processing an illustrated story relative to audio or animation, controlling for author, length, and story type, which has been described as a “Goldilocks effect.”^{292,293} Here, in contrast to “just right” illustration, the animated form seemed “too hot,” with hyperengagement of primary visual areas (watching) and less attention to imagery and language processing, attributed to constrained working memory capacity. By contrast, audio was “too cold,” with lower engagement of visual areas and signs of strain in language areas, interpreted as greater difficulty imagining what was happening in the story. The proposed mechanism for “just right” illustrated format was age-appropriate scaffolding by pictures synergistic with internally derived imagery, together aiding comprehension via language and cerebellar networks.²⁹² These are important considerations in terms of the integration and maturation of an efficient, functional reading network, which is rooted in and shaped by exposure to stories read aloud. Together, these studies suggest a neurobiological correlate of behavioral evidence regarding the relative difficulty for young children to learn from digital platforms with “interactive,” often animated features. Potential

mechanisms include limited working memory and other executive (eg, task-shifting) capacities at this age, constraining the ability to attend to complex audio-visual stimuli. These considerations are especially relevant given the rise of interactive mobile apps and short-format videos such as YouTube, marketed for reading and learning at this age.

Screening for the Presence of Reading-Related Skills and Risks

For younger children, children with medically complex conditions, and those from impoverished backgrounds, primary care-based interventions that enhance the HLE, encourage shared reading, and empower parents to read more enjoyably and interactively can improve foundational emergent literacy skills (notably vocabulary, syntax, concepts of print).^{294,295} However, reading difficulties can stem from difficulties in one or more of these skills. It is, thus, vital to understand and be realistic in the degree to which HLE-based interventions are likely to be effective alone or as an adjunct to more specialized therapies. Skills tightly linked to a child's environment (eg, vocabulary, concepts of print) are most amenable to HLE-based interventions, whereas those with a major genetic or neurodevelopmental basis generally require referral.^{296,297} Deficits in phonological awareness and executive function are notable in that they are most often implicated in dyslexia, which can manifest irrespective of a child's HLE.¹⁸³ Clinicians who screen and document family history of reading difficulties and/or complex or chronic medical conditions conveying neurobehavioral risks, such as prematurity, hearing loss, congenital heart disease, or epilepsy, thus can ensure timely referral in the event that deficits manifest, at the same time offering HLE-focused guidance.¹⁴ Correspondence with teachers and results from reading-related referrals and therapies should also be documented in the medical record to ensure adequate support. The overarching goal is for pediatric physicians and advanced care providers to align their efforts with educators and families to identify risks and provide guidance in a timely, targeted fashion, refer for interventions promptly, and track the child's progress as reading skills develop.¹⁶

The AAP highlights the role of pediatric physicians and advanced care providers to promote early literacy,¹ evaluate school readiness,²⁹⁸ and conduct developmental surveillance during well-visits.²⁹⁹ Emergent literacy is an aspect of child development that is vital for school readiness, encompassing language and literacy skills, approaches to learning, and general knowledge (eg, of the alphabet) and offers an opportunity to support and empower parents as teachers.²⁹⁸ Further, the National Center for Learning Disabilities has cited pediatricians and other health care clinicians as key resources to recognize early signs of reading difficulties through effective

screening and interactions with families during clinic visits.³⁰⁰ Adopting a consistent approach to literacy screening during primary care, ideally in the preschool years before kindergarten entry, provides opportunities to tailor guidance to the child's abilities and family circumstances, to link families with services in their community, and for clinicians to monitor the child's progress.

Commonly used primary care developmental assessments, such as the Ages & Stages Questionnaire, Survey of Wellbeing for Young Children, and PEDS, do not assess emergent literacy, nor have these been shown to predict reading readiness or outcomes. A brief 5-question parent survey of emergent literacy, the Early Literacy Screener, has been developed for use in primary care and has shown evidence of reliability and validity in children 4 to 5 years of age.^{301,302} In addition, recent work has demonstrated the utility of a direct, child-centered, interactive approach to screening during pediatric primary care, using a specially designed children's book (*The Reading House*³⁰³) during pediatric well-visits for 3- and 4-year-old children, with administration time of approximately 5 minutes and high correlation with standard measures of language, processing speed, and emergent literacy skills.³⁰⁴ In a follow-up study, higher scores on *The Reading House* screen for children in this age range were associated with thicker cortex in brain areas in the left hemisphere known to support emergent literacy and reading, including the nascent VWFA.⁵⁵ Although such an approach has been shown to be feasible, implementation for children before kindergarten entry will result in a need for referral services when children have concerning results, and the availability of such services is variable. Possible referral services include high quality early childhood education programs including Head Start, potential preschool special education evaluation, speech and language assessment, and developmental behavioral pediatric assessment.

In addition to children at socioeconomic risk, there is opportunity—and need—to integrate prevention of reading difficulties into care plans of children at medical risk.¹⁴ These should use validated screening tools to detect deficits in emergent literacy skills and inform guidance and interventions as early and consistently as possible. As with primary care, literacy promotion should be integrated into pediatric subspecialty clinics and inpatient settings where these families receive care, especially given the reduced access to the medical home sometimes encountered by children with special health care needs.³⁰⁵ As described above, there has been significant recent progress with modified ROR programs adopted in NICUs,^{239,240} thus, taking advantage of the medical setting to reach a cohort of children at increased medical and developmental risk, and to establish early support for a cohort of parents who face highly stressful circumstances.

EXPANDING AND ENHANCING CLINIC-BASED LITERACY PROMOTION

Benefits to Clinics and Clinicians

In addition to the benefits for children, scaling of literacy promotion programs within pediatric primary care has also drawn on pediatricians' sense that this intervention is practical, useful, and a source of joy and satisfaction to the pediatric clinician and the clinic. The AAP recommends that training on early literacy promotion and fostering early relationships through language and literacy development be incorporated into pediatric residency training programs. Not much was known about the training of pediatric residents in early literacy until recently. The Reach Out and Read Research Network (LitNet), in partnership with the Academic Pediatric Association's Continuity Research Network, conducted a national survey with 42 institutions within Continuity Research Network, representing over 120 ROR sites across the country. Only 4.3% of residents surveyed had not had any training in ROR. The methods by which residents were trained in ROR training varied a great deal. The vast majority (92.2%) had learned in clinic from other residents or faculty. A majority had also had formal training in continuity clinic and/or formal in-person training. Residents also received training through grand rounds, the online ROR training, and conferences.³⁰⁶ In addition, a study of 9 residency program directors showed residency programs rely on ROR and the resident continuity clinic for literacy promotion training. Key barriers listed in their interviews were service obligations, content not tested on boards, time demands on faculty, and resident indifference because of lack of interest in primary care.³⁰⁷

Early literacy promotion programs in pediatric primary care have been implemented and have persisted because of commitment to patients and a sense of mission on the part of clinics and clinicians rather than for financial or regulatory reasons. Their persistence is likely attributable to a perception of significant benefit to families, to the clinic, or both.

Research has looked at different aspects of how ROR may affect the relationship families have with the medical home and how the program may affect the clinical setting. In a multiclinic look at the effects of ROR attendance at health supervision visits, participating families showed increased compliance with visits, especially among Latino families and less-educated families.³⁰⁸ In another study, implementation of the program improved clinic morale and clinician satisfaction, as well as relationships with families,³⁰⁹ and a qualitative analysis of clinician experiences in research network resident training practices indicated that clinicians felt the program was positive not only for patients and families but also for the primary care clinicians. Indeed, early literacy promotion programs have been shown

to enhance clinic collaboration with community resources, such as public libraries.^{145,310}

Additionally, there is a known anecdotal element of early literacy promotion programs contributing to "joy of practice," which has been briefly studied.³⁰⁹⁻³¹¹ These studies showed pediatric physicians and advanced care providers reported positive impact on their patients, families, and their own satisfaction and approach to practice. Given the crisis in medical workforce related to burnout and moral injury—that is, the sense that many clinicians find themselves in situations in which they are unable to act in accordance to their most deeply held ethical beliefs—these elements of early literacy programs have benefits that accrue beyond the identified patient and family and can help reinforce the motives and ideals that drew many to pediatric work in the first place.

Enhancements to the ROR Model of Literacy Promotion

Although the ROR model provides the single greatest opportunity for early literacy promotion as a low-cost, scalable universal primary prevention with proven effectiveness, recent work has demonstrated opportunities for enhancing impacts for specific populations and layering on additional primary prevention strategies (Table 3).

A number of enhancements have been developed to optimize ROR across diverse populations and, in some cases, expand the scope of the program more generally. *Leyendo Juntos* is an adaptation that provides "topic ideas and common phrases to enhance interactions with Spanish-speaking patients and parents around books and reading aloud."³¹² CPR4ESR seeks to use early literacy support to enhance cultural pride, thereby enhancing parent and child engagement in reading aloud together with child school readiness. ROR³¹³ has also developed strategies for children with developmental disabilities and autism spectrum disorder with adapted guidance regarding reading aloud and available resources for families. Furthermore, ROR has engaged in initiatives to expand the scope of early literacy support in health care, including Reach Out and Read Counts, which seeks to use children's books to support parent use of math talk and child learning of early math concepts.

At the same time, there have also been a number of efforts to layer additional primary prevention strategies on top of ROR to further enhance impact. The most studied and implemented strategy is PlayReadVIP. This strengths-based, relationship-based, family-centered intervention provides support for positive parenting from birth to 3 years (with an extension through 5 years) through the addition of a child parenting coach. The core strategy of PlayReadVIP involves a brief video recording of the parent interacting with the child using a toy and/or book provided by the program; the video is reviewed together by the parent and the coach. In 3 RCTs, PlayReadVIP has shown beneficial and

TABLE 3 Primary Care Enhancements to Early Literacy Promotion (Opportunities for Building on the Standard Reach Out and Read Model)

Program	Description	References
Cultural Pride Reinforcement for Early School Readiness (CPR4ESR)	Integrates support for cultural pride within ROR, thereby enhancing parent and child engagement in reading aloud together with child school readiness	https://clinicaltrials.gov/ct2/show/NCT05140460
Finger Puppet intervention	Provision of finger puppets to enhance verbal interactions during early infancy well-child visits	Domek GJ, Szafran LH, Bonnell LN, Berman S, Camp BW. Using finger puppets in the primary care setting to support caregivers talking with their infants: a feasibility pilot study. <i>Clin Pediatr (Phila)</i> . 2020;59(4-5):380–387
Mount Sinai Parenting Center	Curricula and resources for clinicians and parents	https://parenting.mountsinai.org/
Reach Out and Read–Early Math Counts	Adaptation of ROR to support early numeracy or math capacities through math talk and within shared book reading	https://reachoutandread.org/what-we-do/initiatives/
Reach Out and Read–Leyendo Juntos	Adaptation of ROR for families speaking Spanish as their primary language	https://www.myror.org/library/resources/leyendo-juntos
Reach Out and Read–Developmental Disabilities	Adaptation of ROR for children with developmental disabilities, including guidance and resources	https://reachoutandread.org/what-we-do/initiatives/
Reach Out and Read–text messaging	Addition of text messaging to further enhance ROR impacts	Jimenez ME, Crabtree BF, Hudson SV, et al. Enhancing Reach Out and Read with a video and text messages: a randomized trial in a low-income predominantly Latino sample. <i>Acad Pediatr</i> . 2021;21(6):968–976
Reading Bees	Free app providing evidence-based tips, educational videos, and links to community-based resources and services.	https://clinicaltrials.gov/study/NCT05508282?tab=history&a=2
Ready4K	Text messaging providing tips regarding development, learning, and related activities, from birth through eighth grade	https://ready4k.com/core/
Sit Down and Play	Provision of developmentally appropriate toys, guidance, and feedback during well-child visits	Shah R, DeFrino D, Kim Y, et al. Sit Down and Play: a preventive primary care-based program to enhance parenting practices. <i>J Child Fam Stud</i> . 2017;26(2):540–547
Talk With Me Baby	Health care-based support for verbal interactions, including through reading aloud	https://www.kumc.edu/school-of-medicine/academics/departments/pediatrics/research/baby-lab/talk-with-me-baby.html https://twmb.ce.emorynursingexperience.com/courses/talk-with-me-baby-id
Text4Baby	App providing text messages and interactive features related to early child development and growth, for pregnancy to 1 year	https://www.acf.hhs.gov/text4baby
Thirty Million Words	Educational videos provided at well-child visits	https://tmwcenter.uchicago.edu/about
PlayReadVIP (formerly Video Interaction Project)	Real-time video recording and review of parents reading and playing with their children, together with provision of developmentally appropriate toys, additional books, and planning for home	https://www.playreadvip.org/
Vroom	App and text messaging providing tips about child development	https://www.vroom.org/

sustained impacts across multiple domains (many sustained through school entry) related to early relational health, including enhanced positive parenting (reading, teaching, and verbal responsiveness), enhanced coping with stresses of parenting (reduced parenting stress, reduced depressive symptoms), and reduced negative parenting (reduced physical punishment and screen time). PlayReadVIP has been shown to have beneficial impacts across domains of development, including cognition and language and social-emotional

development, with reduced hyperactivity and enhanced attention and early literacy.^{46,135,136,236,237,314–322}

A number of other strategies have also shown promise related to feasibility and efficacy. One example is ROR + text messaging,³²³ for which a pilot randomized controlled trial of low income, Spanish-speaking families suggested the possibility of added impacts. A recent clinical trial based in pediatric primary care in Hartford, Connecticut found high acceptance and significant benefits

for families provided with a free mobile app featuring tips and videos encouraging shared reading at their child's 6- or 18-month visit (ROR plus the app) compared with usual ROR practice. These included more frequent reported reading at the 12-month visits and higher language scores at the 24-month visits, although barriers and opportunities for improvement to app functionality and content were identified.³²⁴ These findings have informed the development of a free mobile app (*Reading Bees*) that is being tested as a complement to usual ROR guidance in longitudinal studies involving families from disadvantaged backgrounds based in Cincinnati, Florida, Texas, and West Virginia. Additional enhancements are shown in Table 3.

Ideally, primary prevention enhancements to ROR would be offered universally to families to promote equity and avoid stigma. This approach has been used in some of the recent implementations of PlayReadVIP. However, given the need to support ROR in the context of limited resources, sites wishing to integrate enhancements to ROR may only have the resources to target higher-need families—for example, those with parent mental health needs or other psychosocial stressors.

The recent revised AAP policy statement on relational health⁴¹ provides a strong framework for integrating diverse strategies, with early literacy promotion through the ROR model as the central universal approach at the base of a pyramid representing tiers of public health approach, with consideration of layering additional primary prevention where feasible and adding more intensive secondary and tertiary prevention for those at higher risk to achieve maximal population-level benefit. These elements are, of course, not unique to early literacy promotion but share a common approach and mindset in which support for PCEs can mitigate adverse effects of ACEs and social drivers of health but is also essential in the absence of ACEs.^{105,106}

Integration With Other Sectors and Platforms

Early literacy promotion in primary care with the ROR model has a strong evidence base and has been implemented in many clinical settings, but to create a climate that truly supports families around early literacy and positive parenting will require partnerships and integrations within pediatrics and across sectors³²⁵ and platforms. Recognizing this need, pediatricians have championed innovative partnerships that incorporate early literacy promotion through cross-sector investments involving the pediatric medical home. Over the last several years, there have been a number of such initiatives (Table 4). A study of Cincinnati Children's Hospital's integration of ROR with Dolly Parton's Imagination Library³²⁶ demonstrated improvements in performance on kindergarten readiness assessment at kindergarten entry. In a pilot study of the New York City Council City's First

Readers initiative, Canfield demonstrated that linking ROR to libraries further enhanced impacts on shared reading beyond ROR alone.¹⁴⁵

There are multiple initiatives in which pediatricians and ROR sites across the country are partnering with libraries. On a state level, in Delaware in 2019, libraries and pediatricians came together to work toward ensuring all children and their families had access to children's books, including expanding the number of primary care clinics with ROR. The Illinois ROR Coalition, in partnership with the Chicago Public Library, is developing ROR at the Library, a unique initiative focusing on creating this type of personal connection between local librarians and ROR coordinators throughout the city of Chicago.

Other initiatives have sought to provide additional services and supports to families at higher risk and children experiencing problems and delays through integration and linkage of health care-based primary prevention with tiered secondary or tertiary prevention, either in health care or other platforms. Some of these models integrate health care-based strategies for addressing social drivers of health together with community outreach. One example is NYC Health + Hospitals 3-2-1, IMPACT, which integrates primary prevention (ROR, PlayReadVIP) and universal screening with secondary or tertiary (HealthySteps) prevention, with additional linkages to community-based services through community health workers and prenatal and maternal mental health services.³²⁷ Other models have sought to integrate or partner health care with home visiting. Ready for School Ready for Life³²⁸ supports primary (ROR) and secondary or tertiary (HealthySteps) prevention in health care with home visiting (Nurse Family Partnership, Family Connects, and Parents as Teachers). Smart Beginnings is a tiered model integrating PlayReadVIP in ROR settings to support primary prevention,¹²⁵ with Family Check Up delivered through a home visiting model for families with preexisting or emergent challenges and is presently being implemented across Pittsburgh through The Pittsburgh Study. Notably, the Smart Beginnings model has been shown to have impacts across populations that are diverse both for race and ethnicity and for geography, including for indicators of reading aloud.³²¹

ADVOCACY, FUNDING, AND STRUCTURE

Federal Funding

The AAP recommends policy makers support early literacy promotion as a key component of pediatric primary care by funding program support, children's books, and pediatric physicians and advanced care providers' time.¹ A recent national qualitative study cited insufficient funding as a major barrier to ROR,³¹⁰ and indeed, funding can be one of the major challenges to implementing and maintaining the program in a practice.^{309,329} A mix of

TABLE 4 Integrations and Partnerships Within Primary Care Early and Linking Primary Care to Other Sectors and Platforms

Program	Components	Level of Prevention			Platform	Linkage or Partnership Between Primary Care + Community ^a	References
		Primary	Secondary or Tertiary	Integration, with Major Focus on Primary Care			
Birth through Eight Strategy for Tulsa (BEST)	ROR + Healthy Steps + numerous other partners	X	X		X	https://www.gkff.org/what-we-do/birth-eight-strategy-tulsa/	
Bridging the Wordgap Research Network	HRSA/MCHB initiative with multiple partner programs	X			X	https://bwg.ku.edu/	
Cincinnati Children's ROR / Dolly Parton's Imagination Library integrated model	ROR + Dolly Parton's Imagination Library (DPIL)	X			X	Szumilas GA, Petronio P, Mitchell MJ, Johnson AJ, Henry TR, DeWitt TG. A combined Reach Out and Read and Imagination Library Program on kindergarten readiness. <i>Pediatrics</i> . 2021;147(6):e2020027581	
City's First Readers (New York City)	ROR + PlayReadVIP + 13 other partners	X			X	https://citysfirstreaders.com/about/	
Get Ready Guilford (North Carolina)	ROR + Healthy Steps + home visiting	X	X		X	https://www.getreadyguilford.org/	
HealthySteps	Primary care universal screening implementation with broad parenting support including early learning	X	X	X		https://www.healthysteps.org/	
Help Me Grow Alabama	ROR + Help Me Grow	X	X		X	https://helpmegrowalabama.org/reach-out-and-read/	
Michigan State University-Hurley Children's Hospital Pediatric Public Health (PPH); Flint, MI)	ROR + PlayReadVIP + Born to Read + DPIL + enhanced early intervention	x	X		X	https://msuhurleypphi.org/	
New York City Health + Hospitals 3-2-1, IMPACT (NYC)	ROR + PlayReadVIP + Healthy Steps + community health workers	X	X		X	https://www.nyhealthandhospitals.org/pressrelease/system-launches-3-2-1-impact-program-provides-early-intervention-services-to-families/	
New York State First 1000 Days on Medicaid	ROR + HealthySteps+ multiple community initiatives	X	X		X	https://uhfnyc.org/our-work/initiatives/childrens-health/first-1000-days-medicaid/	
Oklahoma Health Care Authority- Health Service Initiative (HSI) through Centers for Medicare & Medicaid Services (CMS)	ROR + Developmental screening	X		X		Dunlap M, Lake L, Patterson S, Perdue B, Caldwell A. Reach Out and Read and developmental screening: using federal dollars through a health services initiative. <i>J Investig Med</i> . 2021;Jan 13;im-2020-001629	
North Carolina Department of Health and Human Service- HSI through CMS	ROR + Expansion to birth + quality improvement + research	X		X		https://www.ncdhhs.gov/news/press-releases/2020/12/23/ncdhhs-expand-reach-out-and-read-all-north-carolina-counties-through-new-medicaid-initiative ; https://ccf.georgetown.edu/2021/02/18/once-upon-a-time-in-north-carolina-chip-	

TABLE 4 Continued

Program	Components	Level of Prevention			Platform	Linkage or Partnership Between Primary Care + Community ^a	References
		Primary	Secondary or Tertiary	Integration, with Major Focus on Primary Care			
Providence Talks (Rhode Island)	Home visiting + LENA					X	health-services-initiative-funds-early-literacy-pro-motion-as-part-of-well-child-care/ https://providencetalks.org/
Read Charlotte (North Carolina)	ROR + Ready4K, Home Reading Helper, Reading Checkup, Going to K	X				X	https://www.readcharlotte.org/
The Pittsburgh Study / Smart Beginnings (Pennsylvania)	Text4Baby, NurturePA, ROR, PlayReadVIP, Family Check Up, Healthy Families America	X	X			X	https://thepittsburghstudy.org/ ; Shaw DS, Mendelsohn AL, Morris PA. Integrating health care strategies to prevent poverty-related disparities in development and growth: addressing core outcomes of early childhood. <i>Clin Child Fam Psychol Rev</i> . 2021;24(4):669 – 683; https://steinhardt.nyu.edu/ihdsc/projects/smart
Together Growing Strong (New York City)	ROR + PlayReadVIP + Healthy Steps + ROSE + community health workers + ParentCorps + Vroom + ParentChild +	X	X			X	https://med.nyu.edu/departments-institutes/population-health/divisions-sections-centers/health-behavior/together-growing-strong
Too Small to Fail / Talk Read Sing / First 5 California	Multiple partners in health care and the community, including ROR	X				X	http://toosmall.org/ ; https://www.ccfcc.ca.gov/
You Go Girl Omaha (Nebraska)	ROR + You Go Girl + Nebraska Partnership for Mental Healthcare Access in Pediatrics	X	X			X	https://www.youogirlomaha.com/

^a Examples of linkages and partnerships (nonexhaustive): community agencies, community centers, Women, Infants, and Children centers, home visiting, libraries, social service agencies, mental health agencies.

public and private investment is vital to ensure the sustainability and expansion of early literacy promotion in primary care. Public investment can be provided as municipal, county, state, or federal funding. Currently, 16 states have some type of public funding for ROR, and we will highlight some case studies to show successful strategies because federal funding offers all states the opportunity to leverage literacy support for their children.

Oklahoma, Alabama, Colorado, and North Carolina have succeeded in leveraging federal funding using a Health Service Initiative (HSI). The State Children's Health Insurance Program (CHIP) allows states to use up to 10% of CHIP funding to implement HSIs focused on improving the health of eligible children (§2105(a)(1)(D)(ii) of the Social Security Act).³³⁰ States implementing HSIs have flexibility to determine the type and scope of HSIs. Under the CHIP HSI option, states receive the federal CHIP matching rate for expenditures associated with HSIs.³³¹ To implement an HSI, states must submit a state plan amendment outlining the proposed initiative to the Centers for Medicare and Medicaid Services (CMS) for approval.³³² An HSI must be intended to directly improve the health of children in low-income households and to serve children who are eligible for but not enrolled in Medicaid or CHIP. Although focused on improving the health of children in low-income households, the initiatives may serve children regardless of income and are not bound by the same state-wide requirements that govern regular CHIP benefits.^{332,333} To receive funding, states must show the need for the HSI, identify the source of state funding, explain how the proposal will target improving the health of low-income children, estimate the number of low-income children who will be served, identify the timeframe for the project, and meet the defined program design criteria.³³⁴

In Oklahoma, the Oklahoma Health Care Authority (the state's Medicaid agency), the University of Oklahoma, and Reach Out and Read Oklahoma partnered to implement the HSI. Oklahoma's HSI paired Reach Out and Read and developmental screening.³³⁵ The federal funding supported expansion of ROR, training of clinicians in the ROR model, technical support for clinics, and developmental screening tools and training for clinicians. Oklahoma's state plan is located in Box 1. A review of Medicaid billing data by the Oklahoma Health Care Authority showed that clinics that offer ROR to their patients have a higher rate of developmental screening and a better adherence to well-child visits than non-ROR clinics,³³⁶ and a second HSI has been approved as of 2024.

In North Carolina, through a 3+ year, approximately \$3.1 million HSI project, NC SPA 20-0014 (2021–2023), administered in partnership with NC Department of Health and Human Services, Reach Out and Read in North Carolina expanded and improved the delivery of the intervention, emphasizing that it promotes healthy relationships, bonding,

BOX 1. OKLAHOMA STATE PLAN³³⁵

Health Service Initiative Request #9

The 2016 SoonerCare Program Quality of Care report indicated that in 2015 only 56.7% of children ages 3 to 6 years in the SoonerCare Program received well-child visits as compared with the national average of 71.3% and that only 15.7% received a developmental screening during their first 3 years of life. The Oklahoma Health Care Authority seeks to improve these rates by working in collaboration with the University of Oklahoma College of Medicine, Department of Pediatrics, to train pediatric and primary care practices to implement the ROR early literacy program and use standardized developmental screening tools during health visits with young children. Federal Early and Periodic Screening Diagnosis and Treatment policy and the ROR mission overlap in that they share common goals of ensuring timely and quality developmental surveillance by primary care providers in an effort to identify needed interventions or supports to improve health outcomes. The implementation of ROR into health care practices will improve both the quality of the child's preventive health visit and developmental screening processes. Providers will receive standardized developmental screening tools and training to incorporate them into practice. The total estimated budget for FFY19 is \$101,400; the federal share is \$98,024 and the state share is \$3377. The budget has been updated accordingly in Section 9.10 of the Plan.

brain development, and early literacy.³³⁷ This HSI project expanded the number of clinics, children, and families reached; started ROR at birth; trained more pediatric physicians and advanced care providers; and supported clinics in meeting the highest quality standards by providing ongoing training and technical assistance.

Colorado has been approved for an HSI for fiscal year 2025 for program expansion, clinician training and resources, books, and materials for creation of literacy-rich medical sites.

Alabama was granted an HSI in 2021 (with an extension through 2025) through a match with the Alabama Department of Early Childhood Education, Alabama Medicaid Agency, and the Alabama Department of Public Health.³³⁸ Their initiative focused on providing funding for ROR infrastructure, clinician training, and incentives for training and reporting, travel, and books and program materials. Please see Box 2 for the state plan amendment.

Another opportunity for federal funding is the Title V Maternal and Child Health Services Block Grant Program, one of the largest federal block grant programs, which funds 59 states and jurisdictions to provide health care and public health services for promoting and improving the health and well-being of mothers, children, including children with special needs, and their families. States and jurisdictions must match every \$4 of federal Title V money that they receive with at least \$3 of state and/or local money (ie, nonfederal dollars). Federal law requires that at least 30% of Title V Block Grant dollars allocated to states are to be used for preventive and primary care services for children (Section 505 [42 USC 705] (3)(A)).³³⁴ States can set priorities on improving access to the medical

BOX 2. ALABAMA STATE PLAN³³⁸

ROR Initiative: As permitted under section 2105(a)(1)(D)(ii) of the Social Security Act and federal regulations at 42 CFR 457.10, the State of Alabama is implementing a HSI that will use CHIP funds, within the federal administrative expenditures cap allowed for states, to continue to deliver Reach Out and Read, an AAP-endorsed, evidence-based model to promote early literacy, early learning, and school readiness as part of routine pediatric primary care visits for children, birth to 5 years, in 5 Alabama counties (Jefferson, Macon, Marshall, Monroe, and Randolph). Funding for this initiative is to bolster ROR efforts in the 5 counties for the existing ROR program to increase grade level reading. This HSI will assist in transforming the standard of pediatric care for young children in Alabama to sharpen the focus on activities that support social and emotional development. The criteria used to determine eligibility for the services is the age of the child and the type of visit. The child must be seen for a well-child visit to receive the service.

Funds under this HSI will not supplant or match CHIP federal funds with other federal funds, nor allow other federal funds to supplant or match CHIP federal funds. Metrics used to measure the impact of the state's HSI program on the health of low-income children will be included in the state's CHIP Annual Report.

Cost: The cost of the HSI is budgeted to be \$500 000 and limited to 2 years (\$250 000 for FY 2023 and \$250 000 for FY2024). The budget timeline for the ROR HSI begins June 1, 2023, and will end May 31, 2025.

Find information on Reach Out and Read and the evidence supporting its effectiveness at <https://reachoutandread.org/why-we-matter/>

home, well-child visits, and promoting the social-emotional development of young children. Oklahoma has been able to access Title V funding for literacy promotion through a contract between the Oklahoma State Health Department and Reach Out and Read Oklahoma; funds are being provided for books, training, and programmatic support for county health department clinics across the state.

State and County Level Public Funding

Eight states were providing state level public funding for early literacy promotion through ROR. In Washington state, since 2010, ROR has received continuous funding support from the Washington state general fund. Funding has been provided through the Washington State Department of Children, Youth and Families (formerly Department of Early Learning). Reach Out and Read Washington was founded in 2007 at the time that multiple coalitions of public and private organizations were working to build an improved early learning system for Washington state. Reach Out and Read Washington has worked to be an aligned and embedded strategy in the state's early learning system. Public funding supports a portion of ROR Washington's annual operating costs to provide services to ROR programs to facilitate their participation and ensure program model fidelity. Wisconsin has a designated line item in the 2023 to 2025 biennial state budget specifically appropriating funds for Reach Out

and Read Wisconsin, administered by the Wisconsin Department of Health Services.

Other localities have been able to draw on county funding. In Kent County, Michigan, voters overwhelmingly approved a Ready by Five Early Childhood Proposal in November 2018, to be the first county in Michigan with tax dollars collected specifically to support early childhood programming. The millage is funded by a 0.25 mill (a mill is \$1 in tax for every \$1000 in taxable value) property tax increase. The Ready by Five Early Childhood Millage provides funding for programs that improve the health, school readiness, and well-being of children younger than 5 years through a request for proposal process. The millage is expected to generate approximately \$5.7 million per year over 6 years, for a total of \$34.2 million. The funds help pay for early childhood priorities, including supporting families through home visiting, fostering healthy child development, facilitating play and learn groups, and addressing environmental hazards in the home. Ready for School, the Reach Out and Read Michigan affiliate, has received funding through this process.³³⁹

ROR is known as a pediatric primary care best practice and can be considered a mark of quality care. To the extent that the ROR is associated with high-performing primary care practices,³²⁹ the model can help improve performance on Medicaid and CHIP Child Core Set Quality Measures, such as well-child visits in the first 30 months of life, childhood immunization status, and developmental screening in the first 3 years of life. (Beginning in 2024, state Medicaid agencies will be required to report to CMS, the federal agency responsible for overseeing Medicaid and CHIP, on all Child Core Set Quality Measures and all Adult Core Set Behavioral Health Quality Measures. Since 2009, data collection and reporting on quality measures has been optional.) State Medicaid agencies can encourage implementation of ROR as a "quality facilitator" by boosting Medicaid or CHIP payments to cover the per child costs of ROR when managed care organizations (MCOs) leverage this evidence-backed model as part of a performance improvement project.³⁴⁰

Medicaid policies and MCO contracting strategies can prompt managed care plans to invest in the communities where they deliver care, and such policies can help set ROR on a path to sustainable support. For example, federal Medicaid regulations require MCOs to spend at least 85% of their total revenue from capitation payments (per member per month payments) on activities to improve health outcomes and quality.³⁴¹ Some states allow or require MCOs to count expenditures on strategies that address social drivers of health—such as ROR, a bridge to early learning opportunities—toward the required 85%, a winning opportunity for young children, caregivers, MCOs, and taxpayers alike.

Policy Organizations and Health Care Redesign

A number of health policy organizations are engaged in initiatives to support health care redesign as a mechanism for enhancing early relational health and early child development. The Pediatrics Supporting Parents funding group supported the Center for the Study of Social Policy to explore ways pediatric primary care can unite doctor and family to collectively support a child's healthy social and emotional development. Early relational health and positive parenting activities are prominent across a group of exemplar programs cited by Pediatrics Supporting Parents, including ROR and PlayReadVIP, as well as many other programs that focus on parenting broadly (eg, Centering Parenting, Promoting First Relationships, Family Connects, HealthySteps, TMW Well-Baby). Furthermore, Integrated Care for Kids (InCK), an initiative of the InCKMarks³⁴² Project, together with multiple policy partners and recently implemented in a number of states by the CMS, has included pilot programs to assess and support kindergarten readiness as part of Medicaid transformation.^{343,344} The importance of efforts to support early relational health and child well-being, including through early literacy promotion in primary care, was highlighted in a 2024 report of the National Academies of Sciences, Engineering, and Medicine titled "Launching Lifelong Health by Improving Health Care for Children, Youth and Families."³⁴⁵

CONCLUSION: LITERACY PROMOTION, PRIMARY PREVENTION, AND POSITIVE CHILDHOOD TRAJECTORIES

Literacy promotion in the setting of pediatric primary care takes advantage of the population-level reach of the health care system and the concentration of routine visits in the first months and years of life to support parents, so that reading with children is initiated early in life and incorporated into daily family routines with young children. The other agendas of pediatric primary care offer the opportunity to tie literacy promotion to many different issues in the health and development of young children, from fostering healthy sleep patterns to promoting language and brain development to limiting screen time to supporting school readiness, and to emphasize to parents and caregivers their own central importance in their children's cognitive and social-emotional development. Literacy promotion is a strengths-based approach, drawing its power from the importance of the parent-child bond, the centrality of parental voices, the foundational importance of these early relationships, and the positive interactions that they yield. It is, thus, a practical and evidence-based primary prevention strategy, enhancing the safe, stable, nurturing relationships on which early development is based and, also, providing opportunities and even "scripts" for the all-important reciprocal interactions.

As a universal primary prevention strategy—that is, as a universal strategy for supporting parents and caregivers, foundational relationships, rich home literacy environments, interactive reading practices, and language-rich positive childhood experiences—the AAP recommends that literacy promotion be part of primary health care for every child. It is especially important, however, that this intervention be delivered at the highest level of quality to children in communities that face health inequities, disparities connected to social drivers of health and to socioeconomic disadvantage, systemic racism, and other forces that marginalize families and place children at higher risk of difficulties with reading and with school, thus perpetuating injustice and inequity. Accomplishing this goal includes a commitment to providing high-quality, diverse books, multilingual books, and books that support children's identity formation, a commitment that has to work at every level, from national advocacy to site-by-site book choice and book supply. Literacy promotion, as part of supporting and affirming the power of parents and caregivers to create and nurture foundational relationships, should be part of a broader strategy to address these inequities, partnering with other initiatives to support families and engage issues on the community level. Secondary and tertiary prevention strategies and screenings should identify and support children and families who need additional assistance.

This report has argued that literacy promotion in primary care should be a universal primary prevention strategy, as stated in the AAP policy statements on literacy promotion and on promoting relational health and preventing toxic stress.⁴¹ A vital aspect of high program quality is a rich and diverse supply of high-quality books and the display of posters and other book-related materials that reflect diverse and multicultural populations, with a special emphasis on children from those populations often excluded or underrepresented in children's literature. Books offer opportunities to foster cultural pride in children and to support conversations in the clinic about racial and ethnic identity development, and clinicians will need training in how to take advantage of these opportunities.

High-quality literacy promotion in the clinical setting also offers benefits for the pediatric physicians and advanced care providers and for the relationship between families and the medical home. Training for physicians, which equips them in techniques of literacy promotion, can build on the context of literacy promotion as a strategy to address inequities and the importance of supporting parents and caregivers and building strong early relational health. Pediatricians in primary care can see this as a way to strengthen family resilience and protect children—and parents—against toxic stress, again, especially in communities where inequities place children at greater risk of stress, discrimination, and adverse experiences. There are also opportunities to administer evidence-based screening tools to assess emergent literacy skills and frame

guidance and need for intervention as early as possible, ideally before the child enters kindergarten.

Guidance for parents and caregivers should support the importance of early relational health, emphasizing that these interactions—reading together, talking about books and pictures, telling stories, and asking questions—build on the loving relationships they have with their children, and also that in these interactions, they help their children develop and eventually help them be ready for school, both in terms of their cognitive, language, and early literacy skills, and also in terms of their social-emotional development. The most effective guidance offers encouragement and modeling around interactive or dialogic reading and around building reading routines into their daily lives.

Reading with young children is a joyful experience for the children and a positive parenthood experience for the parents (or a positive caregiving experience for the caregivers). Literacy promotion in the pediatric primary care setting is a positive experience for primary care clinicians and, more generally, builds positive connections between clinics and the families they serve. The population-level reach of pediatric primary care offers an opportunity to incorporate this evidence-based strategy for supporting parents and caregivers, promoting language and early literacy skills and underlying brain development, fostering social-emotional development, strengthening early relational health, enhancing the home literacy environment, addressing inequities and identifying children at increased risk, fostering positive social identity development, and improving school readiness. By offering families books and encouraging developmentally appropriate joyful and interactive reading practices, pediatric primary care physicians and advanced care providers can help families and children shape their own trajectories and tell—and live—the stories that they deserve.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
ACE: adverse childhood experience
EBD: eco-bio-developmental
HLE: home literacy environment
IFG: inferior frontal gyrus
MCO: managed care organization
NAEP: National Assessment of Educational Progress
PCE: positive childhood experience
RCT: randomized controlled trial
RES: racial and ethnic socialization
ROR: Reach Out and Read
STG: superior temporal gyrus
UBB: Universidade do Bebê
VWFA: visual word form area

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