

Prescribing Books for Immigrant Children

A Pilot Study to Promote Emergent Literacy Among the Children of Hispanic Immigrants

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Objectives: To assess book-sharing activities within first-generation Hispanic immigrant families, and to assess the effect of pediatricians giving books to their patients.

Design: Survey.

Participants: Convenience sample of 122 predominantly Hispanic immigrant parents of children aged 2 months to 5 years. Of these parents, 56 had received children's books from the pediatrician, and 66 had not.

Setting: House staff continuity clinic at a university children's hospital.

Main Outcome Measure: Frequent Book Sharing (FBS) was defined as a parent's reporting more than 3 days per week of sharing books with the child. Main independent variables included the following: (1) exposure to the Reach Out and Read program, defined as having received a children's book from the pediatrician; (2) socioeconomic status, as measured by parents' years of education and Medicaid enrollment; (3) acculturation, as defined by 4 questions relating to parents' proficiency with the English language; (4) parent's country of origin; (5) parent literacy, as measured by a parent's reporting more than 3 days per week of reading alone; (6) parent's age; (7) marital status; (8) household size; (9) child's age; (10) child's sex.

Results: Ninety percent of the parents were born out-

side of the United States (71% in Mexico), 85% spoke Spanish in the home, and 63% had completed less than a high-school education. Seventy-five percent of children's medical insurance was provided by Medi-Cal (Medicaid), and 9% of children were uninsured. Sixty-seven percent spoke exclusively Spanish at home, and 84% of parents want their children to learn to read in both English and Spanish.

High FBS was reported among parents whose children had received books from the physician when compared with parents whose children had received no books. The odds ratio (OR) was 3.62 (95% confidence interval [CI], 1.40-9.37; $P < .05$). Also associated with FBS were parents reading frequently to themselves (OR=9.52; 95% CI, 2.09-43.27; $P < .05$) and national origin outside Mexico (OR=5.54; 95% CI, 1.59-19.27; $P < .05$). These findings were independent of parent's educational level, parent's employment, parent's age, acculturation, and family size.

Conclusions: Pediatricians can promote literacy development among Hispanic immigrant children through the provision of free books at well-child visits. Our findings also suggest the independent effects of adult literacy and child age. Further research is needed to understand the effect of pediatric literacy programs on Hispanic immigrant children, their bilingual environments, and their readiness for school entry.

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MORE THAN 14% of the 70 million children in the United States and more than 40% of the children in California are Hispanic. Almost half of Hispanic children speak only Spanish in the home.^{1,2} According to a 1998 study by the US Department of Education,³ Hispanic children are more than twice as likely to fail fourth-grade reading assessments than non-Hispanic white children.³ Research confirms that early reading failure contributes to a cycle of school drop-out, adult illit-

eracy, and poverty; however, early reading successes may curtail this cycle.⁴ Acquisition of reading skills begins long before kindergarten, and children whose parents begin sharing books with them consistently at an early age are more likely to be able to read by the time they enter school.^{5,6}

In 3 studies,^{7,8,9} parents whose children were given books by their pediatrician were significantly more likely to report positive book-sharing behaviors than controls. Pediatric clinic-based programs to promote literacy through gifts of chil-

PARTICIPANTS AND METHODS

SAMPLE

We interviewed a nonrandom convenience sample of 125 parents with children younger than 5 years presenting for care to the house staff continuity clinic at a Stanford University (Palo Alto, Calif) hospital between March 1 and August 1, 1997. The clinic serves a low-income population that is predominantly Hispanic. Our study sample was 85% Hispanic, defined as "speaking some Spanish in the home." At the time of the study, a ROR program was ongoing, but some parents and children had not yet been exposed to the program.

Parents were included in the study if a child between the age of 2 months and 5 years was scheduled for a well-child visit and the parent was self-identified as the child's "primary caregiver." Parents were excluded if they were unable to communicate in English or Spanish, if the child's birth weight was less than 2200 g, if the child had a significant developmental problem, a significant sensory deficit, or a previous hospital stay of greater than 14 days since birth. Prior to the child's visit with the physician, bilingual research assistants interviewed each parent with a structured, 59-item questionnaire in a private space outside the waiting room. Informed consent was obtained from each parent prior to the interview. Of the 125 parents asked to participate, only 3 (2%) refused or were excluded.

PROGRAM

Two months prior to the survey, the bilingual ROR program, which we named "Reach Out and Read/*Vamos a Leer*" was established in the house staff continuity clinic at Lucile S. Packard Children's Hospital at Stanford University. In the clinic, care was provided by 6 attending pediatricians and 42 pediatric residents, approximately 40% of whom were bilingual. A translator was available for all physician-parent encounters.

The program included 4 basic components. First, pediatric residents were educated about "dialogic reading" through a 1-hour didactic section and a 30-minute interactive session coinciding with the introduction of the program. Second, pediatric residents gave a book to each

child, along with a positive verbal message about dialogic reading to the family at each well-child visit from children aged 2 months to 5 years. Developmentally appropriate books were available in English, Spanish, and bilingual versions for each age level (2, 4, 6, 9, 12, 15-18, 24, 36, 48, and 60 months). The program's goal was to give each child a 10-book "home children's library" by the time of school entry. Selection of an English, Spanish, or bilingual version was left to the individual physician's judgment. Third, pediatric residents presented the parent with a signed "prescription to read 10 minutes every day with your child," a formalized recommendation from the physician. Finally, volunteers were recruited to demonstrate reading and book-sharing with groups of children in the waiting room. This reading-positive environment was enhanced by a prominent bilingual waiting room banner that read "Reach Out and Read/*Vamos a Leer*."

INDEPENDENT VARIABLES AND MEASURES

Exposure to Program

We assessed exposure to the ROR program by asking the parent if the child had been given books by the pediatrician, and if so, how many books had they been given. Because the ROR program was still in its infancy and not all pediatricians in the clinic were giving books to the children, almost half of the parents reported that their children had received no books from the pediatrician.

Socioeconomics

Number of years of parental education and source of medical insurance were used as indicators of socioeconomic status. The participant reported the number of years of education to both the primary and secondary care providers. The higher of these 2 numbers was used.

Acculturation

Acculturation is the constellation of linguistic, social, and economic adjustments made when an individual moves to a new country. In this study, acculturation was measured by 2 sets of questions. The first set of 4 questions asked parents to rate on a Likert-type scale the

dren's books, frequently organized under the name "Reach Out and Read" (ROR), are now active in more than 400 sites nationwide.

To extend our understanding of early literacy experiences among Hispanic immigrant families, we conducted a cross-sectional study of a bilingual ROR program among families who recently immigrated from Mexico and elsewhere in Latin America. The purposes of this survey were to describe factors associated with the home book-sharing routines of first-generation Hispanic immigrant families (predominantly from Mexico), and the effect of a bilingual ROR program on Hispanic immigrant families.

We postulated that, among immigrant families from Mexico and Latin America, acculturation, socioeconomics, adult literacy, and family structure would be the most

important determinants of parent-child book-sharing routines. We further postulated that exposure to the ROR program would have an independent effect on parent-child book-sharing routines.

RESULTS

EXPOSURE TO THE INTERVENTION

Of the 122 parents interviewed, 66 (54%) were in the "books" group, reporting that their children had received books from the physician. Fifty-six (46%) were in the "no books" group, reporting that their children had received no books from the physician. Within the books group, most (72%) had received only 1 book, 23% had received 2 books, and 5% had received 3 books.

degree of English or Spanish he or she used when reading, speaking, and "thinking." The cumulative score, on a scale of 1 to 5 of increasing acculturation, has been validated in studies by Marin et al¹⁰ and Celano et al.¹¹ The second set of questions asked the number of years of the parent's residence in the United States since immigration; for parents born in the United States, this was coded as the parent's age.

Adult Literacy

The literacy of each parent was assessed by the parent's reported number of days reading books alone in the previous 7-day week. Given the non-normal distribution of reading habits among the parents surveyed, we chose to dichotomize this measure into frequent readers (>3 days per week) and infrequent readers (<3 days per week). We also asked about the number of days of magazine and newspaper reading, the number of books in the home, and indicators of library use (eg, parent's library card and visits to the library with child).

Family Structure

Each parent provided demographic information regarding his or her age, sex, occupation, source of medical insurance, country of birth, age and sex of each child in the household, child's enrollment in preschool, number of children in the household, and number of adults in the household. We asked parents to recall the previous week's home activities, including the frequency and type of television viewing and number of wakeful hours spent caring for the child.

OUTCOME MEASURES

The primary outcome measure was parent-child book-sharing environment. Studies have shown that fostering parent-child book-sharing routines early in life is associated with increased verbal and reading scores in elementary school.¹² Although the best measure of a book-sharing environment is direct observation in the home, we used parental report as a more convenient and less costly means of measurement. We employed 3 measures of self-reported parent-child book-sharing environments, 2 of which have been used in previous studies of early

childhood literacy. Neither of the previously used measures has been tested for reliability or validity.^{3,9,11}

Frequency of Book Sharing

The first measure was Frequent Book Sharing (FBS), determined by asking the question, "How many times a week do you read to your child?" An answer of greater than 3 times per week was considered high, as in previous studies by the US Department of Education and by developmental pediatricians.^{3,9}

Reading as a Favorite Activity

The second measure was Reading as a Favorite Activity (RFA), a dichotomized variable representing the parent's answers to 2 open-ended survey questions.^{7,8,9,11} The questions were (1) "Other than eating and sleeping, what are 3 of your child's favorite activities at this moment?" and (2) "What are your 3 favorite activities to do with your child when you are together?" If the parent mentioned books or reading as a response to either question, the child was considered to have positive RFA.

Children's Books in the Home

The third measure was the number of children's books in the home (CBH). We assessed CBH by asking for the parent's best estimate: 0 books, 1 to 5 books, 6 to 10 books, more than 10 books. We dichotomized the variables into "few" (≤ 5 books) and "many" (> 5 books).

STATISTICAL ANALYSIS

For the purposes of descriptive analysis, we divided the parents into 2 groups for each of the 3 outcome variables: positive FBS vs negative FBS; positive RFA vs negative RFA; and many CBH vs few CBH. Using χ^2 analysis, we then compared the relative prevalence of the main independent variables in the 2 groups.

Subsequently, we used hierarchical stepwise logistic regression analysis on the entire sample to identify the relative strength of independent variables determined by the χ^2 analysis to be significantly associated with the outcome variable. Data were analyzed using the Statistical Product and Service Solutions 9.0 software package (SPSS Inc, Chicago, Ill).

The books and no books groups were similar with regard to parent age, parent relationship to child, degree of acculturation, highest level of parent education, child's enrollment in preschool, and adult literacy (**Table 1**). However, compared with children in the no books group, children in the books group were more likely to be younger (mean age 16 vs 21 months) and male (56% vs 38%).

SOCIOECONOMICS

Across both groups, the median highest level of formal education within each family was 11 years. The mean level of formal education for parents was 9.8 years (SD, 3.5 years). A minority of parents interviewed (37%) had the equivalent of a high school education. Most parents (75%)

reported that the child's source of medical insurance was Medicaid, which requires that parents document income at or below the federal poverty level. Nine percent were uninsured, and 5% had private insurance. Seventy percent received services from the Women, Infants, and Children program.

ACCULTURATION

Across both groups, most parents were born in Mexico (77%) or elsewhere in Latin America (13%), and their median number of years of residence in the United States was 7. Most parents (67%) spoke predominantly Spanish at home.

Parents' expectations for their children's language acculturation was nearly unanimous. Eighty-four per-

Table 1. Parent and Child Characteristics by Exposure Group*

	No Books From Physician (n = 56)	Books From Physician (n = 66)
Demographics†		
Mean parent age, y	26.1	25.7
Parent is child's mother	96	97
Median child age, mo	21	16
Male child	38	56
Receives Medicaid	74	77
Acculturation		
Speaks mainly Spanish at home	71	64
Mean acculturation score‡	1.6	1.6
Born outside United States	88	91
Born in Mexico	68	73
Education		
Completed ≥12 y of school	32	41
Child enrolled in preschool	48	41
Adult literacy		
Parent reads alone >3 d/wk	13	17

*All values are percentages unless otherwise indicated.

†For values indicating child's median age and sex, $P < .05$.

‡Scores are based on a scale of 1-5.¹⁰

cent preferred that their children read books in both English and Spanish. Seven percent preferred English only, and 9% preferred Spanish only for their children.

FAMILY STRUCTURE AND ACTIVITIES

Most parents interviewed were mothers with a mean age of 26 years. The children presenting for care had a median age of 13 months and a mean age of 19 months. Almost half (40.2%) were the parent's only child, and less than half of all children (44%) were enrolled in preschool.

Frequent adult television viewing was reported, with 71% reporting television viewing every day of the week at an average of 123 minutes per day. Young children's use of television was also high, with parents reporting that 79% viewed television daily at an average of 47 minutes per day. Parents reported that 21% of children younger than 12 months watched more than an hour of television per day.

ADULT LITERACY

A minority of parents reported regular reading habits. Fifteen percent of parents reported reading books more than 3 days per week, while 20% reported magazine or newspaper reading more than 3 days per week. Nearly half (47%) possessed a library card. About a quarter (25.4%) reported visiting the library with their child.

PREDICTORS OF PARENT-CHILD BOOK SHARING

To investigate predictors of parent-child book sharing, we first conducted a χ^2 analysis to compare the distribution of 11 independent variables within each of 2 groups, those with high FBS and those with low FBS (**Table 2**). This comparison suggested significant dif-

Table 2. Parent and Child Characteristics by Frequent Book Sharing (FBS)*

	Low FBS (n = 70)	High FBS (n = 52)	P‡
Demographics			
Median parent age, y	25	27	...
Median child age, mo	12	15	<.05
Male child	51	54	...
Receives Medicaid	80	69	<.05
Acculturation			
Speaks mainly Spanish at home	89	81	...
Mean acculturation score†	1.5	1.8	...
Born in Mexico	84	52	<.05
Education			
Completed ≥12 y of school	44	56	<.05
Child enrolled in preschool	30	35	...
Adult literacy			
Parent reads alone >3 d/wk	4	29	<.05
Exposure			
Physician gave book to child	37	58	<.05

*All values are percentages unless otherwise indicated. High FBS indicates that parents report sharing books with their children more than 3 days per week. Low FBS indicates that parents report sharing books with their children 3 or fewer days per week.

†Scores are based on a scale of 1 to 5.¹⁰

‡Ellipses indicate P values are not significant.

ferences for 5 of the 11 variables: child receiving Medicaid, parent born in Mexico, parent completing more than 12 years of schooling, parent reading alone, and exposure to the ROR program. In the sample as a whole, 43% of parents reported high FBS. When compared with parents who reported low FBS, parents who reported high FBS were more likely to have received at least 1 book through the ROR program (58% vs 37%). This increased likelihood seemed magnified for children younger than 12 months (49% vs 27%), as detailed in **Figure 1**.

When compared with parents who reported low FBS, parents who reported high FBS were more likely to be from a Latin American country other than Mexico (48% vs 16%), to speak at least as much English as Spanish at home (20% vs 11%), and to read frequently by themselves (29% vs 4%). **Figure 2** demonstrates the proportion of parents reporting high FBS by parent's country of origin, stratified by exposure to the ROR Program. Distribution of all other independent measures, including parent's age, parent-child ratio at home, the child's sex, number of parent's years spent in the United States, health insurance status, and number of parent's years of education, did not differ significantly between the 2 groups.

We further examined the prediction of FBS by these 11 independent measures through construction of a multiple logistic regression model, using a backwards elimination approach with FBS as the dependent variable. The model included 8 predictor variables: the child's age (in months), sex, Medicaid insurance status, whether mainly Spanish is spoken at home (yes/no), parent education (in years), parent's national origin (Mexico or not), parent's reading to self greater than 3 days per week (yes/no), and exposure to the ROR program (yes/no).

The odds of parents' reporting high FBS remained more than 3 times greater in the books group than in the

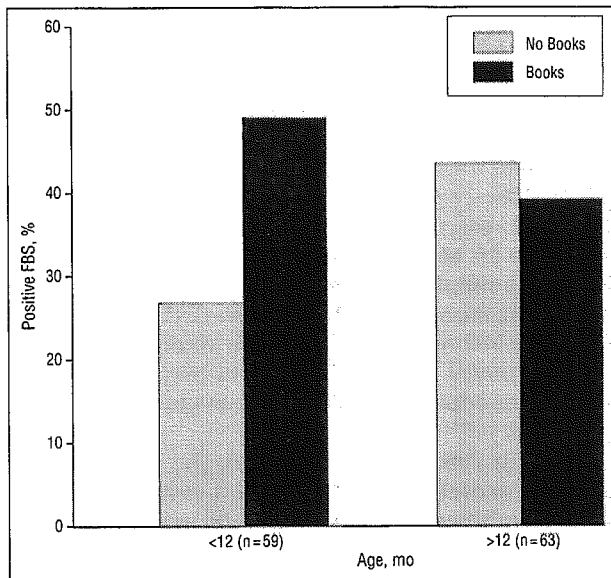


Figure 1. Percentage of parents reporting Frequent Book Sharing (FBS), by child age and exposure group.

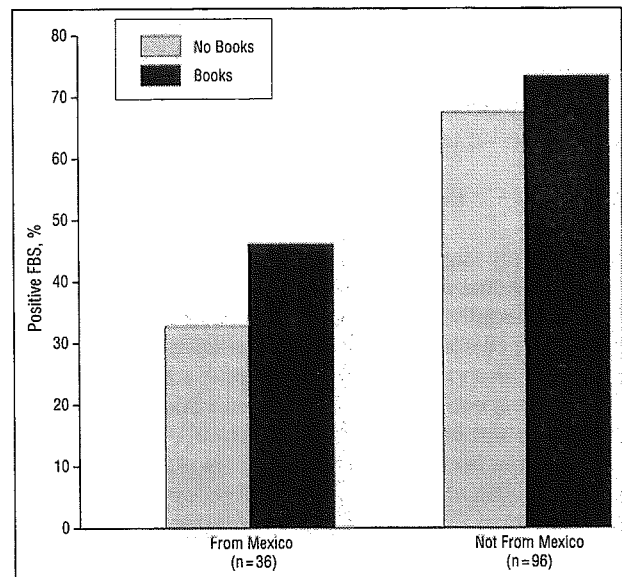


Figure 2. Percentage of parents reporting Frequent Book Sharing (FBS), by parent country of origin and exposure group.

no books group. The odds ratio (OR) was 3.62 (95% confidence interval [CI], 1.40-9.37; $P < .05$). This same model demonstrated that the odds of parents' reporting FBS were greater for parents who also reported frequent reading of their own (OR=9.52; 95% CI, 2.09-43.27; $P < .05$) and among parents who were not from Mexico (OR=5.54; 95% CI, 1.59-19.27; $P < .05$).

The same χ^2 analyses were applied to RFA and CBH as to FBS. Compared with parents reporting no RFA, parents reporting RFA were more likely to report reading alone (21% vs 6%). Compared with parents reporting few CBH, parents reporting many CBS were more likely to use some English in the home (70% vs 38%). However, these differences did not persist after correcting for other independent variables through logistic regression modeling. Reading as a Favorite Activity was not associated with any of the independent variables, including whether the child was in the books or no books group (OR=1.75; 95% CI, 0.77-3.96; $P > .05$). Children's Books in the Home also was not associated with any independent variable, including whether the child was in the books or no books group (OR=0.76; 95% CI, 0.33-1.74; $P > .05$).

COMMENT

PREDICTORS OF PARENT-CHILD BOOK SHARING

Among the Hispanic immigrant parents in our sample, the baseline rate of parent-child book sharing was comparable to that of other low-income parents previously studied.^{7,8,9} However, parents from Mexico seemed to exhibit significantly lower baseline rates of parent-child book sharing when compared with other Hispanic immigrant parents. After adjusting for child age and socioeconomic factors, positive predictors of frequent parent-child book sharing were parent's national origin outside Mexico and frequent book reading by the parent alone. Unexpectedly, parent's level of English proficiency, parent's educational level, years of United States residency,

number of children's books in the household, and child's enrollment in day care had no significant association with parent-child book sharing.

This adds to the portrait of "literacy-rich homes" described in previous ethnographic studies of families with children who exhibit reading skills before age 4 years.¹³ These studies emphasized the importance of prevalent, interactive book-related activities in the home as positive predictors of such "precocious reading." However, most studies have overlooked the importance of national origin and parental literacy, which our study suggests are independently strong predictors of early childhood reading activities. These findings were independent of other factors often associated with parent-child interaction: the parent's reported educational level, parent-child ratio, and parent's time available to spend with the child, as measured by whether the mother reported an occupation.

Families from Mexico seemed to be more at risk for fewer FBS activities at home. Previous studies of Mexican immigrant families suggest possible explanations for this finding.¹⁴ Many parents of Mexican origin are from rural areas, where expectations about child education may be vastly different from those in urban America. Rural-urban disparities in educational expectations may explain some of the differences we observed in reports of early childhood book sharing. We speculate that when Mexican families enter the United States, barriers to acculturation, including fear of legal and economic discrimination, compound these disparities. This may include real and perceived limitations of access to public libraries, early childhood education, and other public programs that promote early childhood literacy.

Parental literacy, assessed in this study with parents' reported frequency of reading alone, may be an important positive predictor of their children's emergent literacy. The finding is consistent with that found in at least 1 previous study.¹⁵ This may be a statistical confirma-

tion of conventional wisdom stating that parents model behaviors for their children. But it also suggests a larger familial context for appreciating early literacy acquisition. Parents who value reading books themselves are likely to value reading books with their children.

EFFECT OF INTERVENTION

Our study suggests that the ROR program increases parent-child book sharing within Hispanic immigrant families, especially those from Mexico. Parents exposed to even a single episode of receiving a children's book from the physician were more likely to report a higher frequency of sharing books at home with their child, compared with parents not exposed to the program. As with smoking cessation, literacy-related behaviors may be changeable as the result of a single, well-timed recommendation from a physician.¹⁶ The effect of that recommendation may be enhanced by the book itself, a rare and unexpected gift in a medical clinic.

LIMITATIONS

This study has several important limitations. As a cross-sectional study, it does not track the influence of the intervention on families over time. All outcomes were assessed by parent report, and none of the outcome measures has been subject to strict validity and reliability testing in this age group. Responses were likely to have been confounded by parents' proclivity to provide socially desirable answers to the interviewers. As a result, our outcome measures were more likely representative of parental perceptions than of parental behavior. Because of the nonrandomized design, significant differences between child age and sex resulted in the exposure (books) and nonexposure (no books) groups. Nonetheless, the study's main findings remained significant in a logistic regression that controlled for these variables. Because of the noncontrolled design, the intervention itself was limited and varied greatly by physician styles. Physicians provided different verbal messages to the parent, and physicians, not parents, chose whether to give the child an English- or Spanish-language book. Exposure to the intervention was assessed by parent report, although interviewers asked this question near the end of the interview: "Has your child received books during any of your visits?" Most children received only 1 book as the intervention. This limitation, however, would likely bias our conclusions away from the null.

IMPLICATIONS

In a previous controlled experiment testing the ROR program among Hispanic families, Golova et al⁹ demonstrated a 3-fold increase in reported book-sharing behaviors between parents and children after they had received children's books from their pediatrician. In that study, the Hispanic population included primarily immigrants from Caribbean Island nations (including the US territory of Puerto Rico) and from Central America, who together represent less than 20% of the Hispanic im-

migrant community. Our study suggests that these conclusions may be extended to the more than 70% of Hispanic immigrants in the United States who arrive from Mexico with a unique set of circumstances regarding citizenship, health care, and education.¹⁷

Our findings suggest that continued investment in early literacy promotion in pediatric clinics that serve immigrant parents is vital. Despite the stressors of everyday life for Mexican immigrant parents, they are receptive to a simple message from their physician that comes with the receipt of a children's book. These parents can quickly become advocates for their young children's emergent literacy. The ROR program may afford pediatricians the opportunity to assist immigrant families in this process.

Our findings also reinforce the need for greater efforts to overcome the language and literacy barriers to opportunities for the children of immigrant parents. Hispanic parents in our study agreed almost unanimously that they expected their children to learn to read in both English and Spanish. To respect these wishes, physicians should provide ROR books, as well as messages about using them, in both English and Spanish. Furthermore, if parental reading habits are predictive of emergent literacy, efforts to promote parents' language and literacy development, through English as a Second Language classes and adult literacy tutoring, are critical therapies that could support the cognitive health of their children.¹⁸

Future interdisciplinary research between pediatricians and educators should be pursued to explore the questions that this opportunity suggests. How do parents perceive the information that they receive from pediatricians about their child's cognitive development? How do pediatricians perceive the effect their advice has on a child's cognitive development? Can the ROR program be tailored to strengthen these perceptions? What competitive role is played by other forces (eg, elder family members and television) that affect parent-child interaction? Can the ROR program compete with these forces? Are programs like ROR indirectly improving other outcomes, such as patient satisfaction, continuity of care, physician education, developmental screening, workplace morale, use of libraries, or enrollment in adult literacy programs? Do programs like ROR improve school readiness? Can lessons from the ROR program be applied to other areas of health promotion?

Determining answers to these questions will significantly advance our understanding of the effect of ROR and programs like it, and will allow us to expand and develop these programs in an informed way.

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