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Mothers' Expectations for Shared Reading Following Delivery: Implications For Reading Activities at 6 Months

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Abstract

Objective—To determine whether mothers with plans related to shared reading and baby books in the home at the time of delivery of their newborns would be more likely to engage in shared reading behaviors at age 6 months.

Method—This was a cohort study with enrollment post-partum and follow-up at 6 months in an urban public hospital. Predictors: mothers' attitudes and resources related to shared reading during the postpartum period. Outcomes: mothers' shared reading activities and resources at 6 months (StimQ-READ).

Results—173 mother-infant dyads were assessed. In multiple regression analyses adjusting for sociodemographics and maternal depression and literacy, StimQ-READ at 6 months was increased in association with all 3 postpartum predictors: plans for reading as a strategy for school success (adjusted mean 1.7 point increase in 6 month score; 95% CI: 0.3 – 3.0), plans to read in infancy (3.1 point increase; 95% CI: 1.6-4.6), and having baby books in the home (2.3 point increase; 95% CI: 0.9 – 3.6). In multiple logistic regression analysis, mothers with two or more attitudes and resources had an AOR of 6.2 (95% CI: 2.0-18.9) for having initiated reading at 6 months.

Conclusions—Maternal attitudes and resources in early infancy related to shared reading are important predictors of reading behaviors by 6 months. Cumulative postnatal attitudes and resources are the strongest predictors of later behaviors. Additional research is needed regarding whether guidance about shared reading in early infancy or pregnancy would enhance programs such as Reach Out and Read.

Keywords

Parenting; Infancy; Reading; Developmental Outcomes

Introduction

The home literacy environment has a crucial impact on young children's language and early literacy development[1-8]. While the optimal age for initiation of shared reading is not known,

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studies have documented that shared reading as early as 6 months is associated with improved language development at 2 years[9] and is predictive of later reading activities[10].

Because of the importance of the home literacy environment, Reach Out and Read (ROR)[11] was developed in order to use primary care pediatric visits to promote shared reading. A large number of studies have documented the impact of ROR on parents' shared reading aloud and improved language outcomes in children[2,12-16]. However, there has been limited study of factors related to initiation of reading aloud in infancy[3,9,17-18], and better understanding of these factors would help inform the implementation of this program.

We have previously reported on postpartum mothers' attitudes and resources related to shared reading as factors with the potential to influence later initiation of this activity[19]. In that report, we interviewed mothers during the postpartum period about their plans to share books with their infants during the first year and whether or not they had books for babies in their homes at the time. We found that more than 75% of mothers had plans to share books during infancy and more than half reported the presence of books for babies in the home. Sociodemographic variables independently associated with lack of plans and/or resources related to shared reading during the first 12 months of life included lower maternal education, primary language not English, and firstborn infant.

In the present study, we sought to determine the implications of postpartum attitudes and resources related to shared reading by assessing whether they predicted reading activities during the ensuing six months. We hypothesized that mothers with plans related to shared reading and baby books in the home at the time of delivery of their newborns would be more likely to engage in shared reading behaviors at age 6 months.

Methods

Study Sample

This was a longitudinal analysis of mother-infant dyads enrolled in a study of early child development from November, 2005 – September, 2006. Consecutive enrollment of eligible dyads occurred in the post-partum unit of Bellevue Hospital Center, an urban public hospital serving at-risk families. Inclusion criteria were: intention to remain in New York City for at least 3 years and receive pediatric primary care at our institution, primary language English or Spanish, full-term gestation (≥37 weeks) and normal birth weight (≥2500 grams), singleton birth, no significant infant medical complications, no Early Intervention eligibility (e.g., sensory impairment, genetic syndromes, congenital malformations), mother primary caregiver, ability to contact mother, mother ≥ 18 years of age, and no significant maternal medical problems.

This cohort was part of a larger study taking place at Bellevue Hospital Center, the Bellevue Project for Early Language, Literacy, and Education Success (BELLE Project), a randomized, long-term study assessing the role of pediatric primary care based interventions in promoting early child development in low socioeconomic status (SES) families. Written, informed consent was obtained. This study was approved by the New York University School of Medicine Institutional Review Board and the Bellevue Research Committee.

Procedure

Mothers were interviewed at two different time periods. The first interview occurred during mothers' hospital stays following delivery. Mothers were interviewed at times of their own preference when they were awake, alert and without visitors (except fathers), typically (93.6%) on the second postpartum day or later. The second interview occurred when infants reached

the age of 6 months. Research staff conducting the interviews were research assistants who were bilingual in Spanish and were trained and supervised by one of the authors (SBB).

Data Obtained

Predictor variables—During the postpartum period, we interviewed mothers about attitudes and resources related to shared reading during infancy (the baby's first 12 months). First, we asked an open-ended question: "Are there any activities that you plan to do with your baby during the next year in order to help him/her be successful when he/she starts elementary school?" and compared mothers reporting plans for reading aloud as a strategy to promote later school success to those who did not report this as a strategy[11]. Next, we asked mothers: "Do you plan to read children's books together with your child?" Those answering affirmatively were asked, "At what age do you think you will start reading aloud with children's books with your child?" Responses were categorized by whether mothers planned to begin shared reading during the infancy period (before 12 months of age). Finally, we asked "Do you have any books for babies in your home right now?" (adapted from the StimQ-Infant, see below)[20]. Those answering affirmatively were asked to estimate the number of such books in the home. Responses were categorized by whether mothers reported having at least 1 baby book. This cutoff was chosen based on this sample's distribution, with more than 40% of mothers not reporting any baby books in the home. We calculated cumulative number of predictors (i.e., reading as strategy for school success, plans to read in infancy and baby books in home).

Outcome variables—We assessed shared reading activities at age 6 months using the StimQ-READ subscale of the StimQ-Infant[20]. The StimQ assesses cognitive stimulation in the home environment. It is based on a structured interview with the child's caregiver which takes place in a research laboratory or health facility, is validated for use in low SES populations and does not require a home visit[21]. It has good internal consistency (Cronbach's alpha=0.88), test-retest reliability (intraclass correlation coefficient of 0.93), criterion-related validity (correlation with HOME[22]: r=.55, p<.001) and is gender neutral[21]. It also has good concurrent validity with developmental measures, and is correlated with the Bayley Scales of Mental Development Mental Development Index[23] (sr=0.45, p<0.001). It has been used in several recent studies of early child development performed with urban economically disadvantaged populations[10,13,16,24]. The StimQ-READ is a subscale of the StimQ. The outcome variables used in this study were total StimQ-READ score (range 0 - 19), frequency of shared reading (days per week) and whether reading had been initiated at the time of the interview.

Potential confounders—Potential confounders were assessed at baseline and at 6 months. At baseline, we assessed sociodemographic variables, including mother's education level, country of origin, ethnicity, and language, whether father was involved in raising child, and child's gender and birth order. Socioeconomic status (SES) was estimated using the Hollingshead Four Factor Index of Social Status, a 5 point scale (highest resource level=1; lowest level=5)[25]. In addition, mothers were asked a series of questions about whether they had experienced homelessness, exposure to violence, involvement with child protection or limited or late prenatal care. Families were considered to be at increased social risk if mothers reported at least one of these.[26]

At 6 months, we assessed maternal depressive symptoms and literacy. We assessed maternal depressive symptoms using the Patient Health Questionnaire – 9 (PHQ-9)[27]. This scale has been found to be reliable and valid in many studies[27-30]. We used a cutoff of 5 to define presence of symptoms, which corresponds to "mild depression". Mother's literacy level was assessed using the Woodcock-Johnson III / Bateria III Woodcock-Munoz Tests of Achievement, Letter-Word Identification Scale and the Woodcock-Johnson III / Bateria III

Woodcock-Munoz Tests of Cognitive Abilities, Verbal Comprehension Scale. We used a cutoff of less than 80 as the definition of low literacy, based on the manual.[31,32]

Statistical analysis

We analyzed associations between predictor variables (mothers' attitudes and resources related to shared reading at the time of delivery) and outcome variables (mothers' reading behaviors and resources at 6 months). We conducted analyses based on each predictor variable considered individually and also based on cumulative number of predictors. We performed simple analyses using independent samples t-tests for continuous outcomes and chi-square and Fisher's exact tests for categorical outcomes. We performed adjusted analyses using multiple linear and logistic regression. In these analyses, we adjusted for potential confounders, including mother's education level, country of origin, ethnicity, and language, whether father was involved in raising child, and child's gender and birth order, SES, increased social risk, maternal depressive symptoms and literacy, as well as exposure to interventions within the larger study. We calculated adjusted mean differences, adjusted odds ratios (AOR), and 95% confidence intervals (CI) using standard methods. For regressions with cumulative number of predictors, adjusted mean differences and AORs were calculated per each additional predictor present. In addition, hierarchical multiple regression analysis was performed to determine the relative contributions of individual predictor variables to the variance of reading aloud at 6 months as measured by StimQ-READ score.

Results

Study Sample

Of 1562 infants born between November 2005 and September 2006 and admitted to the level I nursery, 1237 were ineligible due to one or more of the following: plans to leave New York City and/or receive primary care outside our institution (70.2%), language other than English or Spanish (18.9%), approached for enrollment into another study (12.8%), pre-term or low birth weight (8.0%), difficulty contacting mother (5.9%), significant medical complications (5.1%), mother <18 years old (3.1%), maternal medical issues (1.7%), multiple gestation births (1.7%), and mother not primary caregiver (1.0%). Of 325 eligible dyads, 243 (74.8%) were enrolled with 82 (25.2%) declining participation. Although we do not have information about families that refused, we know that enrollees are comparable in ethnicity to historical data from our newborn nursery, in which approximately 85% of English or Spanish speaking mothers are of Latino ethnicity with the majority having low SES.

Of 243 mother-infant dyads who were enrolled, 173 (71.2%) were assessed at mean (sd) 6.4 (0.7) months. The remaining families were either not available for follow-up at the time of this assessment or completed the assessment after age 9 months (7 cases) and therefore considered too old to be included in this analysis. Assessed families were similar to non-assessed families for all sociodemographics. Descriptive data for the sample, including sociodemographics and other potential confounders, are shown in Table 1. This was a low SES, primarily immigrant sample. The majority of mothers self-identified as Latino and spoke Spanish as their primary language. Table 2 shows descriptive data related to the predictor and outcome variables. The mean StimQ score of 7.4 would be expected to correspond to approximately 5 baby or children's books and a reading frequency of 2 to 3 days per week. The rate of depressive symptoms (28.3%) was at the lower end of what has typically been reported among low-income samples[33,34]. Dyads assessed at 6 months were similar to those not assessed for all potential confounders and predictors.

Associations between attitudes and resources related to shared reading following birth and reading activities at 6 months

Table 3 shows simple and adjusted analyses of associations between attitudes and resources related to shared reading following birth and reading activities at 6 months. In simple analyses, all individual predictor variables measured following birth were significantly associated with all 6 month outcome variables, with the exception of baby books in the home and reading as a strategy for school success related to reading frequency. In multiple regression analyses adjusting for all potential confounders as described above, plans to read in infancy were most consistently associated with 6 month outcomes, including an adjusted mean 3.1 point increase in StimQ-READ score (95% CI: 1.6-4.6), an adjusted mean 1.0 day increase (95% CI: 0.1-1.8) in reading frequency, and an AOR of 5.4 (95% CI 2.0-14) for having initiated reading. In similar regression analyses, having baby books in the home was associated with increased StimQ-READ while reporting reading as a strategy for school success was associated with both increased StimQ-READ and increased reading frequency.

As with individual attitudes and resources, we found that cumulative number of attitudes and resources following birth was associated with shared reading at 6 months. In multiple linear regression analysis, each additional attitude and resource was associated with an adjusted mean 1.8 point increase (95% CI: 1.1 - 2.5) in StimQ-READ score. In multiple logistic regression analysis, each additional attitude and resource was associated with an adjusted odds ratio (AOR) of 3.1 (95% CI: 1.6 - 5.9) for having initiated reading aloud at 6 months. We also compared mothers with two or more attitudes and resources at birth to those with zero or one. In similar multiple logistic regression analysis, mothers with two or more attitudes and resources had an AOR of 6.2 (95% CI: 2.0-18.9) for having initiated reading at 6 months.

In order to determine relative contributions of each predictor variable, we performed hierarchical linear regression. After adjusting for the same set of potential confounders, we found that plans to read aloud in infancy contributed 8.5% ($p<0.001$) to the variance of overall reading aloud (StimQ-READ score) at 6 months, and baby books in the home contributed an additional 4.1% ($p=0.002$) to the variance. School strategies did not contribute any additional significant variance (0.9%, $p=0.15$) independent of the contributions of the other two predictors.

Four potential confounder variables were related to increased likelihood of shared reading in infancy in unadjusted analyses: mother high school graduate ($p=0.01$), primary language English ($p=0.02$), country of origin US ($p=0.03$), and lack of depressive symptoms ($p=0.007$). In multiple logistic regression analysis adjusting for all potential confounders, lack of depressive symptoms retained statistical significance (AOR 0.3, 95% CI 0.1, 0.9). No interactions were seen between any of the potential confounder variables and attitudes about reading in predicting likelihood of shared reading in infancy.

Discussion

Mothers' plans and resources for shared reading reported following birth were associated with later shared reading behaviors at 6 months. The strongest associations were evident for a cumulative number of attitudes and resources. These findings are important because they have implications for programs that promote shared reading such as Reach Out and Read (ROR) as well as anticipatory guidance in pediatric well child care more generally.

Regarding ROR, an unresolved question concerns the optimal age at which to begin promotion of shared reading and the provision of books. Although the age of introduction of ROR is 6 months, there is no specific empirical support for this timing. In addition, many important skills begin to develop in the first 12 months, including formation of attachment classification[35],

capacity for joint attention[36], and precursors of early language development[37]; it is possible that shared reading beginning earlier in infancy might lead to a greater impact both on these developmental processes[9,38-40] as well as on later child development and school readiness. In our ongoing work, we plan to assess whether postnatal attitudes continue to predict reading behaviors into the second year, when ROR would be expected to have an impact. DeBaryshe found that mothers with more positive beliefs about shared reading engaged more frequently in shared reading with their preschoolers than mothers with less positive beliefs[41]. Our findings that postnatal attitudes and resources relate to later behaviors support additional study of the hypothesis that anticipatory guidance about shared reading for mothers during early infancy prior to age 6 months would be associated with subsequent changes in attitudes and behaviors.

Anticipatory guidance is an integral component of pediatric well child care, with counseling provided for parents of young infants regarding physical safety, feeding practices, sleeping practices, and medical concerns[42,43]. However, there has been relatively limited research regarding how to increase the effectiveness of this counseling[44]. Our study addresses a possible avenue for improving anticipatory guidance, through better understanding how attitudes affect behaviors. Our findings are consistent with the Theory of Reasoned Action (TRA), which posits that individuals are more likely to execute a behavior when they consciously intend to do[45]. Our results are consistent with other studies performed later in childhood that have demonstrated relationships between attitudes about child development and both cognitive stimulation provided in the home and approaches to discipline[46,47]. An important implication of our study is that anticipatory guidance may be useful in addressing attitudes at birth or prenatally, prior to initiation of later behaviors.

There are several limitations to these results. Assessment information was collected via parent report, and therefore results may have been affected by social desirability bias. Also, as information was collected from individual participants, possible shared variance between predictor and outcome variables may have influenced our findings. In addition, the interview questions may have acted as a minor intervention; in asking mothers about their plans for shared reading with their infants, it is possible that this question influenced these plans and may have increased mothers' likelihood of sharing books during infancy. However, if this had been the case, this would have led to our finding reduced associations between the predictor and outcome variables. Although we included many variables in the regressions, we may have omitted important confounders, including income. It also would have been useful to collect information about paternal attitudes, which also impact developmental outcomes[48]. Only mothers were studied because they are usually infants' primary caregivers[49], and because it can be difficult to collect reliable and valid information about other household members. Finally, our data was collected from an at-risk urban population and our findings may not be generalizable to other populations. For example, the high rate of shared reading may have been due to prior participation in ROR in our institution by mothers of second born or later babies.

In conclusion, maternal attitudes and resources following delivery are related to shared reading behaviors and resources at age 6 months. Cumulative postnatal attitudes and resources are the strongest predictors of later behaviors. Clinicians should consider assessing attitudes beginning in early infancy, and providing early anticipatory guidance for parents without plans for shared reading in infancy. Additional research is needed regarding whether guidance about shared reading in early infancy or pregnancy would enhance programs such as ROR.

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References

1. Bus AG, van IJzendoorn MH, Pellegrini AD. Joint book reading makes for success in learning to read: a meta-analysis on intergenerational transmission of literacy. Review of Educational Research 1995;65 (1):1–21.
2. Mendelsohn AL. Promoting language and literacy through shared reading: the role of the pediatrician. Curr Prob Pediatr Adolesc Med 2002;32(6):183–210.
3. Karrass J, Braungart-Rieker JM. Effects of shared parent-infant book reading on early language acquisition. Journal of Applied Developmental Psychology 2005;26:133–148.
4. Lonigan CJ, Whitehurst GJ. Relative efficacy of parent and teacher involvement in a shared-reading intervention for preschool children from low-income backgrounds. Early Childhood Research Quarterly 1998;13(2):263–290.
5. Senechal M, LeFevre J. Parental involvement in the development of children's reading skill: a five-year longitudinal study. Child Dev 2002;73(2):445–460. [PubMed: 11949902]
6. Roberts J, Jurgens J, Burchinal M. The role of home literacy practices in preschool children's language and emergent literacy skills. Journal of Speech, Language, and Hearing Research 2005;48:345–359.
7. Raikes H, Pan BA, Luze G, et al. Mother-child bookreading in low-income families: correlates and outcomes during the first three years of life. Child Dev 2006;77(4):924–953. [PubMed: 16942498]
8. Weigel DJ, Martin SS, Bennett KK. Contributions of the home literacy environment to preschool-aged children's emerging literacy and language skills. Early Child Development and Care 2006;176(3):357–37.
9. DeBaryshe BD. Joint picture-book reading correlates of early oral language skill. J Child Lang 1993;20:455–461. [PubMed: 8376479]
10. Tomopoulos S, Dreyer BP, Tamis-LeMonda CS, et al. Books, toys, parents-child interaction and development in young Latino children. Ambulatory Pediatrics 2006;6:72–80. [PubMed: 16530142]
11. Klass, P.; Needlman, R.; Zuckerman, B. Reach Out and Read Program Manual. Vol. 2nd. Boston: Boston Medical Center; 1999.
12. High PC, LaGasse L, Becker S, Ahlgren I, Gardner A. Literacy promotion in primary care pediatrics: can we make a difference? Pediatrics 2000;105:927–934. [PubMed: 10742349]
13. Mendelsohn AL, Mogilner LN, Dreyer BP, et al. The impact of a clinic-based literacy intervention on language development in inner-city preschool children. Pediatrics 2001;107:130–134. [PubMed: 11134446]
14. Needlman R, Toker KH, Klass P, Dreyer BP, Mendelsohn AL. Effectiveness of a primary care intervention to support shared reading: a multi-center evaluation. Ambulatory Pediatrics 2005;5(4): 209–215. [PubMed: 16026185]
15. Sanders LM, Gershon TD, Huffman LC, Mendoza FS. Prescribing books for immigrant children: a pilot study to promote emergent literacy among the children of Hispanic immigrants. Arch Pediatr Adolesct Med 2000;154:771–777.
16. Sharif I, Rieber S, Ozuah PO. Exposure to Reach Out and Read and vocabulary outcomes in inner city preschoolers. J Nat Med Assoc 2002;94(9):171–177.
17. Kuo AA, Franke TM, Regalado M, Halfon N. Parent report of reading to young children. Pediatrics 2004;113:1944–1951. [PubMed: 15173465]
18. Makin L. Literacy 8-12 months: what are babies learning? Early Years 2006;26(3):267–277.
19. Berkule SB, Dreyer BP, Huberman HS, Fierman AH, Mendelsohn AL. Attitudes about shared reading among at-risk mothers of newborn babies. Ambulatory Pediatrics 2007;7:45–50. [PubMed: 17261482]
20. Dreyer, BP.; Mendelsohn, AL.; Tamis-LeMonda, CS. StimQ. 2003 [April 24, 2006]. Available at http://www.med.nyu.edu/stimq
21. Dreyer BP, Mendelsohn AL, Tamis-LeMonda CS. Assessing the child's cognitive home environment through parental report: reliability and validity. Early Development and Parenting 1996;5:271–287.

22. Caldwell, B.; Bradley, RH. The Home Observation for Measurement of the Environment. Little Rock, AR: University of Arkansas at Little Rock; 1984. Self-published manuscript
23. Bayley, N. Bayley Scales of Infant Development. Vol. 2nd. San Antonio, TX: Psychological Corporation, Harcourt Brace; 1993.
24. Albright MB, Tamis-LeMonda CS. Maternal depressive symptoms in relation to dimensions of parenting in low-income mothers. Applied Developmental Science 2002;6(1):24–34.
25. Hollingshead, AB. Four factor index of social status. Yale University; 1975. Unpublished manuscript
26. Sameroff AJ, Seifer R, Baldwin A, Baldwin C. Stability of intelligence from preschool to adolescence: the influence of social and family risk factors. Child Dev 1993;64:80–97. [PubMed: 8436039]
27. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: validity of a brief depression measure. J Gen Intern Med 2001;16(9):606–613. [PubMed: 11556941]
28. Katon WJ, Von Korff M, Lin EHB, et al. The Pathways Study: a randomized trial of collaborative care in patients with diabetes and depression. Arch Gen Psychiatry 2004;61:1042–1049. [PubMed: 15466678]
29. Lowe B, Kroenke K, Herzog W, Grafe K. Measuring depression outcome with a brief self-report instrument: sensitivity to change of the Patient Health Questionnaire (PHQ-9). J Affect Disord 2004;81(1):61–6. [PubMed: 15183601]
30. Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME-MD: The PHQ Primary Care Study. Am Med Assoc 1999;282:1737–1744.
31. Woodcock, RW.; McGrew, KS.; Mather, N. Woodcock-Johnsohn III. Itasca, IL: Riverside Publishing; 2001.
32. Woodcock, RW.; Munoz-Sandoval; McGrew, KS.; Mather, N. Bateria III Woodcock-Munoz. Itasca, IL: Riverside Publishing; 1996.
33. Albright MB, Tamis-LeMonda CS. Maternal depressive symptoms in relation to dimensions of parenting in low-income mothers. Applied Developmental Science 2002;6(1):24–34.
34. Seto M, Cornelius MD, Goldschmidt L, Morimoto K, Day NL. Long-term effects of chronic depressive symptoms among low-income childrearing mothers. Maternal Child and Health Journal 2005;9(3):263–271.
35. Ainsworth, MDS.; Blehar, MC.; Waters, E.; Wall, S. Patterns of Attachment: A Psychological Study of the Strange Situation. New Jersey: Lawrence Erlbaum Associates; 1978.
36. Carpenter M, Nagell K, Tomasello M, Butterworth G, Moore C. Social cognition, joint attention, and communicative competence from 9 to 15 months of age. Monographs of the Society for Research in Child Development 1998;63(4):1–174.
37. Fenson L, Dale PS, Reznick JS, et al. Variability in early communicative development. Monographs of the Society for Research in Child Development 1994;59(5):1–185. [PubMed: 7845413]
38. Bus AG, van IJzendoorn. Mothers reading to their 3-year-olds: the role of mother-child attachment security in becoming literate. Reading Research Quarterly 1995;30(4):998–1015.
39. Whitehurst GJ, Falco FL, Lonigan CJ, et al. Accelerating language development through picture book reading. Dev Psychol 1988;24:552–559.
40. Tomasello M, Farrar MJ. Joint attention and early language. Child Dev 1986;57:1454–1463. [PubMed: 3802971]
41. Debaryshe B. Maternal belief systems: linchpin in the home reading process. Journal of Applied Developmental Psychology 1995;16(1):1–20.
42. Magar NA, Dahova-Missova S, Gjerdingen DK. Effectiveness of targeted anticipatory guidance during well-child visits: a pilot trial. J Am Board Fam Med 2006;19(5):450–458. [PubMed: 16951294]
43. Nelson CS, Higman SM, Sia C, et al. Medical homes for at-risk children: parental reports of clinician-parent relationships, anticipatory guidance, and behavior changes. Pediatrics 2005;115(1):48–56. [PubMed: 15629981]
44. Dinkevich E, Ozuah PO. Well-child care: effectiveness of current recommendations. Clinical Pediatrics 2002;41(4):211–217. [PubMed: 12041716]
45. Ajzen, I.; Fishbein, M. Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall; 1980.

46. Benasich A, Brooks-Gunn J. Maternal attitudes and knowledge of child-rearing: associations with family and child outcomes. Child Dev 1996;67:1186–1205. [PubMed: 8706517]

47. Kochanska G, Kuczynski L, Radke-Yarrow M. Correspondence between mothers' self-reported and observed child-rearing practices. Child Dev 1989;60:56–63. [PubMed: 2702874]

48. Cabrera NJ, Tamis-LeMonda CS, Bradley RH, Hofferth S, Lamb ME. Fatherhood in the twenty-first century. Child Dev 2000;71(1):127–136. [PubMed: 10836566]

49. Hochschild, A.; Machung, A. The second shift: Working parents and the revolution at home. New York: Viking; 1989.

Table 1

Sociodemographic Characteristics and Potential Confounders[a] (n=173)

Mother	
Latino	88.4%
Immigrated to US	82.7%
Spanish-speaking	72.3%
Education (yrs)	10.1 (3.6)
Mother HS grad	43.9%
Hollingshead social class 4/5[b]	89.0%
Father involved in raising child	89.0%
Increased social risk[c]	20.2%
Literacy standard score < 80[d]	7.5%
Depressive symptomatology[e]	28.3%
Child	
Child age at follow-up assessment, mos	6.4 (0.7)
Female gender	52.6%
Firstborn	41.0%

[a] Values are mean(sd) or %

[b] Categories represent the lowest Hollingshead SES groups

[c] Defined as one or more of: homelessness, exposure to violence, involvement with child protection or late prenatal care.

[d] Assessed using Woodcock-Johnson III / Bateria III Letter-Word Identification Scale

[e] Assessed using the Patient Health Questionnaire – 9 (PHQ-9).

Table 2

Descriptive information about predictor and outcome variables[a]

Predictors (Post-partum)	
Plans to read in infancy	22.0%
Baby book in the home	56.6%
Plans for reading as a strategy for school success	29.5%
Cumulative number of predictors:	
0	9.2%
1	36.4%
2	35.3%
3	19.1%
Outcomes (6 months)	
Mean (SD) StimQ-READ scores	7.4 (4.4)
Reading aloud at age 6 months	82.7%
Frequency of reading (days per week)	3.3(2.5)
Age reported initiated reading[b]	2.9 (1.8)

[a] n=173, except as indicated

[b] n=143, representing families who had initiated reading aloud

Table 3

Associations between reading attitudes and resources following delivery and reading behaviors at 6 months[a]

		Outcome variables					
		StimQ-READ		Reading frequency		Initiation of reading	
Predictor variables		**Mean score[b]**	**Adjusted mean difference (95% CI)[d]**	**Mean frequency (days/wk)[b]**	**Adjusted mean difference (95% CI)[d]**	**% Initiated Reading[c]**	**AOR[e] (95% CI)**
Reading as strategy for school success	Yes	8.6*	1.7 (0.3-3.0)*	4.0	0.8 (0.0-1.6)*	92.2%*	2.7 (0.8-9.2)
	No	6.9		3.0		78.7%	
Plans to read in infancy	Yes	8.3****	3.1 (1.6-4.6)****	3.6**	1.0 (0.1-1.8)*	89.6%****	5.4 (2.0-14.1)***
	No	4.3		2.3		57.9%	
Baby books in home	Yes	8.8**	2.3 (0.9-3.6)**	3.8	0.8 (0.0-1.6)	89.8%**	2.1 (0.8-5.8)
	No	5.6		2.6		73.3%	
Cumulative # predictors[f]	0 (reference)	2.9****	1.9 (1.2-2.6)**** per additional predictor	1.5****	0.8(0.3-1.1)** per additional predictor	50.0%****	3.1 (1.6-5.9)*** per additional predictor
	1	6.2		2.9		73.0%	
	2	8.2		3.5		93.4%	
	3	10.3		4.5		97.0%	

[a] n=173

[b] p-value for unadjusted differenced, based on independent samples t-test or ANOVA.

[c] p-value for unadjusted difference, based on Fisher's exact test or x^2

[d] Adjusted mean difference based on multiple linear regression models including all potential confounders

[e] Adjusted odds ratio based on multiple linear regression models including all potential confounders

[f] Reading as strategy for school success, plans to read in infancy and baby books in home

**** p<.0001

*** p<.001

** p<.01

* p<.05