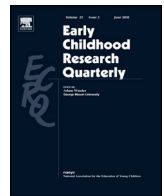




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# Effects of parent and child pre-intervention characteristics on child skill acquisition during a school readiness intervention

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### ABSTRACT

Two-hundred preschool children in Head Start (55% girls; 20% Hispanic, 25% African-American, 55% European American;  $M$  age = 4.80 years old) participated in a randomized-controlled trial of a home visiting intervention designed to promote emergent literacy skills (the Research-based Developmentally Informed parent [REDI-P] program). This study explored concurrent changes in levels of parent support and child literacy skills that occurred over the course of the intervention, and examined the impact of pre-intervention parent support and child literacy skills as potential moderators of parent and child outcomes. Cross-lagged structural equation models and follow-up analyses indicated that intervention had the strongest impact on child literacy skills when parents were high on support at the pre-intervention assessment. Conversely, the REDI-Parent program promoted the greatest gains in parent support when parents entered the program with low levels of support. These findings suggest that families may benefit from home visiting school readiness interventions in different ways: child skill acquisition may be greatest when parents are initially high in support, whereas parenting may improve most when parents are initially low in support.

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### Introduction

Developmental research suggests that much of the socio-economic gap in child school readiness is due to differences in the amount and quality of support for learning provided by parents during early childhood (Hart & Risley, 1995). Parent-focused interventions have been designed to close this gap, using a range of strategies during the preschool years to enhance child school readiness at kindergarten entry (see reviews by Brooks-Gunn & Markman, 2005; Welsh, Bierman, & Mathis, 2014). Some programs focus primarily on improving the general quality of parent-child interactions and thereby increasing parent support for learning, whereas other programs engage parents more specifically as tutors by providing them with home learning materials and coaching them in specific, evidence-based teaching strategies (Gomby, 2005; Mol, Bus, de Jong, & Smeets, 2008; Reese, Sparks, & Leyva, 2010). The growing research base suggests that using parents as tutors for young children may be a more reliable strategy for improving child language and literacy skills than focusing more generally on increasing parent support (Welsh et al., 2014). At the same time, the impact of programs that use parents as tutors is attenuated

for children living in poverty (Mol et al., 2008), perhaps because the supports and skills that parents need to engage effectively in specific, evidence-based teaching activities are reduced under conditions of socio-economic disadvantage (Manz, Hughes, Barnabas, Bracaliello, & Ginsburg-Block, 2010).

Given the importance of promoting the school readiness skills of children growing up in poverty, further research is needed in order to understand the potential role of parent support as a moderator of the impact of parent tutoring interventions (Brooks-Gunn & Markman, 2005). In addition, given the inter-dependence between parent support and child skills, understanding the impact of baseline child skills on parent teaching attempts and program impact is important as well (Anthony, Williams, Zhang, Landry, & Dunkelberger, 2014). This study examined initial (pre-intervention) levels of parent support and child literacy skills as potential moderators of the impact of the REDI (Research-based Developmentally Informed) parent [REDI-P] program, an enriched home visiting program that included a home learning curriculum and evidence-based teaching strategies aligned with the REDI classroom program (Bierman et al., 2008). As background for this study, the following sections provide a brief review of preschool home visiting programs designed to promote school readiness, an overview of the REDI-P program, and existing evidence of moderation in prior preschool home visiting studies.

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*Parenting programs designed to promote child school readiness*

Several widely used, home-visiting programs for economically disadvantaged preschool children focus on promoting parent support for learning in order to boost child academic school readiness. For example, the Parent–Child Home Program (Levenstein, Levenstein, & Oliver, 2002), Parents as Teachers Program (PAT; Pfannenstiel, Lambson, & Yarnell, 1991), and Home Instruction Program for Preschool Youngsters (HIPPY; Lombard, 1981) are three long-standing and widely used home visiting programs. In each case, the general approach is to increase parent support for learning by helping parents more effectively talk and play with their children. In these home visit programs, program staff provide information about child development, model appropriate activities, encourage self-reflection, provide performance feedback, and in some programs, facilitate access to social and support services (Levenstein et al., 2002; Lombard, 1981; Pfannenstiel et al., 1991).

Although quasi-experimental studies show promising results for each of these widely used programs, randomized controlled trials document a lack of reliable impact on child academic skills. For example, randomized control studies failed to find positive effects for the Parent–Child Home Program on child school readiness outcomes (Madden, O'Hara, & Levenstein, 1984; Scarr & McCartney, 1988), or for PAT on child cognitive development, language development or adaptive behavior (Drotar, Robinson, Jeavons, & Kirchner, 2009; Wagner, Spiker, & Linn, 2002). One cohort of children participating in HIPPY had improved reading skills at the end of first grade, but no effects emerged for the second cohort (Baker, Piotrkowski, & Brooks-Gunn, 1998).

An alternative approach to promoting academic school readiness involves engaging parents more specifically as tutors for their young children and coaching them in specific, evidence-based teaching strategies. For example, parent-focused interactive reading programs teach parents how to use questions while reading books to engage child interest, clarify new vocabulary, and facilitate comprehension (Whitehurst et al., 1994). Meta-analyses demonstrate positive effects on child language and emergent literacy skills when parents are trained to read interactively with their young children (Manz et al., 2010; Mol et al., 2008). Similarly, parents can be taught to use letter and letter-sound recognition games at home to promote child letter knowledge and phonemic awareness skills (Evans, Bell, Shaw, Moretti, & Page, 2006; Senechal, 2006), and to refer to print during book-reading to support the development of print concepts (Justice, Skibbe, McGinty, Piasta, & Petrill, 2011; see review by Reese et al., 2010). Despite the generally positive effects of these programs that help parents use evidence-based approaches to teach their young children, researchers have raised concerns that they may over-burden and insufficiently support economically-disadvantaged parents who are often challenged by multiple stressors, including low levels of formal education, limited resources, and low levels of social support (Manz et al., 2010). For example, as a function of limited education and elevated stress exposure, economically disadvantaged parents may not provide sufficient positive and sensitive support when teaching their children, resulting in child resistance and fewer academic gains (Manz et al., 2010).

*The REDI-parent program*

The REDI-P home visiting intervention was designed to provide parents of Head Start children with a home learning curriculum and coaching in evidence-based teaching strategies, tailored for low-income parents to reduce burden and provide support for parent implementation. The REDI-P program built upon and extended the evidence-based REDI classroom enrichment program, which targeted child school readiness in the dual domains

of social-emotional development and language-emergent literacy skills. In the REDI classroom program, teachers delivered the Preschool PATHS (Promoting Alternative Thinking Strategies) curriculum to support the acquisition of prosocial skills, emotional understanding, self-regulation, and social problem-solving skills (Domitrovich, Cortes, & Greenberg, 2007), and also implemented a dialogic reading program to promote oral language skills, a Sound Games program to build phonological sensitivity, and Alphabet Center activities to strengthen print knowledge (Bierman et al., 2008). A randomized-controlled trial documented positive effects for the REDI classroom program on preschool outcomes in both social-emotional and language-literacy domains (Bierman et al., 2008). Most of the social-emotional outcomes were sustained one year later after children transitioned into kindergarten, but only one literacy measure (phonological decoding) showed a sustained intervention effect (Bierman et al., 2014).

The REDI-P program was designed to expand the impact of the classroom program across the transition into kindergarten, with a particular emphasis on promoting sustained benefits in literacy skills. In order to increase parent support for learning as children transitioned into kindergarten, REDI-P included 10 bi-weekly home visits in the spring of the Head Start year prior to transition and six “booster” visits post-transition in the fall of the kindergarten year. Similar to the programs utilizing parents as tutors described above, parents were provided with books, letter identification and letter-sound learning activities, and learning games. In addition, home visitors coached parents in the use of positive support strategies for parent–child interactions, using demonstration DVDs, discussions, reflection and goal-setting activities, and videotaped feedback (Bierman et al., 2014).

Parent support was targeted for special emphasis in REDI-P based on research suggesting that a supportive approach may increase parent's capacity to engage their children effectively in learning activities, and parents who are supportive when they work with their children may have a greater impact on the growth in child skills (Landry, Smith, & Swank, 2006; Nye, Turner, & Schwartz, 2006). Interactions high in parent support are characterized by positive affect (e.g. smiling, laughing), expressed affection (e.g., praise, tenderness, physical affection), a child-centered focus, and sensitive responding to child cues (Dennis, 2006; Landry et al., 2006). High levels of parent support are linked with the development of self-regulation skills (Dennis, 2006) and associated with elevated academic achievement in both reading and math in elementary school (NICHD Early Child Care Research Network, 2002).

Outcome analyses from a randomized-controlled trial demonstrated that, relative to a control group involving “mail home” math games, REDI-P significantly enhanced child emergent literacy skills in kindergarten, and led to more favorable kindergarten teacher ratings in areas of academic performance, self-directed learning, and social competence (Bierman, Heinrichs, Welsh, Nix, & Mathis, in press). Although parents in the intervention condition reported talking more often with their children and reading more interactively than parents in the control condition, observations of parent–child interactions revealed no significant main effects of REDI-P on parent support (Bierman et al., in press). An important unanswered question is whether levels of parent support at baseline moderated the impact of the REDI-P program on child or parent outcomes.

*Evidence of moderation in parenting programs targeting child school readiness*

In general, the degree to which parent characteristics may moderate the impact of parenting programs targeting child school readiness is understudied and of high importance (Manz et al., 2010). The fact that quasi-experimental studies of many

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