



# Parental contributors to children's persistence and school readiness

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## ABSTRACT

This study examined whether parental teaching strategies (e.g., scaffolding) are predictive of school readiness competencies through children's task persistence, and if the strength of the relation varies across two contextual features of parenting (e.g., warmth and harsh discipline). Past research has examined contextual features of parenting or specific parenting practices as being related to children's achievement, with less attention given to how they might interact. In the present study, a moderated-mediation model was tested to assess whether parental scaffolding skills predict children's language-cognitive and social-emotional school readiness, mediated by children's persistence and moderated by parent warmth and harsh discipline. Exploratory analyses assessed whether a competing sequential-mediation model better explained the associations among parenting, children's persistence, and school readiness than a moderated-mediation model. In a low-income sample of families from the Early Head Start Research and Evaluation Project ( $N=2977$ ), parental scaffolding significantly predicted children's persistence at 36 months, as well as both latent constructs of school readiness before kindergarten. Persistence partially mediated the link between parental scaffolding and both latent constructs of school readiness. Neither warmth nor harsh discipline moderated the mediational model. In the sequential-mediation model, parent scaffolding and children's persistence mediated the associations between warmth and harsh discipline and both latent constructs of school readiness. The sequential-mediation model provided a similar fit to the data as the moderated-mediation model. The results indicate that parental scaffolding can promote children's persistence and later school readiness.

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## 1. Introduction

Studies consistently show that the rearing environment predicts children's school readiness, as measured by cognitive development (e.g., Nievar, Moske, Johnson, & Chen, 2014; Towe-Goodman et al., 2014) and academic performance (Kiuru et al., 2012; Martin, Ryan, & Brooks-Gunn, 2007), yet the mediating and moderating processes involved in preparing children for school are less understood. With a sample of low-income, diverse families, the present study investigated whether task persistence mediates the association between a key parental teaching strategy – scaffolding during problem-solving tasks (Wood, Bruner, & Ross, 1976) – and later school readiness indicators. Analyses also were conducted to examine two

features of parenting – warmth versus hostility – as moderating variables because they provide the context in which parent-child interactions take place. The present study used data from the Early Head Start Research and Evaluation Project (1996–2010); therefore, final models were tested for intervention effects as well.

## 2. Early Head Start

Early Head Start (EHS) is a federally funded program that was authorized by the Head Start Act in 1994 and was expanded in 1998 (Raikes, Brooks-Gunn, & Love, 2013). EHS serves low-income families with children under the age of 3. The goal of the program is to promote children's healthy development and family functioning through (a) home-based services, (b) center-based services, or (c) a combination of the two approaches (Raikes et al., 2013). The present study capitalized on data from the EHSREP (1996–2010). The overall findings from the evaluation at age 3, when the program ended, documented several significant outcomes for both children (e.g., greater sustained attention, less negativity during play, greater English vocabulary) and parents (e.g., more supportive during play, less spanking, daily reading; Vogel, Brooks-Gunn, Martin, & Klute, 2013). By age 5, two years after the program had ended, effects

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were still evident on some indicators for children (e.g., fewer social behavior problems, more positive approaches toward learning, and in Spanish vocabulary skills for Spanish-speaking children) and for parents (e.g., daily reading, less depression; for more information see Vogel et al., 2013). The present study extends previous findings from the EHSREP (1996–2010) by testing a causal model of school readiness.

### 3. Parental scaffolding predicts school readiness

One way children acquire competencies for school readiness and later achievement is through a hierarchical process in which foundational skills are challenged by more complex tasks and then evolve into higher-order skills. This skill acquisition is enhanced when parents and teachers provide scaffolding, or structured guidance that is tailored to the developmental level of the child (Wood et al., 1976). For example, after a child makes an error, an effective parent would provide more guidance through increased instruction (Conner, Knight, & Cross, 1997). When the child successfully completes the task with more autonomy, the adult would cede more control. Thus, scaffolding is socially constructed, sensitive guidance that supports children's learning and later school achievement (Bibok, Carpendale, & Müller, 2009; Hammond, Müller, Carpendale, Bibok, & Liebermann-Finestone, 2012; Mattanah, Pratt, Cowan, & Cowan, 2005; Pratt, Kerig, Cowan, & Cowan, 1988). Although he did not use the term in his work, Vygotsky's (1978) zone of proximal development (ZPD) does include the concept of scaffolding.

Theoretically, Vygotsky's (1978) ZPD corroborates the presuppositions of this study. The ZPD is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with a more capable peer" (Vygotsky, 1978 Vygotsky, 1978, p. 86). Vygotsky (1978) argued that parents are responsible for the socialization of their children; therefore, children learn competencies long before they enter school. Thus, one way parents support children's school readiness and later learning is by utilizing scaffolding techniques based on children's current level of functioning within their ZPD (e.g., Evans, Moretti, Shaw, & Fox, 2003; Pino-Pasternak & Whitebread, 2010, Pratt et al., 1988).

Scaffolding also provides opportunities for children to observe and model positive learning behaviors. Social learning theory posits that novel behaviors can be acquired through direct experience such as didactic instruction as well as through observation of behavioral strategies; effective models of behavior are selected and unsuccessful models are discarded (Bandura, 1971). Effective scaffolding interactions thus teach children *how to learn* not just problem-solving strategies but also how to follow rules and maintain a positive attitude toward learning. As such, these learning strategies are transferred from the parent-child context to the child's independent problem-solving context. For example, in a sample of Head Start families, children's attention while independently solving a challenging puzzle task was found to be predictive of performance on the task, but only for children whose mothers' provide high levels of scaffolding during parent-child interactions (Robinson, Burns, & Davis, 2009).

Among a sample of children attending EHS, social-emotional development was significantly related to language development and cognitive skills (Sharkins, Leger, & Ernst, 2017). These findings support past work demonstrating that multiple dimensions of school readiness are interrelated (Hirsch-Pasek, Kochanoff, Newcombe, & de Villiers, 2005); thus, we expected parental scaffolding to predict later language and cognitive development as well as social-emotional skills. Research consistently finds that

parenting practices related to scaffolding, such as engagement and guidance, are positively associated with cognitive outcomes in young children (Hammond et al., 2012; Tramonte, Gauthier, & Willms, 2015), including children's language and reading abilities (e.g., Dieterich, Assel, Swank, Smith, & Landry, 2006) and problem-solving skills (Conner & Cross, 2003). In addition, within Head Start families, parental responsiveness during a parent-child interaction – defined by level of warmth, contingent responsiveness, and verbal scaffolding – predicted growth 6.5 months later in aspects of preschoolers' executive function skills (e.g., delay inhibition, conflict EF; Merz, Landry, Montroy, & Williams, 2016). These associations between scaffolding and cognitive abilities have been obtained with first graders even after controlling for socioeconomic indicators, parent-child characteristics, and earlier cognitive level (Mulvaney, McCartney, Bub, & Marshall, 2006).

Related to social-emotional skills, effective parental scaffolding (e.g., structuring, support, task orientation) during a problem-solving task with preschoolers predicted social-emotional development in the form of lower teacher ratings of child sadness in boys and girls, and higher social skills in girls (Denham, Renwick, & Holt, 1991). Scaffolding also promotes regulation during problem-solving activities, which allows children to persist at challenges and sustain their attention on other cognitive aspects of a task (Blair & Ursache, 2011). This finding has been replicated in a sample of Head Start families such that maternal scaffolding (e.g., negative regard, autonomy support, and intrusiveness) predicts children's observed regulation (e.g., negativity, joint attention) during parent-child tasks (Lincoln, Russell, Donohue, & Racine, 2016). Together these findings suggest that early scaffolding during parent-child interactions promotes skills that help children navigate later cognitive and social tasks, yet the underlying mechanisms remain unclear.

### 4. Children's persistence as a mediator of scaffolding's impact

Given that scaffolding is related to children's task success and persistence (Neitzel & Stright, 2003) as well as later school readiness, persistence was viewed in this study as a potential explanation for how parental teaching strategies help to prepare children for success at school entry. In one longitudinal twin study of contributors to task persistence, much of the stability in persistence was related to genetic influences, yet change in task persistence was explained by the nonshared environment (Deater-Deckard, Petrill, Thompson, & DeThorne, 2006). Specifically, within each genetically identical twin pair, the child who was shown more warmth, support, and constructive guidance (scaffolding) during dyadic tasks was more likely to show growth, or minimal decline, in task persistence as compared to the sibling. Thus, persistence appears to be promotable in early childhood and may be a potential mechanism in preparing children for success in school. In the present study, therefore, we hypothesized that persistence mediates the association between scaffolding and both language-math school readiness and social-emotional school readiness.

#### 4.1. Language-math readiness

There is a paucity of research regarding the longitudinal relation between early indicators of motivation (e.g., persistence) in early childhood and achievement at school entry (Mokrova, O'Brien, Calkins, Leerkes, & Marcovitch, 2013). However, earlier work has documented that preschoolers' task persistence is predictive of cognitive functioning in early childhood (Sigman, Cohen, Beckwith, & Topinka, 1987) as well as math and reading abilities at age 21 (McClelland, Acock, Piccinin, Rhea, & Stallings, 2013). More recent research has also demonstrated that persistence at age 3 signifi-

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