



## High-quality early education: Age of entry and time in care differences in student outcomes for English-only and dual language learners



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### ABSTRACT

Research on early education and care (EEC) dosage, defined as the amount or timing of either current or cumulative participation in EEC programming, generally suggests that more time in high-quality EEC programs is beneficial for children's developmental outcomes. Many of the studies on time in high quality EEC programs are with black and white children and less is known about the effects of dosage with dual language learner (DLL) children. This study used data from an implementation evaluation of Educare – a high-quality early education program serving children from birth to 5 – to examine the extent to which age of entry and time in care relate to language and social-emotional skills for DLL and English-only (EO) children from low-income families. Participants were 5037 children who were enrolled in one of 12 Educare schools as infants, toddlers, or preschoolers between 2003 and 2013 and were followed for their duration in Educare. Longitudinal assessments of children's receptive language and social-emotional skills were analyzed with hierarchical linear modeling, controlling for demographic characteristics and classroom quality. Both age of entry and duration were positively associated with receptive language outcomes, with stronger effect sizes for DLL than EO children. DLL children who entered early consistently scored well across the assessment ages, and late enterers made significant gains during their 1 or 2 years of EEC but lagged considerably behind early entering DLL children when they left for kindergarten. Spanish-speaking DLLs did not lose their proficiency in Spanish as they learned English. Teacher ratings of children's social-emotional skills were lower if children entered at a younger age, but still within normal ranges, and the ratings improved with longer attendance. Results suggest that renewed focus is needed on ensuring that children at-risk for poor school outcomes have access to high-quality EEC early in life and for sustained periods of time to reduce later achievement gaps.

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### Introduction

The achievement gap between economically disadvantaged and more affluent children begins as early as nine months of age (Halle et al., 2009), is large when children enter kindergarten, and does not appear to change as children progress through school (Duncan & Magnuson, 2011). The achievement gap has worsened over the past 40 years as the income gap itself has widened (Reardon, 2011). Studies suggest that high-quality early education can reduce or even eliminate the income-linked achievement gap (Lamy, 2012), and that children whose home language is not English might

especially benefit (Gormley, 2008). Despite this, low-income families are challenged to locate and access early education and care (EEC) programs for their children and when they do, it is often of lower quality than EEC for non-poor children (National Institute of Child Health and Human Development Early Child Care Research Network [NICHD ECCRN], 2005). Finding infant-toddler care is even more difficult than care for preschoolers, and analyses reveal that infants from low-income families are in substantially lower quality care than non-poor infants (Ruzek, Burchinal, Farkas, & Duncan, 2013). This study uses data from an implementation evaluation of a high-quality EEC program that begins during infancy to examine the extent to which age of entry and time in care are related to child outcomes for children from low-income families.

Research on EEC dosage, defined as the amount or timing of either current or cumulative participation in EEC programming, generally suggests that more time in high-quality EEC programs

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is beneficial for children's developmental outcomes (Zaslow et al., 2010). A recent study indicated that children demonstrated the highest levels of school readiness skills if they received high-quality care during both infancy and preschool (Li, Farkas, Duncan, Burchinal, & Vandell, 2013). This suggests that children, especially children from low-income families, should benefit most when they enter high-quality care at a younger age and remain in high-quality care for longer periods of time. However, few studies have been able to document the extent to which children experience high-quality EEC longitudinally, especially for children from low-income families, including dual language learner (DLL) children. Such research is needed in order to determine the extent to which early education experiences might prevent, reduce, or eliminate the achievement gap between children from low- and middle-income families. One model of high-quality EEC in which to investigate questions of entry age and dosage is Educare.

The Educare EEC model for young children and parents in low-income families has been implemented in 20 sites across the country, each serving children from birth to kindergarten entry. In the 2012–2013 program year, 31% of Educare children were identified as being DLLs. This paper presents results from a longitudinal study of more than 5000 Educare children in 12 centers. The purpose of this study is to examine whether children show higher levels of language and social-emotional skills during early childhood if they enter Educare earlier or experience more years in Educare. This study provides one of the largest examinations of the relations between dosage in high-quality, center-based programming that begins in infancy and child outcomes for children from low-income families. This paper also examines potential differences between children whose home language is English or some other language.

#### *Theoretical perspectives*

Traditional and contemporary developmental theories focus on the crucial role that warm, responsive, stimulating interactions with adults and exposure to stimulating environments play in young children's development (Bronfenbrenner & Morris, 2006; Magnusson & Stattin, 2006; Vygotsky, 1978). These developmental models posit that beginning in infancy, children's proximal environments – home and early education settings – provide the primary contexts for development through early childhood. Further, these theories suggest that it is the frequency and sensitivity of interactions between children and the caregivers in these environments that create opportunities for learning (Pianta, 2006).

Family stress models suggest that economic stressors lead to emotional distress in parents, such as increased depression or anxiety, which in turn may lead to harsher, less supportive, and more detached parenting behavior (Elder & Caspi, 1988; MacKenzie, Nicklas, Brooks-Gunn, & Waldfogel, 2011; McLoyd, 1990; Newland, Crnic, Cox, Mills-Koonce, & the Family Life Project Key Investigators, 2013). Children from low-income families are less likely to experience supportive and sensitive interactions from parents and other care providers (Ursache, Blair, & Raver, 2012), which appears to result in discrepancies in language and cognitive skills between low-income and middle-income children that emerge during early childhood (Reardon, 2011). If children from low-income families can be exposed to sensitive interactions and supportive environments in EEC settings, it is possible that these discrepancies in skills can be avoided or reduced.

#### *Empirical results linking high-quality EEC and reduced achievement gaps*

Landmark longitudinal studies of model early education programs for low-income children begun in the 1960s (Perry

Preschool—Schweinhart, Barnes, & Weikart, 1993), 1970s (Abecedarian—Campbell & Ramey, 1994), and 1980s (Chicago Child-Parent Centers [CPC]—Reynolds, Temple, Robertson, & Mann, 2001; Infant Health & Development Program [IHDP]—IHDP, 1990) suggest that high-quality early education can reduce or even eliminate the income-linked achievement gap. In addition to these older randomized studies, recent randomized clinical trials (Welsh, Nix, Blair, Bierman, & Nelson, 2010); rigorous quasi-experimental studies (Gormley, Gayer, Phillips, & Dawson, 2005); and observational studies, such as the Study of Early Child Care and Youth Development (Dearing, McCartney, & Taylor, 2009; Tucker-Drob, 2012) also show relations between high-quality EEC and reduced income-linked achievement gaps. Longer-term effects have been reported through elementary school (Belsky et al., 2007; Peisner-Feinberg et al., 2001), high school (Vandell, Belsky, Burchinal, Steinberg, Vandergrift, & the NICHD Early Child Care Research Network, 2010), and adulthood (Conti & Heckman, 2012; McCormick et al., 2006; Pungello et al., 2010; Schweinhart et al., 2005). Further, cost-benefit analyses have led some to view investment in early childhood education as one of the most effective means for promoting opportunities for all children (Bartik, 2011; Heckman, 2010).

#### *Age of entry and time in EEC*

Most of the prevention/intervention research on EEC delivered in centers has focused on preschool education, despite the fact that the interventions that began in infancy have some of the largest and longest impacts on cognitive skills (Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; McCormick et al., 2006). The Abecedarian Project (ABC) and the Infant Health and Development Program (IHDP) are two early interventions that have shown long-term effects on cognitive skills. Both randomized clinical trials enrolled infants, beginning child care by 4 months in ABC and at 1 year in IHDP. Large initial impacts on language skills were observed ( $d \sim 0.75$  for both studies), and those impacts remained statistically significant at most recent assessment at 30 years for ABC (Campbell et al., 2012) and 18 years for IHDP (McCormick et al., 2006).

Contrasting these two random-assignment studies where the intervention began very early in life with the many studies that have provided intervention beginning at preschool, one typically sees smaller effects and treatment group cognitive and language score differences that tend to “fade out.” For example, the initial cognitive impacts in the High Scope/Perry Preschool study disappeared in elementary school (Schweinhart et al., 2005) and in the evaluation of Head Start had disappeared by grade 1 (US DHHS, 2010). A recent meta-analysis demonstrated that preschool interventions can be effective for children from low-income families (Duncan & Magnuson, 2013), but they are typically helping children recover from a deficit that has already occurred by the time children enroll, whereas a decline may be prevented in children who enroll early and stay enrolled (Ramey & Campbell, 1984). A set of propensity score analyses has suggested that the combination of high-quality infant-toddler care and preschool care best promotes school readiness (Li et al., 2013). This issue has evoked much speculation, but needs further examination (Burchinal, Vernon-Feagans, Vitiello, Greenberg, & the Family Life Project Key Investigators, 2014) because center-based care is used much less frequently than other types of child care settings for infants and toddlers, especially for low-income infants and toddlers (Ruzek et al., 2013).

Evidence from observational studies also suggests that longer exposure to high-quality care is related to higher levels of school readiness skills among low-income children. This line of research has examined questions about children's outcomes in intervention or early education programs as a function of quantity of

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