

LONG -TERM EFFECTS THROUGH GRADE THREE OF THE EARLY AUTHORS PROGRAM FOR
LOW-INCOME, ETHNICALLY DIVERSE PRESCHOOLERS

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ABSTRACT

LONG -TERM EFFECTS THROUGH GRADE THREE OF THE EARLY AUTHORS PROGRAM FOR LOW-INCOME, ETHNICALLY DIVERSE PRESCHOOLERS

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The current study analyzes longitudinal measures from kindergarten through third grade for 84 low-income, ethnically diverse (55% Black, 45% Hispanic) children who, during preschool, participated in the Early Authors Program (EAP) (Bernhard, Winsler, Bleiker, Ginieniewicz, & Madigan, 2008), and a comparison group of 38 children with similar socio - demographic characteristics. The EAP is a literacy intervention that targeted preschool children attending center-based or home-based childcare in Miami. Children self-authored books depicting their daily lives. Teachers and families were engaged in literacy activities, and technology was used in the classroom to facilitate the children's authoring of the texts. Initial published results showed that the EAP contributed to language development by increasing expressive and receptive language skills and letter recognition, and also by preventing children from falling behind in relation to national averages, compared to control children (Bernhard et al., 2008). Readiness for school at kindergarten entry and emergent literacy in English as well as children's math and

reading skills in second and third grades were assessed here with standardized tests. Furthermore, teachers provided children's academic grades at the end of each school year (K-3), and information was gathered regarding retention, use of special education, and English proficiency. Significant differences in school readiness between children participating in the EAP program and children in the comparison group were found, with EAP children being more likely to be classified as "ready" for school. Likewise, EAP children showed stronger emergent literacy (in English) in K according to the DIBELS. No other main effects of group were observed for outcomes through third grade. However, interaction effects were observed between group and gender, and group by ethnicity. Boys in the EAP group performed better than boys in the comparison group in school readiness, kindergarten grades, and in literacy and other academic grades in first grade. Black children in the EAP group performed better than black children in the comparison group on literacy, other academic grades, and FCAT math in third grade.

INTRODUCTION

Disparities between the educational attainment of minority young children from low - income families and their counterparts has been at the center of attention for parents, educators, and policy makers during the past decades (Cabell, Justice, Konold, & McGinty, 2011; De Feyter & Winsler, 2009). Indeed, young children's education is a complex and multifaceted topic that warrants the consideration of variables at the student, school, and family level. It also warrants consideration of the social, political, and economic dynamics surrounding the context in which students, schools, and families interact in order to navigate the educational system with the common goal of optimal academic achievement. For instance, at the student level, elements such as motivation to learn, gender, ethnicity, and skills at the time of school entry may impact academic performance skills (Bosacki & Moore, 2004; Clarke-Stewart & Allhusen, 2005). Likewise, family characteristics such as parental education, socio economic status (SES), home environment, and parental involvement in children's education have been linked to children's academic performance (Chall, 2000; Lee, 2002; Ramey & Ramey, 1998). The relationship between school-level characteristics (curriculum, classroom size, teacher's education, and instructional practices) and children's academic performance has been also amply documented (Wasik, Bond, & Hindman, 2006). Finally, social aspects may also influence children's adaptation and performance in school. For example, in the USA, the poverty experienced by many ethnically diverse populations is a relevant variable that

impacts student academic achievement (Capps, et al., 2005; Meece & Kurtz-Costes, 2001).

Emergent Literacy Skills

Literacy skills and the ability to read, understand, and communicate in oral, as well as in written, ways are considered key elements for young children to learn, and constitute the foundation needed in order to learn and succeed, not only in reading and writing, but in other academic areas as well (Cunningham & Stanovich, 1997).

Whitehurst and Lonigan (1998) define emergent literacy skills as “the skills, knowledge, and attitudes that are presumed to be developmental precursors to conventional forms of reading and writing.” (p.849). The authors propose two main domains for the classification of literacy skills: inside-out skills and outside-in skills. Phonological awareness and letter knowledge constitute an example of inside-out skills; and language and conceptual knowledge constitute examples of outside-in literacy skills (Whitehurst & Lonigan, 1998). A complementary classification is offered by Dobbs-Oates, Kaderavek, Guo, and Justice (2011) who described how children’s emergent literacy skills are commonly organized in two main categories: oral language skills including vocabulary and grammar; and code-related skills including print concepts, letter knowledge, and phonological awareness. Both, oral language and code-related skills are related. These early skills during the preschool years have been associated with children’s later abilities in reading, writing, and content comprehension. For example, Lonigan, Burgess, and Anthony (2000) found that early alphabet knowledge had a significant predictive value

for reading achievement during the early years in elementary school (Lonigan et al., 2000).

Emergent Literacy Skills in Diverse Children

The influence of environmental factors on the acquisition of literacy skills has been amply studied, establishing that, in general, children from lower socio economic status struggle more in the development of literacy skills, when compared with middle- class children (Cabell, Justice, Konold, & McGinty, 2011; Whitehurst, 1997). Vasylieva and Waterfall (2011) described how socio economic status and poverty might be a source of variability in the development of language skills; which could be due to environmental stressors, and lack of literacy- related materials and activities in the home environment (Cabell et al., 2011). Likewise, Buckhalt (2011) stated that “Children from low socioeconomic status (SES) families are at greater risk for problems in school, including underachievement, behavioral maladjustment, and early dropout.”(p.59). Thus, low SES impacts children and their families, as well as children’s school grades, grade completion, and scores in standardized tests (Buckhalt, 2011). Additionally, children from low - SES backgrounds might show behavior problems likely to interfere with the learning process, and lead to disciplinary actions like suspensions, that, in turn, might affect academic performance (Buckhalt, 2011).

These effects of SES may extend through children’s academic careers, impacting their performance all the way through elementary school and even into high school (Chall, Jacobs, & Baldwin, 1990; Entwisle, Alexander, & Olson, 2005; Jimerson,

Egeland, & Teo, 1999; Sharif, Ozua, Dinkevich, & Mulvihill, 2003). For instance, Burger (2010) describes that children from low- socio economic backgrounds are more likely to “repeat grades, to develop special education needs in the course of their later school years, or to withdraw from school before completing their program.” (p. 142). Stanovich (1986) describe what he called the “Matthew” effect, where children who start with a disadvantage in reading and academic skills struggle to perform in school, and as they progress in the school system, they face more challenging and advanced material, and the struggle just continues, which makes those children fall and stay behind in academic performance when compared with their counterparts (Phillips, Norris, Osmond, & Maynard, 2002; Torgesen, 1998).

It is important to remember that, far from uniform, children in poverty are a diverse group, and different elements need to be taken into account in order to study their struggle in developing literacy skills (Vasylieva & Waterfall, 2011). One of these elements is English Language Learner (ELL) status. Over the last few years, there has been increasing attention to the development of literacy skills of ELL children. According to Vialpando, Yedlin, Linse, Harrington, and Cannon (2005), ELL refers to children for whom English is not their native language, and who are currently in the process of learning English. ELL children face specific challenges in the American educational system, where they are studying and attempting to learn curriculum content which, for the most part, is presented in what constitutes a foreign language for them (Capps et al., 2005). Because of that, alternatives such as immersion and bilingual education have been developed in order to support the ELL child’s need to achieve the

English proficiency needed to fully benefit from the educational system, and to increase their chances of academic success in the short and long term (Senesac, 2002; Vialpando et al., 2005). Bilingual education is based on an *English as a Second Language* (ESL) approach, in which children who are not fully proficient in the English language learn conversational as well as academic skills, with limited or no use of their native language during instruction (Vialpando et al., 2005).

In sum, the combination of low SES and ELL status might increase the difficulties that minority children face when attempting to perform in the educational system (Jalongo & Sobolak, 2011; Wasik et al., 2006); thus increasing their risk of falling behind in their academic pursuits (Dickinson & McCabe, 2001; McCoach, O'Connell, Reis, & Levitt, 2006).

Many programs have arisen in the past years with the purpose of helping ELL children by targeting protective factors such as academic and social skills (Crawford, 1999). The end result ideally is to contribute to closing the academic gap by minimizing risk factors in the short and long term. Through many years of research, it has been established that the sooner an intervention is put in place, the better the odds are of success (Neuman, 2009). In the following, a summary of outcomes from early literacy intervention programs is presented.

Early Literacy Interventions

In order to support the enhancement of emergent literacy skills, practitioners are promoting an “early start” (Snow, 2006); and a variety of programs are being

implemented such as home-based and center-based programs, which include strategies that target different aspects of literacy (print knowledge, phonological awareness, writing, oral language) or different factors (children, teachers, families) related to the acquisition and development of early literacy skills (NELP, 2008; Neuman, 2009; Snow, 2006). Overall, these programs understand the children's early years to be a critical period for intervention, and implement educational activities to enhance one or more literacy skills (Neuman, 2009). Indeed, early literacy interventions present a wide range of approaches and focuses of interest. Some of them prefer the direct teaching of specific literacy skills (Schickedanz & McGee, 2010; Vellutino & Scanlon, 2001), while others focus on classroom elements/dynamics and the potential to promote children's participation in authentic literacy activities (Bernhard et al., 2008). Bernhard et al. (2008) state that "global literacy interventions that involve increasing children's participation in meaningful literacy activities, and that do not overemphasize direct teaching of literacy skills and subcomponents, are effective in increasing the language skills of diverse, urban young children who live in poverty"(p.100). In addition, Neuman (2009) explains that interventions more likely to generate "moderate-to-large" effects on development are those interventions that emphasize professional training and coordination of services. In sum, comprehensive interventions combining approaches and involving different factors have proven successful when enhancing early literacy skills among at risk children.

In their 2008 report, the National Early Literacy Panel (NELP) explored a wide set of studies describing how early development of literacy skills relates to later skills and

academic attainment. While doing this, the panel described different type of interventions and their impact on children's development of literacy skills, and classified the interventions into the following five groups:

Code- focused interventions

Code-focused interventions usually emphasize the teaching of phonological awareness, alphabet knowledge, and decoding skills (NELP, 2008). Children learn how to recognize letter names and sounds, and also focus on reading, spelling, oral language, and other activities related to the alphabetic code. These interventions consistently showed moderate-to- large effects with a positive impact on children's conventional literacy skills. Those effects seemed to apply even when considering children's age and prior literacy knowledge. That is to say that positive effects were found among preschool and kindergarten - age children, children with minimal alphabetic knowledge, as well as among children who were able to read (NELP, 2008). For instance, Blachman, Ball, Black, and Tangel (2004) conducted a study where 84 inner-city children who received instruction in phonological awareness showed improvement from pre-test to post-test measurements, when compared with 75 children with similar backgrounds in the control group. No differences were observed at pretest, however. After the 11 weeks of intervention, children in the experimental group performed better than children in the control group on phoneme segmentation, letter name and letter sound knowledge, reading, and spelling, (Blachman et al., 2004).

Shared reading interventions

Shared reading interventions promote a different array of activities in which adults (teachers, parents, or both) read to/with the children, encouraging children's engagement with the content of the material being read. These interventions consistently showed moderate effects on children's print knowledge and oral language skills. Furthermore, shared-reading interventions appear to be equally beneficial in preventing later academic difficulties for at - risk children and for children not at risk (NELP, 2008).

Schickedanz and McGee (2010) stated that shared reading interventions that encourage children's understanding of meaning, vocabulary, and syntax development positively impact not only the children, but the adults involved as well, generating changes in parents' and teachers' book reading behavior to/with children, which, at the same time, benefit children's literacy skill development by having a supportive context. Similar findings have been reported by Wasik et al. (2006) who found that early literacy interventions show a positive impact on teacher's instructional practices (Wasik et al., 2006). Furthermore, it is generally accepted that shared book reading interventions benefit vocabulary acquisition and subsequent academic performance (Jalongo & Sobolak, 2011; Justice, Meier, & Walpole, 2005; Mol, Bus, & de Jong, 2009). For example, students who start with better vocabulary knowledge will understand books easier than those students with limited vocabulary knowledge, and this easier understanding of books transcends most all subjects and might also affect children's performance in later academic years (Jalongo & Sobolak, 2011). Justice and Ezzell (2002) conducted a study where the impact of participation in book-reading sessions

among low- income children was assessed. Children in the experimental and control group participated in reading sessions; however children in the experimental group participated in reading sessions with a print focus, rather than the picture focus experienced by children in the control group. At posttest, children in the experimental group performed better in print awareness (words in print, print recognition, and alphabet knowledge).

Parent and home programs

Parent and home programs rely on parents to teach children different elements that will boost their cognitive and literacy skill development. In order to do this, parents receive training in instructional practices to use at home when teaching their children. Parent involvement as well as the improvement of the home literacy environment remains at the core of these interventions (Crain-Thoreson, & Dale, 1999; NELP, 2008). Moderate - to - large effects were found in parent and home interventions, with improvement of children's oral language skills and general cognitive abilities (NELP, 2008). Some studies have discovered that parental involvement and parent level of education may moderate the effect of literacy intervention (Sénéchal & LeFevre, 2002). For example, Shariff et al. (2003) found that children with college-educated parents had higher scores on the PPVT after a short - term intervention than children from parents with less education. Additionally, parents from low- income families benefit from interventions that try to encourage dialogic reading, improving their ability to promote their children's learning of new vocabulary and concepts (Salsa & Peralta, 2009). Regarding children with developmental delays (Hemmeter & Kaiser 1994), parents were

able to generalize and apply at-home strategies initially learned in a play room setting, with positive results and general effects in both parents and children, as well as improved children's initiative and verbal communication.

Preschool or kindergarten programs

Preschool or kindergarten literacy programs are implemented as part of the regular preschool or kindergarten programs, usually with comprehensive services (education, nutrition, social services, home-visiting and parent support) targeting at-risk children and their families. Like in the parent and home programs, parental involvement is a key element together with professional development of the staff and a curriculum that emphasizes literacy. Preschool/ kindergarten programs consistently showed moderate- to-large effects on spelling and school readiness, particularly in the category of reading (NELP, 2008). For example, Carlson and Francis (2002) studied the impact that the RITE (Rodeo Institute for Teacher Excellence) program had on children's reading skills from kindergarten through second grade. On a yearly basis, the authors assessed children's reading skills with standardized measurements, finding that participants in the RITE program outperformed children in the comparison group.

Language-enhancement interventions

Language-enhancement interventions are "..... designed to explicitly and directly improve young children's language skills, in terms of vocabulary development, syntactic sophistication, listening comprehension, and other similar aspects of language development." (NELP, 2008. p 211). The NELP found that language-enhancement

interventions improved children's language development in a more consistent way than the other types of interventions, enhancing children's expressive and receptive language skills, phonemic awareness, and verbal intelligence (NELP, 2008). For example, Tyler, Lewis, Haskill, and Tolbert (2003) studied the effect of a language- enhancement program combined with phonological and morphosyntactic elements for 47 children with speech-language impairment. After 24 weeks, improvements were observed in the morpho syntactic component (addressing finite morphemes), superior to children in the control group.

To summarize, some of the interventions described by the NELP focus on formal reading instruction and direct teaching of specific literacy skills, while others focus on enrichment of either family or classroom environments, and they're adult - mediated by parents and teachers. All findings show that enhancement of child literacy, cognitive abilities, and the home/classroom literacy environment is possible (NELP, 2008; O'connor & Jenkins, 1999). Literacy is also a social and cultural practice (Volk & De Acosta, 2001), and activities that relate to children's cultural background help children to better understand and develop language. The need to focus on the social and cultural context of literacy, as well as the need to provide children with meaningful, motivating, culturally relevant literacy experiences in the classroom has been pointed out by many authors (Bernhard et al. 2008; Bricker, 1993; Cairney & Langbien, 1989; Erickson & Gutierrez, 2002; Gee, 2001). Additionally, the impact of the home literacy environment has been reported by Sénéchal and LeFevre (2002), who found links between the experience that children have at home, and their literacy skills and reading achievement

up to third grade. Whitehurst and Lonigan (1998) also reported how the environments where children develop significantly impact their literacy skills. Thus, characteristics of the home and classroom (books and print material available, literacy practices, etc.) which might promote children's reading and writing are linked to children's development and enhancement of oral, reading, and written skills. Burgess, Hecht, and Lonigan (2002) described the importance of the context in which children's learning experiences occur, and the relevance of the support that teachers and other adults can give to children. Moreover, those elements seem to have a significant impact even over other relevant variables such as SES (de Jong & Leseman, 2001; Jalongo & Sobolak, 2011; Wasik et al., 2006). Magnuson, Meyers, Ruhm, and Waldfogel, (2004) reported that children who participated in early education programs were not as likely to be retained in kindergarten. And evidence across studies has been presented that supports the association between participation in early intervention programs and children's cognitive improvements in both the short and long term, academic achievements, reduction in special education placement, higher rates of employment and income later in life as well as lower rates of involvement in crime (Goodman & Sianesi, 2005).

The need to combine different approaches used by the interventions described before lead to the creation and implementation of programs like the Early Authors Program (EAP, Bernhard et al. 2008), where parents as well as teachers are actively involved during the implementation of the program. The EAP falls into the category of a multifaceted and comprehensive approach, targeting children, families, and schools in

both their home and classroom environments, but without focusing on specific bottom - up teaching of skills.

Early Authors Program's (EAP)

The Early Authors Program (EAP) was a 12-month early literacy intervention, implemented with an ethnically diverse population of 800 families, 1,179 children, 57 teachers, 32 childcare centers, and 13 literacy specialists/interventionists in Miami-Dade county during the 2003 - 2004 preschool year (Bernhard et al., 2008). The 32 centers were preselected based on their time providing services (at least two years), their ability to reach families receiving childcare subsidies and their geographic location (representative of the county). Then, the center directors were invited to participate in the study, and nine additional similar centers were invited to be part of the study as a comparison group. Thus, rather than random assignment of children to either the EAP or the comparison group, there was a random selection of the children at the centers participating in each condition. Likewise, from the 1,179 children who participating in the original study, Bernhard et al. (2008) randomly selected a subsample of 325 EAP children and 103 comparison children. A final sample of 280 EAP children and 87 children in the comparison group was selected, including only those children with at least some pretest or posttest data for a total of $N=367$ children in the original sample, with 48% being Hispanic children, 44% Black, 5% white and 3% "other" ethnicity, representing the overall ethnic distribution of the community.

The EAP intervention focused on providing language interactions that were meaningful for the children in both the classroom and home. Children in the experimental group ($N= 119$) wrote/drew and read storybooks which reflected their daily experiences at home, school, and community, and included their families and friends as characters in either English or Spanish. The process of writing and reading the books was supported by both teachers and parents. Parents and other family members attended on-site group parent/family meetings where they shared family stories and made books based on the stories (Bernhard et al., 2008). The teachers were all women, primarily Hispanic or Black with limited training in early childhood and with teaching experience ranging between one and twenty years. The EAP intervention did not focus on teaching children component literacy skills directly, but rather focused on children and families creating meaningful self-authored texts with the assumption that this approach would motivate children, teachers, and families to engage in literacy activities. Literacy specialists trained teachers in cultural sensitivity, literacy acquisition, the relevance of family/home language for promoting literacy, and helped teachers, using technology in the classroom, make individualized books using children's drawings and words which depicted their home culture. The emphasis on the "books" authored by children was to allow children to communicate their personal stories while also sharing their family photographs. Many of the children's self- authored books featured the child as the protagonist. These books were typically placed in the classroom and family libraries. In addition, during the process of writing their books, children experimented with a variety of writing tools including computers, markers, and pencils. Some of the core principles of the EAP

program listed by Bernhard et al. (2006) were 1) Encouraging teachers to recognize and use the knowledge/cultural capital that families and children bring to the school setting, 2) Encouraging students to better understand their role in their communities and develop a sense of belonging, 3) Positively valuing diversity and inclusion, 4) Promoting the development of bilingualism and 5) emphasizing the importance of aesthetic experiences in the learning process.

Developmental data of language and cognition from the children were obtained using The Preschool Language Scale—Revised Fourth Edition (PLS-R; Zimmerman, Steiner, & Evatt Pond,

2002), and the Learning Accomplishment Profile-Diagnostic (LAP-D; Nehring, Nehring, Bruni, & Randolph, 1992), scales at the beginning (pre-test) and at the end (post-test) of the intervention, finding that the EAP contributed to the enhancement of language development, and also prevented the children from falling behind in terms of comparison with national averages at age four. Specifically, three - and four - year - old children who participated in the EAP made considerable gains in their PLS language scores from the beginning of the intervention (pre -test) to the end (post -test) significantly better than the gains made by children in the control group, with a moderate effect size of $d = .32$. Likewise, regarding the language gap when compared to national language norms, the EAP 3 - to 4 - year - old children improved from the beginning of the intervention (pre -test) to the end (post -test) doing significantly better than the children in the control group, who worsened over time. Furthermore, surveys filled out

by parents and teachers before and after the implementation of EAP, provided data on the quality of both the home and classroom literacy environments. Bernhard et al. (2008) found that the EAP significantly improved the quality of the classroom literacy environment, and increased the teacher's literacy-supported practices, such as, reading to children daily, encouraging children to write their own stories, reading to children books that represent children's home culture and language, writing down children's oral stories, among others. Finally, teachers and literacy specialists also noted that the children became more verbal, formed fuller sentences, and saw the connections between writing and reading. Positive changes in the area of children's identity and appreciation of their culture were also observed during the preschool years (Bernhard et al., 2006). Bernhard et al. (2008) examined outcomes during the preschool year only, thus a long – term follow – up of EAP children has not been conducted.

Long-Term Outcomes for Early Literacy Interventions

Although short-term benefits from early literacy intervention programs on children's literacy skills have been well documented (Carlson & Francis, 2002; Shariff et al., 2003; Tyler et al., 2003), there is less evidence available regarding the long-term effect of preschool literacy interventions. Follow-up studies with children who participated in an early interventions and general high-quality preschool programs have found that early childhood programs have a positive impact on children's school readiness skills, and subsequently those skills impact academic and socio-emotional aspects later in children's lives as well (Lynch, 2006; Ramey, Ramey, & Stokes, 2009; Snow, 2006; Winsler et al., 2008). Some of these impacts go as far as adolescence and

adulthood, though the effects are not always the same for all children (Garces, Thomas, & Currie 2002; Reynolds, Temple, Robertson, & Mann, 2001; Vandell et al., 2010).

Furthermore, processes like “sleeper effects” and “fade out/catch up” effects have been identified (Magnuson, Ruhm, & Waldfogel, 2007). Magnuson et al.(2007) described how the apparent dissipation of positive preschool effects over time, may be explained as an “catch up” effect; where rather than children losing the advantage they gained as result of their participation in a program, their peers who did not participate are able to “catch – up” under ideal circumstances (classroom quality, curriculum, etc.). Conversely, a “fade out” effect, might occur where initial advantages observed as an intervention gained during preschool, might dissipate over the years when children lack the opportunity to participate in environments that promote and nurture those initial gains (Magnuson et al., 2007). So far, the outcomes of general early interventions have been discussed. Next will be a review of the long-term outcomes of some main studies related specifically to early childhood literacy intervention.

Cartledge, Yurick, Singh, Keyes, and Kourea (2011) analyzed data from 41 ethnically diverse (African Americans 44%, European Americans 14%, and English language learners 22%) and low- income urban children in second grade, who when in kindergarten, participated in either one ($N= 13$) or two ($N=14$) years of supplementary early literacy intervention of phonemic awareness, or in the comparison group ($N= 14$) of no intervention. The authors measured student’s reading status with yearly pre- and post-Woodcock-Johnson Tests of Achievement (WJ-III), and the Dynamic Indicators of

Basic Early Literacy (DIBELS). The finding showed relations between the student's reading status and the amount of treatment they received, with children in both groups (one and two years of treatment) maintaining the gains achieved after the intervention. Cartledge et al. (2011) underline the importance of "progressive monitoring" of early literacy interventions, as well as the continuity of supplementary instruction in order to support the development of at-risk children's literacy skills.

Simmons et al. (2008) followed up, from kindergarten through third grade, 41 children identified as at risk of reading difficulty in kindergarten. On a yearly basis, the authors measured growth or change in children's reading risk status, finding that children did respond positively to a timely sustained intervention informed by students responsiveness, showing improvements by the end of kindergarten, and sustaining changes in risk status over time through third grade. Similarly, Coyne, Kame'enui, Simmons, and Harn (2004) found that children identified at risk for developing reading difficulties, who responded positively to a code-based reading intervention during kindergarten showed reading progress later at first grade, evidencing what the authors called an "inoculation effect," which alludes to the hypothesis that a pre-emptive, intensive intervention at an early age can significantly decrease the chances of future literacy-related challenges for children.

Furthermore, Berninger et al. (2002) explored patterns of children's response to a reading intervention in first grade, establishing profiles of, "faster and slower responders." Before first-grade, the verbal IQ on the Wechsler Intelligence Scale for

Children was given. Other measures given both before and after the first-grade included: Word Identification and Word Attack of the Reading Mastery Test-Revised (WRMT-R), phoneme deletion, orthographic coding in short-term memory, orthographic choice for first graders, rapid automatic naming of letters, and rapid automatic switching between letters and numbers. In their study, Berninger et al. (2002) concluded that one year after the intervention (when children were in second grade), faster responders maintained their gains in reading, and slower responders were able to maintain the gains when they continued receiving the intervention during second grade. While progressing at a slower rate when compared to faster responders children, slower responders did continue making progress in their reading skills.

Schickedanz and McGee (2010) discussed the meta analyses by the National Early Literacy Panel (NELP, 2008), and suggest that more attention needs to be directed toward longitudinal studies through the third or fourth grade, with the intent to determine the relative long-term effects in simple vocabulary, complex language, and comprehension gain from interventions obtained during preschool. The current study is an attempt to contribute to the analysis of long- term outcomes of early literacy interventions with economically and ethnically diverse children and their families - specifically regarding the Early Authors Program (EAP) intervention. Hence, the present study analyzes longitudinal measures of school readiness in kindergarten, academic performance and math/reading ability from kindergarten through third grade, retention patterns, use of special education services and English proficiency for 84 low-income, ethnically diverse (57% Black, 43% Hispanic) children from Miami-Dade County Florida, assigned, during

preschool to participate in the Early Authors Program (EAP) conducted by Bernhard et al. (2008). Measurements from 38 children with similar backgrounds who did not participate in the EAP were used as a comparison group. Readiness for school and emergent literacy in English at kindergarten entry were assessed, as well as math and reading skills in second and third grades using standardized tests. In addition, teachers provided children's academic grades at the end of each school year (K-3) and information from school records was obtained regarding children's language, ethnicity, SES, gender, English proficiency, use of special education services, and academic retention. It is important to clarify that the Early Authors intervention was designed considering pre and post measurements at the beginning and the end of the preschool year only, and did not initially attempt to include longitudinal measurements over longer time. However, children who participated in the EAP, moved on into kindergarten and elementary school within the same county, and their schools were also participating in the larger "Miami School Readiness Project" (MSRP, Winsler et al. 2008) at the time. The MSRP defined its own measurements and variables according to its goals, and not with the intention to provide a follow up to the children participating in the EAP program. Moreover, it is noteworthy that the EAP did not necessarily attempt to impact long-term variables such as retention patterns, use of special education services, or performance in standardized tests years later. However, possible associations between the enhancement of early literacy skills and later academic performance as well as relationships between demographic variables and children's outcomes are considered worth exploring in the present study. Thus, with the outcome data from the larger Miami School Readiness

Project (MSRP; Winsler et al., 2008), the following research questions were able to be examined about children in the EAP:

Research question 1: In kindergarten, did the academic performance and/or school readiness of the children who participated in the EAP program differ from that of children who didn't participate in the EAP? It was hypothesized that children who participated in the EAP program would be assessed as being "school ready" at a higher rate than children who didn't participate in the EAP, and would have better academic performance in kindergarten in reading, writing, and other areas related to literacy skills (writing, language development, handwriting, pre-reading, etc.) No significant differences were expected in academic areas where literacy skills are less involved in the learning process (i.e. physical education, arts, music).

Research question 2: Did children who participated in the EAP show less grade retention at any point during children's academic trajectory than those who did not participate? It was hypothesized that children in the EAP would show less grade retention.

Research question 3: Did children who participated in the EAP show less use of special education services and more participation in gifted programs at any point during 1st, 2nd and/or 3rd grade, than those who did not participate? It was hypothesized that children in the EAP would show less use of special education services than those who did not participate.

Research question 4: Did children's performance on math and reading standardized tests in 2nd and 3rd grades vary as a function of participation in the EAP? It was hypothesized that children's performance on reading would vary as a function of participation on EAP; that is, children who participated in the EAP program would obtain higher scores on reading measurements (SAT -10, FCAT) in 2nd and 3rd grade, than those who did not participate in the EAP.

Research question 5: In 1st, 2nd, and 3rd grades, did the academic performance for children who participated in the EAP program differ from that of children who didn't participate in the EAP? It was hypothesized that children who participated in the EAP program would have better academic performance in 1st, 2nd, and 3rd grade, in reading, writing, and other subjects related to literacy skills (writing, language arts, pre-reading, handwriting, etc.) than children who didn't participate in the EAP. However a fade out / catch up effect was expected; that is, regardless of the skills shown by children participating in the EAP, the difference between their scores and children's scores in the control group would gradually lessen over the years. No significant differences were expected in academic areas where literacy skills were less involved in the learning process (physical education, arts, music).

Research question 6: Did participation in the EAP relate to the ELL children's growth in English proficiency from kindergarten through 1st, 2nd, and 3rd grade? It was hypothesized that the English ability level of ELL children who participated in the EAP

program would be higher and would improve at a faster rate (from K, 1st, 2nd and 3rd grade) than those who did not participate in the EAP.

Research question 7: Did the effects of participation in the EAP program differ according to children's gender and/or children's ethnicity? given the well-known struggles that boys and Black children have early on in literacy skills and school readiness (Below et al., 2010; Chatterji, 2006; Ferguson, 1995; Millard, 1997; Rathbun, et al; 2004; Vernon-Feagans et al., 2001; Washington, 2001), it was hypothesized that boys and Black children participating in the EAP program would perform better than boys and Black children in the comparison group, specifically in measurements of school readiness and academic outcomes.

METHOD

Participants

The present study analyzes data from 84 low-income, ethnically diverse (55% Black, 45% Hispanic) children from Miami-Dade County Florida, who all participated in the early literacy intervention "Early Authors Program" (EAP) conducted by Bernhard et al. (2008). It also includes 38 children with similar backgrounds in the original control group who did not participate in the EAP. Thus, the total sample for the present study consist of $N= 122$, children between 3 and 5 - years - old, 54 % males, 55 % Black, 35% English language learners, 92 % children receiving free/reduced lunch, and 90% of children coming from center – based child care (See Table 1 for N s and percentages of demographic variables by group). After the EAP intervention was completed, the children entered school and through the Miami School Readiness Project (MSRP, Winsler et al., 2008), their school readiness at kindergarten entry was assessed by the public schools, as was their academic performance, and ELL status throughout elementary school. However, not all children who originally participated in the EAP program entered the public school system and were successfully matched longitudinally. Thus, of the original $N= 428$ (EAP = 325, Comparison group =103), only $N = 168$ children had information in some or all of the public school outcome variables of interest in the present study and were successfully matched longitudinally. Of the original $N=325$ EAP children, $N = 196$ (60.3%) did not show up to kindergarten, first, second or third

grade, whereas of the original $N=103$ comparison children, $N =64$ (62.1%) did not show up to kindergarten, first, second or third grade. There were no significant differences in the level of attrition between the EAP and comparison groups. Likewise, when comparing children who did show up to kindergarten, first, second or third grade, with those who did not show up for public school, no significant differences were observed by children's gender, age, or center type they attended; nor by children's performance at age 3 or 4 in motor, cognitive and language subscales of the PLS4, ELAP, or LAPD used in the original study (Bernhard et al., 2008). There was a significant difference by ethnicity with a higher proportion of White children without longitudinal measurements (83%) and only 17% of White children had kindergarten, first, second, or third grade data.

At this point preliminary analyses were conducted for the sample of children with longitudinal measurements ($N = 168$), which found an uneven distribution in ethnicity and age; only 4 White children were in the EAP group, and none were in the comparison group. Because of this, it was decided to take away data for White children and to draw comparisons between Black and Hispanic children only. Likewise, 25% ($N= 42$) of the longitudinal data sample consisted of children who were under 36 months of age at the time they received the EAP intervention. In the original study, Bernhard et al.(2008) found that the EAP intervention mostly enhanced language and developmental outcomes for three to four year old children. Because of this, together with the fact that 41 of the younger children in the longitudinal sample were members of the EAP group and only one of the younger children was part of the comparison group, it was decided to not include data for the younger children in the final sample for this study. Therefore, the

final sample for the present study is constituted by 84 EAP children and 38 children in the comparison group for a total $N = 122$. It is noteworthy that of the $N = 122$ sample, not all the measurements are the same for every year and not all the children have data for each measurement. This is explained in part by the fact that older children showed up to kindergarten before younger ones, and were more likely to have data through third grade, whereas children showing up to Kindergarten in subsequent years will have extended to fewer grades. In addition to cohort -based attrition, some children simply left the public school system at some point of their academic trajectory and only some of their data will be available. Therefore, the sample sizes may differ across the analyses presented depending on the amount of children with data in a specific variable in a specific year (See Table 2 for N s for each of the outcomes examined).

Procedure/ Measurements

Child demographics. Information on children’s gender, ethnicity, free/reduced lunch status in kindergarten, and primary language was collected from school records at kindergarten, first, second, and third grade, generating sets of variables for each characteristic according to the school year (e.g. Gender at Kindergarten, gender at first grade, ethnicity in Second grade, ethnicity in third grade, etc.). Master ethnicity, gender, and English Language Learner status (ELL) variables were created after consolidating information across all the years. For example, a “ELL ever” dichotomous variable was created consolidating data available for English proficiency status at any point of the children’s K-3 academic trajectory; so if a child was flagged as an English Language Learner in second grade, a value of “one” was assigned in the master ELL variable. On

the contrary, if there were no data available for the English as a second language measurement at any point K-3, a value of “zero” was assigned in the master ELL variable (0 = No ELL, 1= Yes ELL). As shown in Table 1, $N= 43$ children were considered ELL at some point; 79% spoke Spanish, 19% spoke Haitian-Creole and 2% spoke French.

Ethnicity was coded with a ‘1’ representing Black children and ‘2’ representing Hispanic children. Initially, 10% of children were classified as either “Hispanic-Black”, “Hispanic-Multi” or “Black-Multi.” Taking into account language, family language, and ELL status, children were re-classified as either Hispanic or Black. Thus, if a child was initially classified as “Hispanic-Black” or “Hispanic-Multi,” s/he was considered Latino/Hispanic’. When the child’s first language was Spanish, or Spanish was spoken at home, we classified the child as Latino/Hispanic’ in the master ethnicity variable. Similarly, 2.5% children were classified as “Hispanic –Black” or “Black-Multi.” After the revision of variables, if the child’s language was Haitian-Creole, the child was classified as Black rather than as Hispanic, $N= 9$ children had Haitian-Creole as their primary language and were classified as Black. As mentioned before, there was an uneven representation of White children in the original longitudinal sample ($N = 168$), with only four White children in the EAP group, and none in the comparison group. Because of this, it was decided to take away data for White children and to draw comparisons between Black and Hispanic children only.

Information about the use of free or reduced lunch help was available, indicating on a yearly basis, if the family received a reduction or exception for lunch payment at

school. A master dichotomous variable was created to indicate if the children received free/reduced lunch at any point during K-3 grade. Finally, children's date of birth was available through school records. This information was used to create an age variable indicating children's age in months at the time they participated in the EAP intervention.

Childcare Center Type. Information regarding the type of pre-school center that children attended during their participation in the EAP was also available from the EAP program records. A two level categorical variable was created to indicate if the children attended a family daycare or a center-based childcare. A total of $N = 110$ (90.2%) children came from child care center, whereas a total of $N = 12$ (9.8 %) children came from family day care.

School Readiness and emergent literacy. Readiness for school at kindergarten entry and emergent literacy in English were assessed by the school district with the Early Screening Inventory (ESI-K, Meisels & Wiske, 1983) and the initial sounds and letter naming subtests of the Dynamic Indicators of Basic Early Literacy Skills (Center of Teaching and Learning, 2011; Kaminski & Good, 1996).

The Early Screening Inventory measures children's verbal expression, fine and gross motor skills, ability to reproduce figures, ability to remember visual and auditory sequences, and body awareness. The ESI takes approximately 20 minutes to administer (FLKRS, 2010) and yields information that classifies the children's level of school readiness in three categories: a) not ready, where the children's development and abilities don't seem to be according to those proper of their age group, b) getting ready, where the

scores are inconclusive in order to establish if the children's development and abilities are according to those proper of their age group, and c) "ready now," where the children's development and abilities are according to those proper of their age group (Florida Department of Education, 2005). The ESI also is scored in a continuous manner with a range from 0 to 75, with bigger numbers meaning greater school readiness.

Initial sound fluency (ISF) is a subtest of the DIBELS that measures children's phonological awareness by testing a child's ability to identify and repeat the first sound of a verbally presented word (Kaminski & Good, 1996). This subtest is administrated between one and three minutes in a one-on-one manner, and includes two sections. In the first section, the examiner presents and names four images to the children, then says the beginning sound of each picture; children are expected to point to the picture that begins with the sound. In the second section, children are required to say the beginning sound of the picture they are shown. Regarding the reliability of the ISF, alternate-form reliability of this measure was .72 according to the developers (Center of Teaching and Learning, 2011). Regarding ISF validity, there is information related to the concurrent validity of ISF with phoneme segmentation fluency (PSF) at .48 and .36 with the Woodcock-Johnson Psycho-Educational Battery Readiness Cluster score (Center of Teaching and Learning, 2011).

The letter naming fluency (LNF) subtest measures children's risk for achievement of early literacy by testing their ability to label upper- and lower- case letters from the English alphabet that are visually presented (Kaminski & Good, 1996). This subtest is

administered between one and three minutes in a one- on- one manner; children are given one minute to orally identify as many as possible upper- and- lower case letters randomly placed on a page (Center of Teaching and Learning, 2011). Regarding reliability of the LNF, Good et al. (2004) stated that the 1-month, alternate-form reliability of LNF is .88 in kindergarten and the median criterion-related validity of LNF with the Woodcock-Johnson Psycho-Educational Battery-Revised readiness cluster standard score is .70. Regarding LNF validity, Good et al. (2004) stated that the predictive validity of kindergarten LNF with first-grade Woodcock-Johnson Psycho-Educational Battery-Revised Reading Cluster standard score is .65, and .71 with first-grade CBM reading (Center of Teaching and Learning, 2011).

Child academic performance. At the end of each academic year, children received grades from their teachers that were averaged across 11 subjects, including language development, reading, writing, math, science, Spanish, social studies, music, art, physical education, and English as a second language (ESOL). The grades in Kindergarten were given as “E” for Excellent, “S” for Satisfactory, and “U” for Unsatisfactory. These grades were converted to a 3-point scale with E = 3, S = 2, and U = 1. For first through third grade, children received traditional grades in an ordinal scale A, B, C, D, F, with A as the highest grade and F the lowest. These grades were converted to a 5-point scale with A = 5, B = 4, C = 3, D = 2, and F = 1. In addition, 12 new variables were created in order to consolidate grades across subject areas in three main categories.

- 1) Literacy - related subjects (averaging grades in language development, reading, writing, ESOL, and foreign language).
- 2) Non –Literacy but academic subjects

(averaging grades in math, science and social studies) and 3) Non-academic subjects (averaging grades in arts, music, and physical education). A set of these three variables was created for each grade K-3, for a total of 12 new variables.

English proficiency. The Oral Language Proficiency Scale (Oral Language Proficiency Scale, 1978) was used by the schools to classified ELL students in one of five ordered proficiency levels, and to determine whether or not the students needed to participate in an English as a second language (ESOL) program. The assessments were conducted by ESOL specialists on a yearly basis using an ordinal scale; the levels used were: 1) beginner (children who get two hours a day of instruction in ESOL), 2) intermediate a (children who get one hour a day of instruction in ESOL), 3) intermediate b (children who get some instruction in ESOL) 4) advanced (Children with good management of the language but who were not proficient yet) and 5) independent (Children who no longer qualify for any bilingual education). Only children with a home language other than English got this assessment. Only for those children classified as English language learners, a “Time of English proficiency” variable was created, indicating the year in which a child achieved an “5=Independent” classification in the Oral Language Proficiency Scale. Thus, if a child was classified as “advanced” in Kindergarten and as “independent” in first grade, a value of one was assigned indicating that he/she achieved English proficiency at first grade. Likewise, if a child was classified as “independent” in second grade a value of two was assigned and, a value of three was used to indicate English proficiency achieved by third grade. When children were classified as “independent” in kindergarten, a value of zero was used. Therefore, in the

“Time of English proficiency” variable, lower numbers are indicative of an earlier achievement of English proficiency (0 = proficient by kindergarten, 1= proficient by first grade, 2= proficient by second grade, and 3 = proficient by third grade).

Math and reading ability The SAT-10 (Stanford Achievement Test - Tenth Edition), and the Florida Comprehensive Assessment Test (FCAT, Human Resources Research Organization, & Harcourt Assessment, 2007; Florida Department of Education, 2005) were used by the district to assess children’s math and reading ability at second and third grade respectively. The Stanford Achievement Test measures children’s phonemic awareness, vocabulary, reading comprehension, mathematical operation, geometry, and science and social science concepts (Stanford Achievement Test - Tenth Edition, 2011). The administration of the test is untimed with flexible guidelines Stanford Achievement Test - Tenth Edition, 2011). The reading section of the SAT-10 has an alpha reliability rating of .87, and it is .80-.87 in the math section (Stanford Achievement Test - Tenth Edition, 2011). The FCAT reading test measures children’s ability in four areas (a) word and text, which includes identifying words and phrases in context (b) main idea, related to plot, and purpose (c) recognizing relationships, which includes comparisons and cause/effect and (d) research reference (Human Resources Research Organization & Harcourt Assessment, 2007; Shermis & Long, 2009). The math test measures children’s ability in performing operations and problems with numbers; measurement and statistics; geometry and spatial sense; and algebraic thinking. (Human Resources Research Organization & Harcourt Assessment, 2007). The FCAT provides ordinal classification as follows 1= little success with the challenging content; 2 = limited

success with the challenging content; 3 = partial success with the challenging content; 4 = success with the challenging content; 5 = success with the most challenging content. A score of one or two in the FCAT is considered a failure. Furthermore, the FCAT provides a continuous standard score ranging from 100 to 500.

Special education status. Each year, a child's public school record indicates whether the child had an active IEP and was receiving special education due to the presence of developmental delays, mental handicaps, language impairment, autism, being "gifted," emotionally disturbed, sensory impaired and/or having learning disabilities. Two new categorical variables were created in order to consolidate the use of special services information across the years. Thus, in the first variable "Use of special services ever," if a child received any special education services (different than as "gifted") at any point in Kindergarten through third grade, a value of "one" was assigned, and a value of zero if no-special education services were used. For the second variable, "Gifted ever", if a child received special education services as "gifted" at any K-3 point, a value of "one" was assigned, and a value of "zero" was used otherwise.

Retention. Information regarding the children's academic trajectories was available (i.e. child was retained) which specified if the children completed the same grade for the second time. For example, a child attending kindergarten for the first time would have kindergarten information during the year 2004. If the child repeated kindergarten, then he/she also had kindergarten grade information during the year 2005. All such occurrences of this were noted through third grade, which created a dichotomous master

variable, “Retained ever,” giving a value of “one” to the children who experienced retention at any point in his/her academic trajectory, and a value of “zero” for those children who did not experience retention.

RESULTS

In order to answer the research questions stated in the present study, chi-square and t-test analyses were initially conducted in order to explore group differences in the categorical and continuous outcomes; Table 2 presents children's mean scores and standard deviations for continuous outcomes, as well as the proportion of children for the different levels on categorical variables. Then, hierarchical and logistic regression analyses were conducted in order to determine the extent to which children's participation in the EAP predicted outcomes of interest above and beyond of demographic variables. Thus, for continuous outcomes, in Step one of the model, five demographic variables were entered (age, gender, ethnicity, free/reduced lunch, and ELL status), and in step two, group status was added. Whereas for categorical outcomes, logistic regressions were conducted including four demographic variables (age, gender, ethnicity, and ELL status) in step one, and adding group status in step two. The free/reduced lunch variable was excluded in the logistic regression analyses presented in Table 6, due to lack of variance (all were children who received free/reduced lunch). Tables 3 to 5 provide results for these hierarchical regressions. Note that not all results are included in Table 3 to Table 5, generally just those results with significant effects are presented.

School Readiness and Academic Performance at Kindergarten

The first research question examined the relationship between participation in the EAP program and children's academic performance as well as school readiness in kindergarten. Table 2 indicates that EAP children scores on the Initial Sound scale of the DIBELS were higher ($M= 10.97, SD=8.39$) than those scores from children in the comparison group ($M= 4.70, SD= 4.34$), this difference was statically significant as indicated by $t(74.102) = -4.52, p < .001$, with an effect size of $d = .84$. A similar pattern was observed in the Letter Naming scale of the DIBELS with EAP children scoring higher ($M= 25.02, SD=21.58$) than children in the comparison group ($M= 10.52, SD=13.76$) with a significant $t(86) = -3.00, p < .005$, with an effect size of $d = .74$. Likewise, children in the EAP program were more likely to be classified as "ready" (87.5%) or "getting ready" (12.5%) than children in the comparison group. This difference between groups was significant as indicated by $\chi^2(2) = 11.458, p < .005$.

Table 3 presents hierarchical regression analyses showing how group status together with background variables significantly explained about 16% in variance of children's scores in ESI $F(1, 95) = 11.34, p < .001$, with participation in the EAP program having a significant effect, $\beta = .32, t = 3.37, p < .005$, and gender having a marginal effect of $\beta = -.18, t = -1.94, p = .055$, with girls performing better than boys. As shown in Table 3, group status together with background variables significantly explained about 25% in variance of children's scores in DIBELS Initial Sounds $F(1, 80) = 13.92, p < .001$, with participation in the EAP program, and free/reduced lunch being the variables with a significant effects, $\beta = .37, t = 3.73, p < .001$, and $\beta = -.35, t = -3.52,$

$p < .005$ respectively, Children who participated in the EAP and children who did not received free/reduced lunch obtaining higher scores This pattern was also observed in the DIBELS Letter Naming regression analyses, where group status together with background variables significantly explained about 19% in variance of children's scores $F(1, 81) = 8.03, p < .05$, with participation in the EAP program, and free/reduced lunch the variables with significant effects, $\beta = .29, t = 2.83, p < .05$, and $\beta = -.21, t = -2.05, p < .05$ respectively, Children who participated in the EAP and children who did not receive free/reduce lunch obtaining higher scores.

Regarding academic grades in kindergarten, as seen in Table 2, no significant differences by group were found in children's overall academic performance in kindergarten, nor in academic areas related to literacy skills (writing, language development, handwriting, pre-reading, etc.) or any other academic subject (i.e. math, social studies, science, physical education, arts, music). However, a general pattern was observed, with EAP children performing somewhat better than children in the comparison group in overall academic grades, in academic areas related to literacy skills, and other academic areas, consistently from Kindergarten through third grade.

In addition, as seen in Table 4, hierarchical regression analyses showed that background variables significantly explained about 14% in variance of children's overall performance in Kindergarten $F(5, 98) = 3.28, p < .05$. Specifically, English language learner status contributed to the prediction of children's grades above and beyond the other variables $\beta = .21, t = 1.97, p = .052$, with ELL children obtaining better grades in

kindergarten than non-ELL children. A similar pattern was observed in the prediction of children's performance in literacy-related grades and non-academic grades, where ELL status contributed to the prediction of children's scores above and beyond the other variables, $\beta = .47, t = 4.84, p < .001$ and $\beta = .23, t = 2.10, p < .05$, respectively; once again with ELL children obtaining better grades than non-ELL children. Regarding the prediction of children's performance in other academic areas (math, social studies and science), a gender effect was observed, $\beta = -.21, t = -2.20, p < .05$, with girls performing better than boys. Finally, there were marginal effects for ethnicity in children's performance in other academic areas $\beta = .21, t = 1.94, p = .055$, and children's overall grades $\beta = .19, t = -1.83, p = .07$, with Hispanic children performing better than Black children.

Grade Retention

The second research question examined the relationship between participation in the EAP program and grade retention at any point during children's academic trajectory. As seen in Table 2, there was not a significant difference between groups in the proportion of children being retained $\chi^2(1) = 1.52, p = .21$. The majority of children in both the comparison (84.2 %) and in the EAP group (91.7%) did not experience retention at any point in their academic trajectory between kindergarten and third grade, but children from the comparison group were retained in a higher proportion (15.8 %) than children in the EAP group (8.3 %). Moreover, as seen in Table 5, hierarchical logistic regression analyses showed, that only children's age was a significant predictor for grade

retention, where for each month increase in age, the odds of being retained increased by 7%.

Special Education Services

The third research question examined the relationship between participation in the EAP program and use of special education services at any point during children's academic trajectory. There was not a significant difference between groups in the proportion of children using special services $\chi^2(1) = .15, p = .69$, or in the proportion of children classified as gifted $\chi^2(1) = .15, p = .69$. The majority of children in both the comparison (86.8 %) and in the EAP group (89.3%) did not use special education services at any point in their academic trajectory between kindergarten and third grade, but children from the comparison group presented a slightly higher proportion (13.2 %) of use of special services than children in the EAP group (10.7 %). A similar pattern was observed regarding children's classification as gifted, where children from the comparison group were classified as gifted in a higher proportion (13.2 %) than children in the EAP group (6 %). Moreover, hierarchical logistic analyses showed that neither background variables nor group status were significant predictors of children's use of special education services. However, children's gender was a significant predictor for the classification as gifted, with boys being 18% less likely to be classified as gifted than girls.

Reading and Math Performance in Standardized Tests

The fourth research question examined the relationship between participation in the EAP program and children's performance in reading and math standardized tests (SAT - 10, FCAT) in second and third grades. There was not a significant difference in children's scores between groups in neither reading nor math standardized tests. Likewise, there was not a significant difference between groups in the proportion of children who passed or failed the FCAT reading, $\chi^2(1) = .51, p = .47$, or FCAT math, $\chi^2(1) = .05, p = .83$ tests. Finally, hierarchical regression analyses showed that group status was not a significant predictor of children's scores in SAT-10 or FCAT, free/reduced lunch was a significant predictor of children's scores in SAT-10 reading $\beta = -.25, t = -2.52, p < .05$, with children who did not receive free/reduced lunch doing better; also ethnicity had a marginal effect in the prediction of children's scores in SAT-10 math $\beta = .23, t = 1.87, p = .064$ with Hispanics performing better than Black children. .

School Performance in 1st, 2nd, and 3rd grades

The fifth research question examined the relationship between participation in the EAP program and children's academic performance in kindergarten, first, second, and third grades. No significant differences by group were found in children's overall academic performance in first, second or third grades, nor in academic areas related to literacy skills (writing, language development, handwriting, pre-reading, etc.) or any other academic subject (i.e. math, social studies, science, physical education, arts, music). Contrary to what was hypothesized, no patterns of "fade-out" or "catch-up" effects were observed between the groups' grades. Moreover, hierarchical regression analyses showed

that only English language learner status contributed to the prediction of children's overall grades in third grade above and beyond the other variables $\beta = .26, t = 2.23, p < .05$, with ELL children performing better than non-ELL children. Moreover, ELL status contributed to the prediction of children's grades in literacy-related areas in third grade, above and beyond the other variables $\beta = .36, t = 3.25, p < .005$ once again with ELL children performing better than non-ELL children.

English Proficiency

The sixth research question examined the relationship between participation in the EAP program and ELL children's English proficiency from Kindergarten through third grade. No significant differences by group were found between the groups in children's ESOL classification at any point of their academic trajectories. Likewise, regression analyses showed that none of the background variables were significant predictors for children's English proficiency in any year. Moreover, no significant differences by group were found between the groups in children's time for English proficiency, $t = -.55, p = .59$. Finally, hierarchical regression analyses showed that neither background variables nor group status were a significant predictor of children's time for proficiency (see Table 5 for coefficient and model values)

Interaction Effects

The seventh research question examined the possibility of group-by-gender, as well as group-by-ethnicity interactions. The first part of Table 7 shows results for ANOVAs where interaction effects were observed between group and gender, with specifically

boys in the EAP group performing better than boys in the comparison group in the Early Screening Inventory (ESI -K), group- by-gender $F(1, 98) = 4.66, p < .05$ (see Figure 1). The same pattern was observed in overall grades group-by-gender $F(1, 100) = 13.26, p < .001$, literacy group-by-gender $F(1, 100) = 7.51, p < .05$, other academic group-by-gender $F(1, 100) = 16.13, p < .001$ and non-academic areas group-by-gender $F(1, 96) = 8.45, p < .05$ in kindergarten; as well as in overall grades group-by-gender $F(1, 101) = 4.38, p < .05$, and other academic areas group-by-gender $F(1, 100) = 5.84, p < .05$ in first grade (see Figure 2 and Table 7 for an example of the group-by-gender interaction, showing specifically boys in the EAP group performing better than boys in the comparison group).

Furthermore, as shown in the second part of Table 7, a group-by-ethnicity interaction effect was also observed, in Literacy $F(1, 90) = 4.22, p < .05$, with Black children in the EAP group performing better ($M=3.59$ $SD=.83$) than black children in the comparison group ($M=2.79$ $SD=1.28$), other academic areas group-by-ethnicity interaction $F(1, 90) = 3.91, p = .051$, with Black children in the EAP group performing better ($M=3.56$ $SD=.66$) than black children in the comparison group ($M=2.90$ $SD=1.18$) and an FCAT math test group-by-ethnicity interaction $F(1, 89) = 4.44, p < .05$, with Black children in the EAP group performing better ($M=314.45$ $SD=62.86$) than black children in the comparison group ($M=264.85$ $SD=79.26$) in third grade. The same pattern was present in children's overall grades at third grade with a marginal effect of $F(1, 90) = 3.58, p = .06$, (see Figure 3 and Figure 4 for an example of the group-by-ethnicity interaction, showing Black children in the EAP group performing better than Black children in the comparison group).

DISCUSSION

Despite the efforts of educators, families, and policy makers to develop and implement effective early intervention programs for low-income ethnically and linguistically diverse children and their families, the achievement gap observed during the early school years and the subsequent academic trajectories of these children and their counterparts still persists (Gonzales et al., 2007). Increasing research providing evidence of the effectiveness of early intervention programs is available (Duncan et al., 2007; La Paro & Pianta, 2000) However, there is still a need for longitudinal studies that contribute to a better understanding of the long-term effects of such interventions (Schickedanz & McGee, 2010).

The present study analyzed the long-term outcomes of an early literacy intervention with low-income, ethnically diverse children and their families, specifically the Early Authors Program (EAP) intervention developed by Bernhard et al. (2006). The EAP intervention focused on providing language interactions that were meaningful for the children in both the classroom and home. Children in the experimental group wrote/drew and read storybooks which reflected their daily experiences at home, school, and community, including their families and friends as characters in either English or Spanish or Creole. The process of writing and reading the books was supported by both teachers and parents (Bernhard et al., 2008). The EAP intervention did not focus on teaching

children component literacy skills directly, but rather focused on children and families creating meaningful self-authored texts with the assumption that this approach would motivate children, teachers, and families to engage in literacy activities. Literacy specialists trained teachers in cultural sensitivity, literacy acquisition, the relevance of family/home language for promoting literacy, and helped teachers, using technology in the classroom, make individualized books using children's drawings and words which depicted their home culture. The emphasis was on the "books" authored by children, these books were typically placed in the classroom and family libraries. In addition, during the process of writing their books, children experimented with a variety of writing tools including computers, markers, and pencils.

As previously discussed, the EAP program contributed to the enhancement of children's language development, and also prevented the children from falling behind in terms of comparison with national averages during the preschool year (Bernhard et al. 2008). Moreover, the EAP significantly improved the quality of the classroom literacy environment, and increased the teacher's literacy-supported practices. Finally, teachers and literacy specialists noted that the children became more verbal, formed fuller sentences, and saw the connections between writing and reading, while evidencing positive changes in their identity and appreciation of their culture. (Bernhard et al., 2006).

Longitudinal measures of school readiness in kindergarten, academic performance and math/reading ability from kindergarten through third grade, retention patterns, use of special education services, and English proficiency for children participating in the EAP

program were analyzed in the present study, finding that in addition to the early reported effects by Bernhard et al. (2008), the Early authors program proved to have long-term effects on children's school readiness at kindergarten entry, as well as specifically on boy's school readiness, academic performance in kindergarten and first grade, and in Black children's academic and math performance on the FCAT test in third grade. These are important findings that show how early preschool interventions during this sensitive period can lead to long-term improvements in children's academic trajectories above and beyond their socio-economic circumstances, and contribute to the already existing evidence of the long-term effects of early literacy interventions, specifically for low-income, ethnically and linguistically diverse preschoolers.

Certainly, it is impressive to observe long-term effects of the EAP, not only because of the relatively small longitudinal sample in the present study and the initial moderate effects of the EAP, but especially because the original study design was not focused on long-term effects. Snow and Dickenson (1991), in their longitudinal study analyzing home and school factors related to the enhancement of language and literacy skills of children from low-income families, reported longitudinal effects up to fourth grade of teacher's language use, and of classroom factors on children's language and emergent literacy skills (Dickinson, McCabe, & Essex, 2006). Perhaps the EAP effects observed regarding teacher literacy practices during the preschool year contributed to the differences observed between children participating in the EAP intervention and children in the comparison group reported in the present study.

Furthermore, Sénéchal and LeFevre (2002), in their 5-year longitudinal study with middle- and upper middle-class children and their parents, found that children's early literacy experience at home were related to children's later development of vocabulary and receptive language. In turn, those emergent literacy skills were related to children's reading ability in first and third grades. The authors explained how parental involvement influenced children's emergent literacy skills, and then indirectly related it to children's reading ability in first and third grades (Sénéchal & LeFevre, 2002). Lonigan et al. (2000) also reported longitudinal findings regarding the relationship between children's emergent literacy skills and their reading ability later on in the first years of their academic trajectories, and also there is a fair amount of research that supports the relationship between children's school readiness and later outcomes (Campbell et al., 2001; Duncan et al., 2007; La Paro & Pianta, 2000; Schweinhart, 2005). As mentioned before, the EAP intervention focused on motivating children, teachers, and families to engage in literacy activities through the creation of meaningful self-authored texts. Perhaps the combined effects of the EAP in children, teachers, classroom, and home might have influenced some of the outcomes reported; both in a direct way, and through enhancement of school readiness at kindergarten as well.

Group-by-gender interaction effects were also evidenced in the long-term outcome analyses of the EAP program, with participatory boys performing better than boys in the comparison group in school readiness measurements, and obtaining higher grades in kindergarten and third grade. Research on gender differences in academic achievement has provided evidence of girls performing better than boys in overall grades and reading

skills (Below et al., 2010). Disparities in reading skills are already present at kindergarten entry and either remain or tend to worsen over the elementary years (Chatterji, 2006). Among the possible explanations for this phenomenon, Below et al. (2010) mention how teacher's expectations may differ according to their students' gender, and as such may influence greater attention to girls during reading instruction and greater attention to boys more during math instruction, which could contribute to some kind of self-fulfilling prophecy. Motivational factors as well as cultural beliefs may also play a role in the reading gap between boys and girls. Millard (1997) explained how patterns of boredom and avoidance toward reading are developed early on by boys in the school environment, and from there generalize to other settings. The author explained how the content of the books used for reading instruction is mainly related to fictional topics, which seems to be of more interest for girls than for boys, who prefer to read nonfictional and informational material. Also, according to Millard (1997), reading is usually perceived as a form of "passive" activity which might impact the way which boys approach literacy activities when taking into account their emerging gender identity. Although Millard's observations pertain to an older group of children (10 to 12 years old), they can also apply to young preschoolers. The group-by-gender interaction effect observed in the present study might be explained by the fact that boys participating in the EAP intervention did have the chance to develop literacy skills in an inclusive environment where a sense of belonging and positive valuing of children's own experiences were emphasized. Contrary to boys in the comparison group, boys in the EAP group did write their own books, portraying their own experiences and using as characters themselves,

their family members, and friends; this element could have contributed to enhance boys' motivation when approaching literacy experiences. Furthermore, a professional development element was also part of the intervention, where teachers were trained by literacy specialist on literacy practices to promote and enhance children's skill, and this factor could have contributed to the results here observed as well.

Group-by-ethnicity interaction effects were also observed, with participatory EAP Black children obtaining higher math scores on the Florida Comprehensive Assessment (FCAT) than Black children in the comparison group, and in academic areas in third grade. Washington (2001) discussed the various difficulties encountered by young Black children in their pursuit of reading achievement, and emphasized the need for early interventions prior to kindergarten entry. The author explained how key variables like poverty, quality of the home literacy environment, teacher's expectations, assessment practices, and barriers built upon cultural differences impacted Black children's ability to develop literacy skills. Indeed, the research has consistently shown how Black children tend to perform below their White peers in reading, math, and science, and how negative long-term outcomes relate to this achievement gap (Ferguson, 1995; Rathbun, et al; 2004; Vernon-Feagans et al. 2001). Black children who participated in the EAP program performed better than Black children in the comparison group in these very same areas and in the math section of the FCAT. While most of the Black children participating in the present study were not ELLs, they certainly did profit from their participation in the EAP. Perhaps the fact that the EAP intervention promoted an inclusion environment which emphasized a sense of belonging and positive valuing of children's cultural

diversity contributed to a sense of confidence and accomplishment among Black children and their families, which, in turn, could have contributed to an improvement of literacy practices at home. Also, the professional development aspect included in the intervention proved to impact teacher's literacy practices, which did benefit the classroom literacy environment. Finally, the EAP targeted children, families, teachers and schools, which promoted continuity of the efforts across relevant environments for the children (home and school), which is an important factor when promoting early literacy development among low-income minority children (Gay, 2000; Reese & Gallimore, 2000. Washington, 2001). All of these factors, combined with the direct effects of participation in the EAP on children's scores in language measurements at the end of the intervention, constitute a possible explanation for the long-term effects among Black children in the EAP group.

Warranting attention are the facts that long-term effects of the EAP program were observed mostly in Kindergarten and third grade, while limited effects were observed at first grade and none in second grade. Possible explanations for this pattern could be a "sleeper effect," where the effects of a determined intervention will become evident later on (Clarke & Clarke, 1981), or could be an "inoculation effect" as described by Coyne et al. (2004), where early literacy interventions contribute to decreasing the chances of literacy-related challenges that children face later on. Although, as indicated by Clarke and Clarke (1981), it is important to consider alternative explanations when discussing sleeper effects, such as a third intervening variable or random fluctuations. We did

control for potential covariates through hierarchical regression analyses and tested for interactions through ANOVAs, finding significant effects for the EAP program.

Also, although non-significant, certain patterns were observed in the present study that may warrant further investigation, such as the retention patterns of children who participated in the EAP, who seem to be somewhat less likely to be retained at any point between kindergarten and third grade than children in the comparison group. Likewise, the proportion of EAP children using special education services was less than that observed in the comparison group. This may be because the participation in the program did have a direct effect on these outcomes, but due to the small sample with pertinent information in the present study, significance was not achieved. Another possible explanation for this finding could be that the impact that the EAP program had on children's school readiness did also decrease the chances of child retention and/or need of special services through a mediation effect.

Finally, this study did not find evidence of an effect of the EAP on children's English proficiency. This is not surprising, since the aim of the program was not to enhance the speed/growth by which ELL children achieved proficiency, and previous research has shown that the important factors associated with the speed/growth of English proficiency among ELLs pertain to family (use of first language at home, higher socio economic status and education level) school factors (classroom sizes, lower percentages of ELL children), as well as children's characteristics (gender, proficiency in first language stronger cognitive, language, and socio-emotional skills and low behavioral

problems) (Cardenas-Hagan, Carlson, & Pollard-Durodola, 2007; Castilla, Restrepo, & Perez-Leroux, 2009; Halle et al. 2012; Kim, 2011; Ladegaard & Bleses, 2003). This might be an opportunity to once again emphasize the need to support ELL children from low-income families while in their early years. While most of the children in the present study achieved English proficiency by second grade (see Table 2), their “English proficiency” reflected only their oral abilities, not their written, reading or academic listening skills, which are also needed for academic success (Beal, Adams, & Cohen., 2010). Thus, before we conclude that our work with ELL children is done, we need to carefully look at the measurements used to determine their skills.

Limitations

There were several limitations to the current study that are worth noting. First, as is the case with any longitudinal study, we encountered attrition patterns that lessened the sample size over the years, limiting the possibility of conducting analyses for more than two- way interactions, and possibly limiting our ability to achieve significance in the analyses of outcomes like retention patterns and use of special education services. Second, as mentioned before, the measurements available were not specifically designed to follow up the EAP’s long-term impact on children’s outcomes, so instead, we had to just use measurements available through the school system’s records. However, this also constitutes one of the main strengths of the study which has to do with the ecological value of the measurements. These are, in fact, the tests which children are expected to succeed in, and their performance constitutes the basis for important high-stakes school decisions regarding children’s futures, like grade retention and placement in special

education services. Finally, White children were not represented in the present study, limiting the ethnicity analyses to comparisons between Black and Hispanic children only. Despite the limitations encountered, the results found in the present study did support previous findings regarding the long-term effects of early literacy interventions (Berninger et al., 2002; Cartledge et al., 2011; Coyne et al., 2004; Simmons et al., 2008).

Implications

In addition to the more widespread implementation of the EAP and other programs similar to the EAP with ELL children (Bernard et al.; 2006), the present study provides evidence that programs similar to the EAP can also be beneficial for “at risk” boys and Black children by bettering the chances of success in their long-term academic trajectories. This is especially important when considering the ecological validity of the measurements used in the present study, assessments used to make decisions that directly impact children’s academic lives; such as recommendations for grade retention and use of special services. Therefore, the added ecological validity of the results found in the present study constitute a relevant element to promote the implementation of programs like the EAP which set children up for a good start by enhancing the skills needed to succeed in kindergarten and during their first years of school. As a matter of fact, the toy industry is already taking the lead in promoting the widespread use of “early authors” kits for young children, like “illustory,” an activity kit that encourage children to write and illustrate their own books. The kit offers an “about the author page,” where the children get to write their “bio” and dedication page. The final product is then mailed to the publishing company, and afterwards the children receive their “published” book. Illustory

is advertised as a product that contributes to “build children’s self-esteem as well as excitement for reading and writing and sense of accomplishment.” Multiple awards (Oppenheim Gold Seal, Creative Child Toy of the Year, Parents' Choice Classic, Family Life Best Learning Toy, Dr. Toy Best Toy Classic) have been granted to “Illustory,” and in general, it has received positive feedback from parents and bloggers. Similar products exist in the market, like “think it, ink it”, which encourages children to write their own stories using a wordless template in either a hard copy book or on the company’s website. “Think it, ink it” stimulates children’s creative process in what is called the “Think It phase”, during which instructions encourage children to ask themselves about the characters in the story, their names, their actions in the story, and how the story will end.

Future Research

Additional research is needed in order to provide a deeper understanding of the long-term effects of early literacy interventions, and to identify effective practices. For example, the Early Reading First (ERF) initiative supports the enrichment of early education programs focused on enhancing early language, cognitive, and reading development for low-income and/or ELL children. Gonzales et al. (2007) analyzed ERF-funded programs and found they significantly improved children’s oral language abilities, alphabetical knowledge, and print concepts, which suggests that the elements promoted by the ERF programs could potentially better low- income and ELL children’s chances to succeed in kindergarten. However, the authors pointed out the need for longitudinal studies that track the impact of the ERF as children progress through school. The same need for follow-up and longitudinal studies is common across studies assessing early

intervention outcomes, which adds to the already existing evidence of the short-term benefits of early interventions; that they keep falling short in providing evidence of their long-term benefits, and keep us wondering if they are worth the effort. The EAP implemented family-inclusive strategies which may have been related to the outcomes observed. Additional studies are needed to provide a better understanding of the relationship between the home literacy environment and its contribution to the long-term effects of programs like the EAP. Certainly, there is evidence of the relevance of working with children's families (Ada, 1998; Ada & Campoy, 2003) Finally, it is important to study possible moderation, mediation, and interaction effects between early interventions and other variables of interest, like gender, ethnicity, age, etc., in order to reach a better understanding of responses to treatment patterns among low-income, ethnically- and linguistically-diverse populations.

General Conclusions

The fact that academic and cognitive disparities between children from different economic backgrounds start early on during childhood, and that such disparities prevail across children's academic trajectories, have been widely reported in the literature (Cunha & Heckman , 2010). Hence, there is urgent need for the development of interventions that contribute to closing this gap, not only in the early stages of children's academic lives, but also across the elementary years and even later on. In order to do so, it's important to identify those interventions which can generate results in terms of enhancing literacy skills as well as school readiness, such as the EAP. Perhaps, through some kind of response to treatment analyses, continuity to the intervention can be

attained in order to maximize results and redirect intervention efforts with those children for whom the effects are unclear or minimum.

When programs achieve results with populations from diverse ethnically, linguistically and economic backgrounds, one must think that, despite the presence of “risk” factors, there are elements in the intervention that enhance individuals’ skills and abilities to the point that they are able to overcome the so called “risk” associated with their particular circumstances. However, it is not surprising that once the interventions and their key elements stop while the “risk” factors remain present in the individual’s environment, the observed effects dissipate over time. Gunn and Kameenui (1998) stated that early literacy experiences related to children’s later reading acquisition are also influenced by diverse social contexts and conditions. If this is indeed true, one can’t help but wonder why it is that long-term interventions that incorporate response to treatment analyses are not being implemented in a more consistent basis. There is only so much we can expect from short-term interventions; after their implementation, participating children go on with their lives, and the social influences which placed them at risk before the intervention are likely to persist. Cost–benefit analyses are already available providing evidence of the impact that early interventions can have on children’s lives and the associated costs for society as well (Lynch, 2006). However, there is still an absence of long-term interventions. Perhaps, there is a bigger need for program developers to take on the challenge to not only developing and implementing effective short–term interventions, which is already challenging enough; but also, to create contingent plans for the follow-up of intervention’s outcomes and for their continuity among the target

populations. This will not only keep practitioners informed about their daily work with populations of interest, but will also constitute a rich source of information for the development of new programs. If we continue to accrue evidence and information about short-term effectiveness of early intervention programs, while simultaneously neglecting efforts to guarantee their continuity and improvement, we will be neglecting the efforts to close the achievement gap between low-income, ethnically, and linguistically diverse children and their counterparts, and in so doing we will continue providing a short-term solution to a long-term problem. This will have long-term impacts, not only on the lives of these children, but likely on the lives of their children as well, continuing from generation to generation. In sum, early interventions have proven to be effective in a wide variety of aspects, and it is time to make them interventions across the early years in children's academic lives, in order to provide them with the needed elements to close the gap and break the cycle of poor outcomes with which they are associated (Wasik & Slavin, 1993).

APPENDIX A

Table 1 Comparisons on Demographic Variables Between children in the EAP program, and Children in the comparison group

	EAP Children <i>N</i> = 84 (69%)	Comparison Children <i>N</i> = 38 (31%)	Total Sample <i>N</i> = 122 (100%)
Age	<i>M</i> = 48.79 <i>SD</i> = 9.05	<i>M</i> = 50.95 <i>SD</i> = 10.69	<i>M</i> = 49.46 <i>SD</i> = 9.60
Gender			
Males	48 (57.1%)	18 (47.4%)	66 (54.1%)
Females	36 (42.9%)	20 (52.6%)	56 (45.9%)
Ethnicity			
Black	49 (58.3%)	18 (47.4%)	67 (54.9%)
Hispanic	35 (41.7%)	20 (52.6%)	55 (45.1%)
SES			
Children receiving free/reduced lunch	75 (89.3%)	35 (92.1%)	112 (91.8%)
Children did not receive free/reduced lunch	9 (10.7%)	3 (7.9%)	10 (8.2%)
Center Type			
Child care center	73 (86.9%)	37 (97.4%)	110 (90.2%)
Family day care	11 (13.1%)	1 (2.6%)	12 (9.8%)

ELL status

ELL children	27 (32.1%)	16 (42.1%)	43 (35.2%)
NO ELL children	57 (67.9%)	22 (57.9%)	79 (64.8%)

Table 2 Means and standard deviations, N's and percentages for all outcomes by group

	EAP Children <i>N</i> = 84			Comparison Children <i>N</i> = 38		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
SCHOOL READINESS						
DIBELS Initial Sound*	10.97	8.39	64	4.70	4.34	23
DIBELS Letter Naming*	25.02	21.58	65	10.52	13.76	23
ESI TOTAL*	23.56	2.88	72	21.20	4.99	30
ESI RISK CATEGORY*						
No Ready	-	-	0 (0%)	-	-	4 (13.3%)
Getting Ready	-	-	9 (12.5%)	-	-	1 (3.3%)
Ready Now	-	-	63 (87.5%)	-	-	25 (83.3%)
ACADEMIC OUTCOMES						
K						
Overall Grades K	2.24	.32	75	2.19	.51	29
Literacy Grades K	2.33	.48	75	2.22	.69	29
Other acad. grades K	2.19	.36	75	2.18	.59	29
Non acad. grades K	2.33	.39	71	2.34	.49	29

**ACADEMIC OUTCOMES
G1**

Overall Grades G1	4.10	.50	74	4.08	.63	31
Literacy Grades G1	3.69	.85	74	3.63	.95	31
Other acad. grades G1	3.90	.63	73	3.79	.96	31
Non acad. grades G1	4.65	.44	71	4.77	.32	31

EAP Children

Comparison Children

M *SD* *N*

M *SD* *N*

**ACADEMIC OUTCOMES
G2**

Overall Grades G2	3.97	.59	69	3.92	.58	31
Literacy Grades G2	3.78	.82	69	3.68	.84	31
Other acad. grades G2	3.65	.84	69	3.69	.72	30
Non acad. grades G2	4.50	.45	69	4.43	.46	31

SAT-10 G2

SAT READING	593.52	45.56	69	590.13	44.05	31
SAT MATH	572.13	39.37	69	576.97	38.49	31

**ACADEMIC OUTCOMES
G3**

Overall Grades G3	3.92	.58	66	3.77	.85	28
Literacy Grades G3	3.64	.82	66	3.33	1.27	28
Other acad. grades G3	3.64	.73	66	3.40	1.15	28
Non acad. grades G3	4.84	1.74	62	4.58	.46	27

FCAT G3

FCAT READING	295.94	62.29	65	303.89	61.60	28
FCAT MATH	313.29	68.69	65	299.86	81.09	28
FCAT-Reading / Pass	-	-	40 (61.5%)	-	-	15 (53.6%)
FCAT-Reading / Fail	-	-	25 (38.5%)	-	-	13 (46.4%)
FCAT-Math / Pass	-	-	41 (63.1%)	-	-	17 (60.7%)
FCAT-Math / Fail	-	-	24 (36.9%)	-	-	11 (39.3%)
Time for English Proficiency	1.81	1.15	27	1.63	1.03	16
Proficient by Kindergarten			4 (14.8)	-	-	2 (12.5)
Proficient by G1			8 (29.6)	-	-	6 (37.5)
Proficient by G2			4 (14.8)	-	-	4 (25)
Proficient by G3			11 (40.7)	-	-	4 (25)
GIFTED STATUS						
Gifted	-	-	5 (6%)	-	-	5 (13.2%)
Not - Gifted			79 (94%)			33 (86.8%)
SPECIAL EDUCATION STATUS						
Special Education			9 (10.7%)			5 (13.2%)
No special Education			75 (89.3%)			33 (86.8%)
	EAP Children			Comparison Children		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
RETENTION STATUS						
Retained	-	-	7(8.3%)	-	-	6 (15.8%)
Not Retained	-	-	77 (91.7%)	-	-	32(84.2%)

* $p < .05$.

Table 3 Hierarchical Regression Model for Variables predicting School Readiness

ESI SCORE

	B	SE B	β	ΔR^2	Total R ²	F(d.f.)
Step 1				.061	.061	1.25 (5, 96)
Age	.05	.04	.13			
Male	-1.28	.75	-.17			
Black	.96	.87	.13			
Reduce/Free Lunch	.70	1.33	-.05			
Yes ELL	-.07	.93	-.01			
Step 2*				.100	.161	*11.34(1, 95)
Age	.05	.04	.12			
Male	-1.38	.71	-.18			
Black	1.15	.83	.15			
Reduce/Free Lunch	-.84	1.27	-.06			
Yes ELL	.23	.89	.03			
EAP*	2.64	.79	.32*			

DIBELS INITIAL SOUND

	B	SE B	β	ΔR^2	Total R ²	F(d.f.)
Step 1				.113	.113	2.07 (5, 81)
Age	.05	.12	.04			
Male	-1.67	1.70	-.10			
Black	-1.40	1.94	-.09			
Reduce/Free Lunch*	-8.95	2.94	-.33*			

Yes ELL	-.33	2.09	-.02			
Step 2*				.131	.245	*13.92 (1, 80)
Age	.000	.11	.000			
Male	-1.84	1.57	-.11			
Black	-.61	1.82	-.04			
Reduce/Free Lunch*	-9.64	2.74	-.35*			
Yes ELL	.077	1.95	.004			
EAP*	6.70	1.80	.37*			

DIBELS LETTER NAMING

	B	SE B	β	ΔR^2	Total R ²	F(d.f.)
Step 1				.109	.109	2.01 (5, 82)
Age	.31	.31	.11			
Male	1.70	4.36	.04			
Black	-.58	5.04	-.01			
Reduce/Free Lunch	-13.33	7.22	-.20			
Yes ELL*	-10.85	5.44	-.24*			
Step 2				.080	.190	*8.03 (1, 81)
Age	.22	.30	.07			
Male	1.49	4.18	.04			
Black	1.12	4.87	.03			
Reduce/Free Lunch*	-14.21	6.94	-.21*			
Yes ELL	-10.01	5.23	-.22			

EAP* 13.62 4.81 .29*

* $p < .05$.

Table 4 Hierarchical Regression Model for Variables predicting School Grades in Kindergarten

KINDERGARDEN GRADES

	B	SE B	β	ΔR^2	Total R ²	F(d.f.)
Step 1*				.143*	.143	3.28 (5, 98)
Age	.002	.004	.04			
Male	-.13	.07	-.17			
Black	.15	.08	.19			
Reduce/Free Lunch	-.20	.15	-.01			
ELL	.17	.08	.21			
Step 2				.011	.154	1.28 (1, 97)
Age	.002	.004	.04			
Male	-.13	.07	-.18			
Black	.15	.08	.20			
Reduce/Free Lunch	-.01	.15	-.003			
ELL*	.17	.08	.21*			
EAP	.09	.08	.11			

LITERACY GRADES IN K

	B	SE B	β	ΔR^2	Total R ²	F(d.f.)
Step 1*				.279	.279	*7.58 (5,

98)

Age	.01	.005	.10			
Male	-.08	.10	-.07			
Black	.06	.11	.06			
Reduce/Free Lunch	-.12	.19	-.06			
ELL *	.54	.11	.47*			
Step 2				.020	.299	2.72 (1, 97)
Age	.05	.005	.10			
Male	-.09	.09	-.08			
Black	.08	.11	.07			
Reduce/Free Lunch	-.10	.19	-.04			
ELL*	.54	.11	.48*			
EAP	.17	.11	.14			

* $p < .05$.

Table 5 Hierarchical Regression Model for Variables predicting time for English proficiency

TIME OF ENGLISH PROFICIENCY

	B	SE B	β	ΔR^2	Total R ²	F(d.f.)
Step 1				.086	.086	.725 (4, 31)
Age	.02	.02	.22			
Male	-.07	.33	-.04			
Black	-.47	.38	-.22			
Reduce/Free Lunch	-.60	.63	-.18			
Step 2				.005	.091	.166 (1, 31)
Age	.02	.02	.21			
Male	-.03	.35	-.02			
Black	-.52	.41	-.24			
Reduce/Free Lunch	-.60	.64	-.18			
EAP	-.16	.38	-.08			

Table 6 Hierarchical Logistic Regression Predicting Grade Retention, use of special education services, and standardized test performance

GRADE RETENTION

	STEP 1		STEP 2	
	<i>OR</i>	<i>SE (B)</i>	<i>OR</i>	<i>SE (B)</i>
AGE*	1.079*	.03	1.075*	.03
Gender (Male)	1.28	.63	1.39	.64
Ethnicity (Black)	.46	.71	.45	.73
ELL (Yes ELL)	.57	.73	.53	.76
Group	-	-	.53	.63

SPECIAL EDUCATION SERVICES

	STEP 1		STEP 2	
	<i>OR</i>	<i>SE (B)</i>	<i>OR</i>	<i>SE (B)</i>
AGE	.94	.04	.94	.04
Gender (Male)	2.10	.64	2.13	.65
Ethnicity (Black)	.31	.66	.31	.67
ELL (Yes ELL)	.33	.77	.32	.78
Group	-	-	.68	.63

GIFTED

	STEP 1		STEP 2	
	<i>OR</i>	<i>SE (B)</i>	<i>OR</i>	<i>SE (B)</i>
AGE	.95	.04	.95	.04
Gender (Male)*	.18*	.82	.19*	.83
Ethnicity (Black)	.70	.82	.77	.87

ELL (Yes ELL)	1.14	.85	1.01	.91
Group	-	-	.43	.72
FCAT READING				
	STEP 1		STEP 2	
	<i>OR</i>	<i>SE (B)</i>	<i>OR</i>	<i>SE (B)</i>
AGE	1.00	.02	1.01	.02
Gender (Male)	1.09	.44	1.04	.44
Ethnicity (Black)	.47	.51	.44	.52
ELL (Yes ELL)	1.44	.54	1.45	.54
Group	-	-	1.62	.48
FCAT MATH				
	STEP 1		STEP 2	
	<i>OR</i>	<i>SE (B)</i>	<i>OR</i>	<i>SE (B)</i>
AGE	.97	.02	.97	.02
Gender (Male)	1.27	.45	1.25	.45
Ethnicity (Black)	.83	.52	.82	.53
ELL (Yes ELL)*	3.43*	.58	3.46*	.58
Group	-	-	1.20	.50

* p < .05

Table 7 Analyses of Variance for Group by Gender and Group by Ethnicity Interactions in School Readiness, Kindergarten, Third grade and Standardized test performance

SCHOOL READINESS ESI –K

	<i>N</i>	<i>M</i>	<i>SD</i>	F (d.f.)
Group by Gender*				4.66 (1, 98)*
EAP Boys	39	23.44	2.95	
Comparison Boys	15	19.40	4.95	
EAP Girls	33	23.73	2.84	
Comparison Girls	15	23.00	4.49	
Group by Ethnicity				2.23 (1, 98)
EAP Black	44	23.34	3.12	
Comparison Black	14	19.64	6.57	
EAP Hispanic	28	23.93	2.49	
Comparison Hispanic	16	22.56	2.56	

KINDERGARTEN GRADES

	<i>N</i>	<i>M</i>	<i>SD</i>	F (d.f.)
Group by Gender*				13.26 (1, 100)*
EAP Boys	42	2.26	.31	
Comparison Boys	14	1.92	.30	
EAP Girls	33	2.22	.33	
Comparison Girls	15	2.45	.55	
Group by Ethnicity				.003 (1, 100)
EAP Black	43	2.16	.29	

Comparison Black	14	2.08	.51	
EAP Hispanic	32	2.37	.32	
Comparison Hispanic	15	2.30	.52	
LITERACY GRADES G3				
	<i>N</i>	<i>M</i>	<i>SD</i>	F(d.f.)
Group by Gender				.89 (1, 90)
EAP Boys	39	3.64	.84	
Comparison Boys	13	3.09	1.34	
EAP Girls	27	3.66	.82	
Comparison Girls	15	3.54	1.23	
	<i>N</i>	<i>M</i>	<i>SD</i>	F(d.f.)
	<i>N</i>	<i>M</i>	<i>SD</i>	F(d.f.)
Group by Ethnicity*				4.21 (1, 90)*
EAP Black	38	3.59	.83	
Comparison Black	13	2.79	1.28	
EAP Hispanic	28	3.71	.83	
Comparison Hispanic	15	3.80	1.11	
STANDARDIZED TEST FCAT MATH				
Group by Gender				.74 (1, 89)
EAP Boys	38	321.32	73.10	
Comparison Boys	13	294.92	78.67	
EAP Girls	27	302.00	61.52	
Comparison Girls	15	304.13	85.65	

Group by Ethnicity*				4.44 (1, 89)*
EAP Black	38	314.45	62.86	
Comparison Black	13	264.85	79.26	
EAP Hispanic	27	311.67	77.38	
Comparison Hispanic	15	330.20	71.92	

* p < .05

APPENDIX B

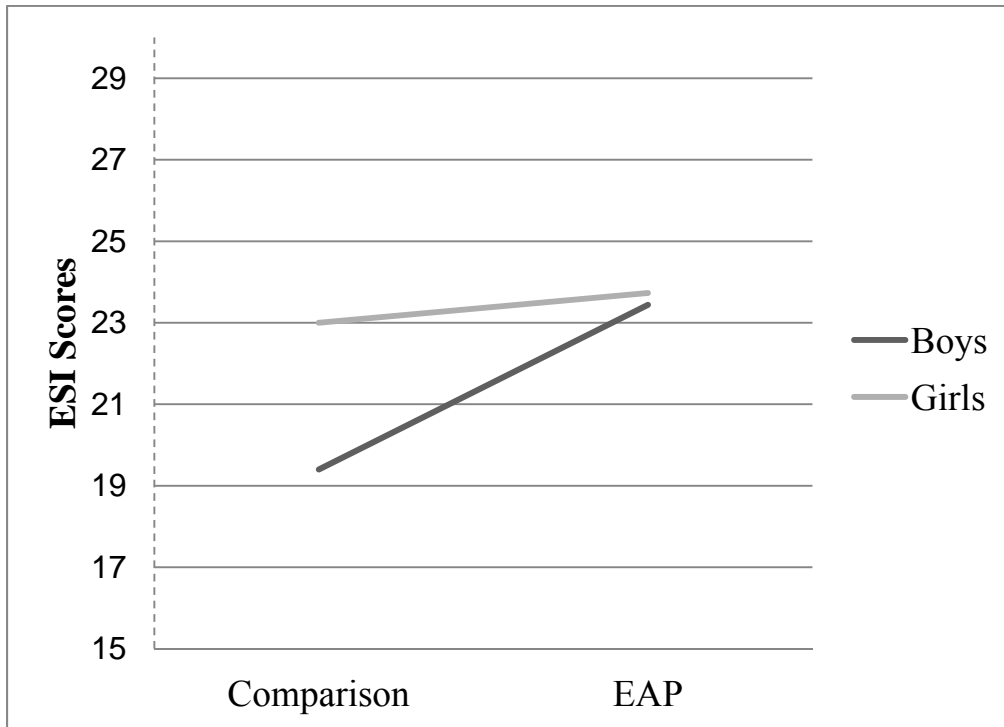


Figure 1 Interaction results between group and gender for mean Early Screening Inventory ESI-K scores

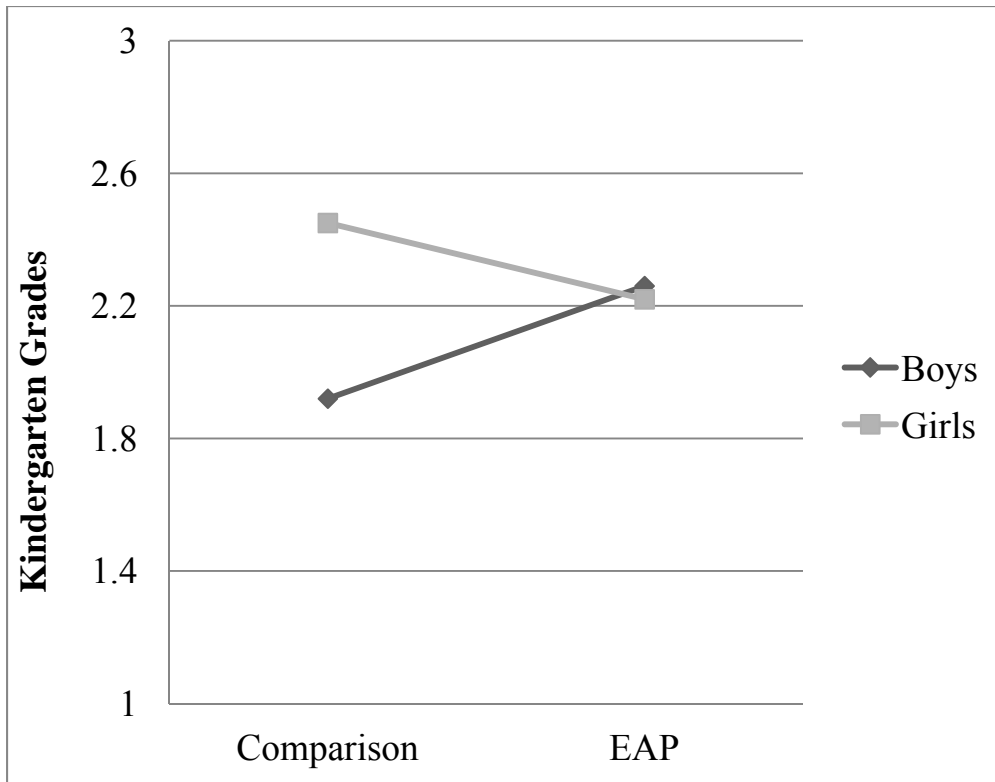


Figure 2 Interaction results between group and gender for mean kindergarten grades

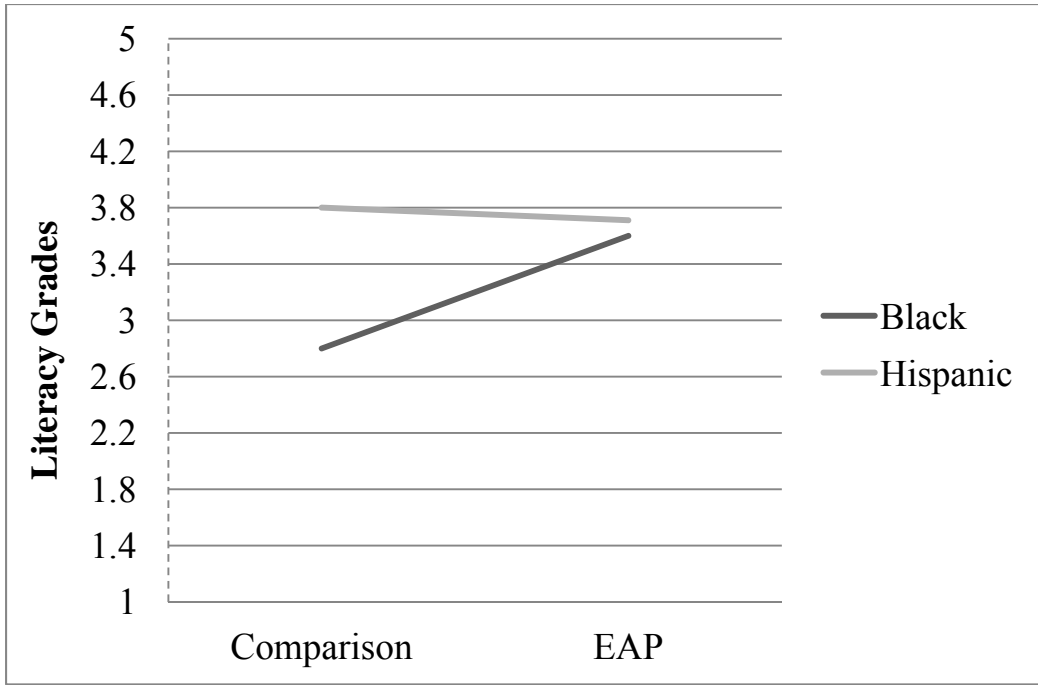


Figure 3 Interaction results between group and ethnicity for mean literacy grades at third grade

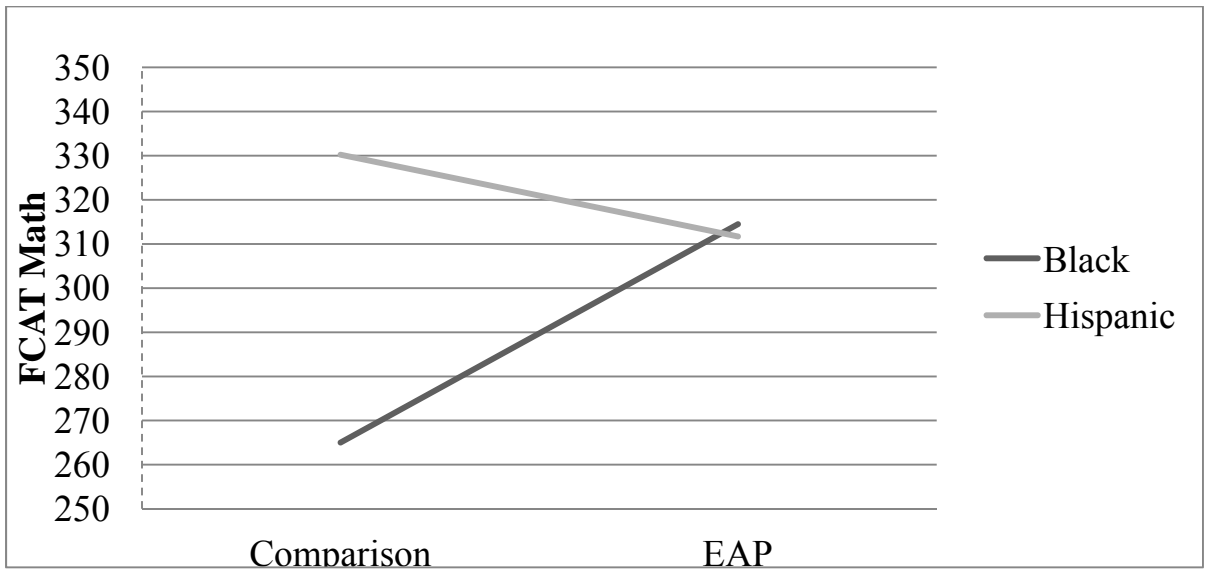


Figure 4 Interaction results between group and ethnicity for mean FCAT math scores at third grade

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