CEMETR-2014-02
MARCH 2014

CEME Technical Report

The Center for Educational Measurement and Evaluation

The Literacy Skills of Returning and First-Year Children in Head Start Programs

Priscila G. Baddouh
Richard Lambert
Huifang Zuo

RICHARD LAMBERT
CHUANG WANG
MARK D'AMICO
EDITORS

A PUBLICATION OF THE CENTER FOR EDUCATIONAL MEASUREMENT AND EVALUATION

CEME
The Center for Educational Measurement and Evaluation
College of Education
UNC CHARLOTTE

The Literacy Skills of Returning and First-Year Children in Head Start Programs

Priscila G. Baddouh

Richard G. Lambert

Huifang Zuo

Center for Educational Measurement and Evaluation

UNC Charlotte

Abstract

The benefits of preschool, especially for low-income children, have been a major research and policymaking question in the last decades. As more children are starting preschool at the age of 3, and, with the development of programs like Early Head Start, understanding the effect of early literacy interventions for young children became indispensable. This quantitative study was designed to investigate whether children who return to a Head Start program (for a second year or from an Early Head Start Program) have different literacy skills and perform better than newly enrolled children, and to compare returning children's literacy skills from rural, suburban and urban centers. This study uses the Language and Emerging Literacy Assessment (LELA) and analyzes the literacy scores of 2,305 3- and 4-year olds, from 39 Head Start centers in Alabama. The results reveal that returning children have higher literacy skills, but the return effect in centers differs depending on center's location, percentage of 3 year olds, and percentage of ESL children.

Keywords: preschool assessment, Early Head Start, Head Start, early literacy

Literacy Skills of Returning and First-Year Children in Head Start Programs

Benefits from Preschool

While preschool attendance has become common for children of all income levels, positive effects of preschool are especially pronounced for low-income children, influencing their cognitive and social development (Camilli, Vargas, Ryan, & Barnett, 2010; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; Bridges, Fuller, Rumberger, & Tran, 2004). Although scholars do not agree on the long-term effects that preschools have on low-income children, studies such as the High Scope Perry Preschool Program in Michigan (1962 to 1967), and the Carolina Abecedarian Project (1972 to 1977) demonstrate that low-income children who begin their education with high-quality preschool programs tend to complete high school, and, consequently, are more successful academically and professionally (Campbell & Ramey, 1994). They also have less criminal involvement (Ryan, Fauth, & Brooks-Gunn, 2006), which shows not just a long-term benefit for the child, but also for society.

Arteaga, Humpage, Reynolds, & Temple (2013) also compare the long-term benefits for children from the Chicago Longitudinal Study, in which children participated in the Child-Parent Centers for one or two years. Arteage and colleagues (2013)'s results reveal that children who participated in the program for two years rather than one were less likely to be involved in juvenile crime and have a felony arrest by the age of 24, and they were less likely to be reported to child protective services for child abuse or neglect. Academically, the two-years group was less likely to repeat a grade from first to eighth grade or need special education services, and had higher test scores, although Arteage and collegues did not find benefits in adult educational attainment.

Long- and short- term effects vary depending on the child's socio-economic circumstances. Earlier literacy intervention may have minor consequences on the cognitive development of middle- and high-income children, but low-income children who start preschool earlier, in some cases during infancy, have the greater cognitive benefits (Loeb et al., 2007; Bridges et al., 2004; Campbell &

Ramey, 2004). In fact, the gains in cognitive development are high during the infancy and preschool years, and they may persist through the earlier years of adolescence (Arteage et al., 2013; Campbell &Ramey, 2004; Ryan et al., 2006). The question of what is the right age to start preschool is of great significance for parents from a variety of socio-economic backgrounds, but this question is particularly relevant for policymakers who also make decisions regarding funding for programs such as Head Start and Early Head Start.

Head Start and Early Head Start Program

In 1965, the Head Start program was created as a way to decrease the social and educational gap between low- and high- income children. The program has as a mission — among its health and social objectives — to increase school readiness for children between 3-5 years old (Puma, Bell, Cook, & Heid, 2010). In 1994, the program expanded to Early Head Start, which serves children between 0 and 3 years old. To participate in a Head Start or Early Head Start program, children have to meet family poverty guidelines, be homeless, or have a qualifying disability. An exception to these requirements is for foster children, who are eligible to the program despite their foster family's income (Poverty & Guidelines, 2014).

The Early Head Start Evaluation (Love & Brooks-Gunn, 2010) states that Early Head Start programs have impact starting at the age of 2 on these areas: cognitive, language, and social-emotional development. This is also the age when poverty and family risk effects on cognitive development become evident (Barajas, Philipsen, & Brooks-Gunn, 2007; Ryan et al., 2006). Loeb et al. (2007) findings also indicate that children who start preschool between the ages of 2 and 3 have the highest effects on reading and math independent of income groups or race (African American, Caucasian, or Hispanic). However, Loeb et al. did not find cognitive benefits for children who started in a preschool program before the age of 2.

Although long-term effects of preschool depend on quality of K-12 schools and parent involvement (Loeb et al., 2007; Reynolds, 1995), researchers agree that preschool has the short-term benefit of preparing children to start school. Such benefit influences the academic development of children during elementary school. In addition, early intervention during infancy may reduce the effect of poverty on the cognitive development of a child, consequently, reducing the learning gap between low-income children and children from other economic backgrounds (Ryan et al., 2006). Also children who participate in an Early Head Start program are more likely to enroll in a preschool program (Love & Brooks-Gunn, 2010).

This study builds on the Head Start Impact Study Final Report (2010) that describes and compares the effect that Head Start programs have on 3- and 4-year olds. The Head Start Impact Final Report's data collection was conducted between 2002 and 2006. In that study, approximately 5,000 newly entering, 3 and 4 years old children were randomly assigned to treatment and control conditions. The final report showed that both groups benefited from the program in the following literacy areas: vocabulary, letter-word identification, letter naming, spelling, parent-report emergent literacy and pre-academic skills. Yet, 3 year olds advanced more in phonological processing and non-emergent literacy areas such as behavior and health.

In addition, the Head Start Impact Final Report revealed that there was a difference between urban and non-urban 3 year olds — 3 year-old- preschoolers from non-urban areas had a sustainable cognitive impact on language and literacy through the end of the first grade. The report leaves as an unanswered question for researchers, whether two years of Head Start would benefit children more than one year of Head Start. This question has become an even more relevant policymaking question with the creation of Early Head Start in 1994, since some of the children may stay in this type of early intervention from 0 to 5 years old.

In 1995, Arthur Reynolds researched the effect of two years versus one year of Head Start. Reynolds (1995) found out that returning children have a more stable and sustainable benefit on their cognitive development: they are more prepared for Kindergarten, they read better, they are less likely to be placed in special education up to grade four, they have lower rates of grade retention during elementary school, and their parents are more involved. But he did not find a statistically significant difference in long-term effects beyond elementary school between one and two years in a Head Start program. Reynolds (1995) presumed that the difference between one and two years of Head Start is not sustainable over time for two reasons. First, children have a peak in their performance during the first year and diminishing return in their second year. Second, returning children often have the same activities during their two years of Head Start, which means that the second year merely reinforces what was learned in the first year.

Another study also with children from a Head Start program who started when they were 3 or 4 years old shows short-term benefits in literacy. Domitrovich, Morgan, Moore, Cooper, Shah, Jacobson, & Greenberg (2013) found that children who stay two years rather one year in a Head Start program had an improved vocabulary and knew more letters at the beginning of Kindergarten, although they did not find any differences in writing for the two groups of children. Our study also focused on literacy skills, and divides 3 and 4 year old children in two groups, which were not randomly assigned: returning children (who were enrolled before in a Head Start or Early Head Start program) and newly enrolled children.

This study seeks to answers two questions: Do children who are returning from a Head Start or Early Head Start program perform better than children who are newly enrolled and may or may not have participated in another preschool program? Does the effect for being a returning child vary by center location? This study's definitions of rural, suburban (urban-cluster) and urban are based

on the Census 2010 — rural: less than 2,500 people, suburban (urban-cluster): from 2,500 to 49,999 people, urban: 50,000 or more people.

Emergent Literacy Skills and The Instrument used in This Study

Emergent literacy includes knowledge, attitudes and skills that are the foundation for reading and writing (Lonigan, Burgess, & Anthony, 2000; Whitehurst & Lonigan, 2000; Teale & Sulzby, 1986; Welsh, Sullivan, & Justice, 2003). Emergent literacy development starts during preschool or infancy, and will depend on the child's exposure to an environment that stimulates learning. For children from high-income backgrounds, this environment can be found at home, but for low-income children, early intervention programs are sometimes the main opportunity to develop emergent literacy skills. It is especially important to start developing emergent literacy before kindergarten, as those skills will influence children' reading abilities during kindergarten, elementary school and throughout their academic life (Bailet, Repper, Piast, & Murphy, 2009; Lonigan, Burgess, & Anthony, 2002; Adam, 1990).

There are seven major literacy skills in preschool. First, language: vocabulary and oral expression (Whitehurst & Lonigan, 2000; Lonigan, Burgess, & Anthony, 2000). Second, conventions of print: directions in which print is to be read (left-to-right and top-to-bottom), understanding of what is the cover and what are the pages in a book, differentiation between pictures and print, and print structure such as words, sentences, spaces and punctuation. (Whitehurst & Lonigan, 2000; Lonigan, Burgess, & Anthony, 2000). Third, knowledge of letters: name and sounds of letters, and the ability to recognize them in upper and lowercase versions (Whitehurst & Lonigan, 2000; Wood & McLemore, 2001; Rosenberg, 2006). Knowledge of letters is also closely related to phonemic awareness; children who recognize more letters have higher levels of phonemic awareness (Rosenberg, 2006).

Fourth, linguistic/ phonological awareness: includes syllables, rhymes, and phonemic awareness (Whitehurst & Lonigan, 2000; Lonigan, Burgess, & Anthony, 2000; Wood & McLemore, 2001; Rosenberg, 2006). Yet, Rosenberg (2006) and Adams (1990) consider phonemic awareness, which is the understanding of words and its parts (the phonemes), as the most important aspect in phonological awareness related to reading development. Fifth, phoneme-grapheme correspondence: knowing the connection between phonemes and alphabet letters, including knowledge of combination of letters (Whitehurst & Lonigan, 2000, Wood & McLemore, 2001). Sixth, emergent reading and writing: recognition of print in labels, for example, and pretending or beginning to write (Whitehurst & Lonigan, 2000). Seventh, name writing (Haney, 2002; Welsh et al. 2003).

To evaluate literacy skills, this study uses the Language and Emerging Literacy Assessment (LELA) — an instrument developed by researchers and practitioners from the Jefferson County Committee for Economic Opportunity. LELA has two sections. Section I: Book Knowledge, Expressive Language, Beginning Sounds, Phonemic Awareness and Rhyming; section II: Uppercase Letter Recognition, Lowercase Recognition and Name Writing (only first name). Although name writing is included in LELA, since children have different name lengths, and our sample had a variation from 2 to 12 letters in a name, we excluded Name Writing from our evaluation.

This study is a subset from a larger study that analyzes the instrument and evaluates the measurement properties, including validity and reliability of LELA (Lambert, 2000). The full sample had 5,727 preschoolers in 50 Head Start centers from seven Head Start Programs. The original study had two different versions of LELA, one that included questions regarding returning, IEP and ESL status, and another without that information. Our study uses the first version and has a sample of 2,305 children that answered Lela in the first two months of the Fall semester 2006, 2007 and 2008, in 39 Head Start centers from five Head Start Programs in Alabama — 4 centers were located in an urban region, 25 in a suburban region, and 10 in a rural region.

LELA Administration

Section I has five sub-divisions. Each item in each division has a score value of one. First, Book Knowledge (nine items): assessors gave a book to children and asked them to show (by pointing) a letter, a word, the name of the book, the name of the book's author, the name of the book's illustrator, where the assessor should start reading and in what direction (left to right, top to bottom), and where the story ends. Second, Expressive Language (five items): assessors asked children to tell the story in the book. Children had five elements to include: beginning of the story, setting, characters, sequence and ending of the story.

Third, Beginning Sounds (eight items): assessors showed three images to children, for example, a "rake", a "paintbrush" and a "hammer". Then, assessors said a word, for example, "ruler", and asked children which image/ word starts with the same sound. This exercise was repeated eight times with eight different words to identify eight different beginning sounds: ruler, bus, monkey, sun, hat, ladder, dog and kite. Fourth, Phonemic Awareness (four items): assessors said a word dividing it into syllables, (for example: Ti ger), and children needed to complete the word (tiger). Fifth, Rhyming (four items): assessors said a word, for example, cat, and other two words (showing the images) to children, for example, "rat" and "chair", and children needed to identify which word sounds like cat.

Section II has three sub-divisions. First, Uppercase Letter Recognition: alphabet letters are in a random order in the uppercase format. Assessors circled the letters that children recognized. Second, Lowercase Letter Recognition: alphabet letters are in a random order in the lowercase format. Assessors circled the letters that children recognized. Each letter has a score value of one. Third, Name Writing: children wrote first their name, and we compared how many letters they wrote correctly. However, because some children had 2 or 3 letters in their names, while others had 11 or 12, we do not use this section in this study.

Method

Sample and Participants

The sample includes 2,305 children from 39 centers, enrolled in five Alabama Head Start programs. The children were identified as returning to the center from a Head Start or Early Head Start program or as newly enrolled. We have information about whether the child was returning, but not the total years of participation in an Early or Head Start program. This study only includes 3- and 4- year olds: 36.6% are 3 year olds, and 63.4% are 4 year olds. Among the 3-year olds, 11.1% are returning students, likely from an Early Head Start program. Among the 4-year olds, 49.4% are returning students. The sample has 2.7% children who have an IEP, and 1.6% for whom English is their second language.

Variables

We used Cronbach's alpha to evaluate the internal consistency reliability of the eight variables: Book Knowledge (α =0.802), Expressive Language (α=0.775), Beginning Sounds (α =0.755), Phonemic Awareness (α=0.887), Rhyming (α=0.767), Total Emergent Literacy (α=0.895), Uppercase Letter Recognition (α=0.962), Lowercase Letter Recognition (α=0.951) and Name Writing (α=0.951). The Total Emergent Literacy was produced through adding all scores of Book Knowledge, Expressive Language, Beginning Sounds, Phonemic Awareness and Rhyming together.

Two level HLM models were used to explore the return effects of Head Start and the difference between skills of returning children in rural, suburban and urban centers. At level I, we examined four predictors: status as returning or not (uncentered), age in months (group mean centered), IEP — Individualized Education Program – (uncentered), and ESL — English as Second Language — (uncentered). Therefore, the intercept represented the average score for each center for each outcome for newly enrolled children who do not have an IEP and are not an ESL learner.

Slopes of the Level I model captured relationships between each of four predictors and each outcome measures. The Level I model is listed as follows:

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{RETURN}) + \beta_{2j}(\text{AGE}) + \beta_{3j}(\text{IEP}) + \beta_{4j}(\text{ESL}) + r_{ij}$$

At Level II, two separate models were used to investigate whether the scores of returning children differ in rural, suburban and urban areas. The first model aimed at explaining the intercepts, or center means, from the Level I model. The second one intended to model the slope for returning effects from the Level I model. Three contextual control variables were added to level II models for further exploring how these contextual variables modify the level I model intercepts, and differences between returning children and newly enrolled children for each outcome measure. These three contextual variables were the percentage of children who have an IEP (IEPPERC), percentage of children who are ESL learners (ESLPERC), and average age of all children (AGE_MEAN), which were all centered on their grand mean. We specify the Level II models as following:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{SUBURBAN}) + \gamma_{02}(\text{RURAL}) + \gamma_{03}(\text{IEPPERC}) + \gamma_{04}(\text{ESLPERC}) + \gamma_{05}(\text{AGE\_MEAN}) + u_{0j}$$

$$\beta_{1j} = \gamma_{00} + \gamma_{01}(\text{SUBURBAN}) + \gamma_{02}(\text{RURAL}) + \gamma_{03}(\text{IEPPERC}) + \gamma_{04}(\text{ESLPERC}) + \gamma_{05}(\text{AGE\_MEAN}) + u_{0j}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

Results

Returning status and age were positively correlated with higher scores in all outcomes measured in this study. The results on Table 1 indicate that returning children recognized, on average, 5.174 more uppercase letters, and 3.721 more lowercase letter than non-returning children. Returning children scored, on average, 1.432 higher in Book Knowledge, 0.706 higher in Expressive

language, 1.123 higher in Beginning Sounds, 0.470 higher in Phonemic Awareness, 0.056 higher in Rhyming, and 11.223 higher in Total Emergent Literacy on the LELA than non-returning children. For each additional month in their age, children recognized, on average, 0.351 more uppercase letters, and 0.286 more lowercase letters. They also scored, on average, 0.113 higher in Beginning Sounds, 0.060 higher in Expressive Language, 0.062 higher in Beginning Sounds, 0.050 higher in Phonemic Awareness, 0.056 higher in Rhyming, and 0.342 higher in Total Emergent Literacy on the LELA for each additional month in their age.

Children with an IEP status scored lower in all outcomes measured in this study. They recognized 2.430 less uppercase letters, and 2.441 less lowercase letters than non-IEP status children. In addition, they scored, on average, 1.280 lower in Book Knowledge, 0.442 lower in Expressive Language, 0.800 lower in Beginning Sounds, 0.712 lower in Phonemic Awareness, 0.521 lower in Rhyming, and 4.010 lower in Total Emergent Literacy on the LELA than non-IEP status children. ESL children also scored lower in most of the outcomes than other children, but the difference is only statistically significant for four of the outcomes: Beginning Sounds (-0.800), Phonemic Awareness (-0.768), Rhyming (-0.569), and Total Emergent Literacy (-2.992) (see Table 1).

The results from the level II models do not indicate any statistically significant differences in average scores among the three urbanicities, and children who are returning scored higher in 38 centers, and lower in just one (red line in Figure 1). However, the return effect varied for the centers depending on their urbanicities (see Table 2). Rural locations had lower return effects for Uppercase Letter Recognition (-4.339), Lowercase Letter Recognition (-3.426), Book Knowledge (-1.085), Beginning Sounds (-1.048), Rhyming (-0.494), and Total Emergent Literacy (-2.729). Suburban locations had lower return effects for Book Knowledge (-0.787), Expressive Language (-0.383), and Total Emergent Literacy (-1.807). Although both rural and suburban regions had lower return effect

in Total Emergent Literacy, the difference between rural and urban is greater than the difference between suburban and urban.

Level II models also consider the percentage of children with an IEP or ESL status, and the average age of the children in the centers. Higher percentages of children with an IEP status are positively correlated with the recognition of, on average, 9.811 more uppercase letters, and 10.703 more lowercase letters. Higher scores for these centers are also statistically significant for Book Knowledge (8.699) and Beginning Sounds (7.903). Centers with higher percentages of children with an ESL status had a stronger return affect for uppercase letter recognition: returning children recognized, on average, 17.509 more uppercase letters than non-returning children; and they recognized, on average, 12.321 more lowercase letters than non-returning children. These centers also had a statistically significant return effect for Beginning Sounds (4.127), Rhyming (1.760), and Total Emergent Literacy on the LELA (4.441) (see Table 2).

Average age in a center is positively correlated with higher scores on the LELA. Age was measured in months, for each month increase on the average age in the center, uppercase letter recognition had a 0.425 increase, and lowercase letter recognition had a 0.313 increase. Increase in score on the LELA related to increase in age was also statistically significant for: Book Knowledge (0.168), Expressive Language (0.056), Rhyming (0.122), and Total Emergent Literacy (0.634). However, the return effect is negatively correlated to increase in age. As average age in the center increases (by month), the return effect decreased for: Book Knowledge (-0.161), Beginning Sounds (-0.197, Rhyming (-0.084), and Total Emergent Literacy on the LELA (-0.572). These results indicate that 3 year olds may benefit more than 4 year olds from the return effect (3 year olds returned from an Early Head Start program, while 4 year olds returned from a Head Start program).

Discussion

The results reveal benefits from more than one year of Head Start and are consistent with The Head Start Impact Final Report (2010), as well as other studies such as Domitrovich et al. (2013). Children who return from an Early Head Start or Head Start program scored higher on the LELA than newly enrolled children. But the return effect for centers is different depending on the region, ESL status, and age of children. The return effect for urban locations is higher than the return effect for suburban and, especially, rural locations. Centers in rural locations had a statistically significant lower return effect in six of the eight outcomes, in two of them — Beginning Sounds and Total Emergent Literacy — the difference is statistically significant with a $p < 0.001$ when compared to urban regions. This indicates that there may be differences between rural and urban centers that influence children's learning. Consequently, a second year in a rural Head Start center is possibly not as beneficial as a second year in an urban Head Start center. More research would be necessarily to address the question of differences in urbanicities related to income, teaching quality, and resources in different centers' locations.

Regarding the return effect in centers that have more ESL learner, they have a statistically significant higher return effect in five of the eight outcomes. Two of the higher return effects — Beginning Sounds and Rhyming — are outcomes in which ESL children scored lower. Note that both Beginning Sounds and Rhyming are part of phonological awareness. Phonological structure varies from language to language. Thus, its is understandable that ESL children will have more difficulties in this area because they are learning a new language. Yet, we also expect that ESL children who are returning to a Head Start program had more exposure to English than ESL children who are newly enrolled. Consequently, we can assume that the return effect in centers that have more returning ESL will be greater.

This finding indicates that more than one year of Head Start may benefit more ESL children because it gives them more exposition to English. Yet our percentage of ESL children was lower

than expected in a national level. This study had only 1.6% of ESL children. The low number is not a surprise, seeing that Alabama has only 4.1% of its whole population being Hispanic or Latino (Census, 2012), and only 1.2% of Asians (Census, 2012); while states such as Texas and California, for example, both have 38.2% (Census, 2012) of its population being Hispanic or Latino, and 4.2% and 13.9% (Census, 2012), respectively, of Asians.

For centers that have more children with an IEP status, there is no statistically significant return effect related to IEP. Nevertheless, these centers have statistically significant higher average scores in four of the eight outcomes. Although we would need more information about the quality of teaching in those centers, we presume that centers with a more diverse population, for example more IEP children, have a more specialized and individualized teaching method. Different teaching strategies benefit not only children with an IEP status, but also other children. Still more research is needed to fathom why these centers had a higher score in Uppercase letter recognition, Lowercase Letter Recognition, Book Knowledge and Beginning Sounds.

Finally, although older children score higher than younger children, and centers with more 4 year olds than 3 year olds have a higher average score in six of the eight outcomes, age is inversely related to return effect in four of the eight outcomes. This indicates that there may be more benefits from returning from an Early Head Start center than a Head Start center. Our results with the highest statistically significant outcome (in addition to Total Emergent Literacy), Beginning Sounds, and one of the other four outcomes, Rhyming, agree with the Head Start Impact Final Study Report (2010), which found that 3 year olds benefited more in phonological processing than 4 year olds.

Our results strongly indicate that there are benefits of returning to a Head Start. Note, however, that this is a cross-sectional study. Even though our data reflects a snapshot of three cohorts, Fall 2006, 2007 and 2008, a longitudinal study may be more appropriate to further analyze the benefits of longer early childhood interventions and make any in depth causal inferences.

Additional research is necessary to answer questions such as why return effects are different in rural and urban centers, what are the benefits of returning from an Early Head Start rather than a Head Start program, and teaching differentiation in centers that have more children with an ESL or IEP status.

References

Adams M. J. *(1990). Beginning to read: Thinking and learning about print. Cambridge, MA: MIT Press.*

Bailet, L., Repper, K., Piasta, S., & Murphy, S. (2009). Emergent literacy intervention for prekindergarteners at risk for reading failurethat. *Journal of Learning Disabilities*, *42*, 336-355.

Barajas, R. J., Philipsen, N., & Brooks-Gunn, J. (2007). Cognitive and emotional outcomes for children in poverty. In D. Russell Crane & T.B. Heaton (Eds.), *Handbook of families and poverty* (pp. 311-333). Thousand Oaks, CA: Sage.

Bridges, H., Fuller, B. C., Rumberger, R., & Tran, L. (2004). Preschool for California's children: Promising benefits, unequal access. *PACE Policy Brief, 04-3*, Berkeley, CA: Policy Analysis for California Education (PACE).

Camilli, G., Vargas, S., Ryan, S., & Barnett, W.S. (2010), Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers College Record, 112*. Retrieved from http://www.tcrecord.org/Content.asp?ContentID=15440

Campbell, F., & Ramey, G. (1994). Effects of early intervention on intellectual and academic achievement: A follow-up study of children from low-income families. *Child Development*, *65*, 684-698.

Garces, E., Thomas , D., & Currie, J. (2002). Longer-term effects of head start. *The American Economic Review*, *92*(4), 999-1012. Retrieved from http://omega.cc.umb.edu/~pubpol/documents/AmericanEconReviewLongTermHeadStartJourna.pdf

Haney, M. (2002). Name writing: A window into the emergent literacy skills of young children. *Early Childhood Education Journal*, *30,*101-105.

Head Start, U.S. Department of Health and Human Services. (2014). *Poverty guidelines and determining eligibility for participation in head start programs*. Retrieved from website:

http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/operations/mgmt-admin/eligibility-enroll/income/PovertyGuideline.htm

Hofferth, S., Shauman, K., Henke, R., & West, J. (1995). *Characteristics of children's early care and education programs: Data from the 1995 national household education survey*. Washington, D.C.: National Center for Education Statistics.

Lambert, R., Abbott-Shim, M., & Hicks, D. (2000). Language and Emergent Literacy Assessment Technical Report.

Loeb, S., Bridges, M., Bassok, D., Fuller, B., & Rumberger, R. (2007). How much is too much? The influence of preschool centers on children's social and cognitive development. *Economics of Education Review*, *26*, 52-66.

Lonigan, C. J., Burgess, S. R., & Anthony, J. L. (2000). Development of emergent literacy and early reading skills in preschool children: Evidence from a latent variable longitudinal study. *Developmental Psychology*, *36*, 596-613.

Love, J. M., & Brooks-Gunn, J. (2010). *Getting the most out of Early Head Start: What has been accomplished and what needs to be done*. In R. Haskins & W. S. Barnett (Eds.), *Investing in young children: New directions in federal preschool and early childhood policy* (pp. 29-37). Washington, DC: Brookings Institution, Center on Children and Families.

Maher, E., Frestedt, B., & Grace, C. (2008). Differences in Child Care Quality in Rural and Non-Rural Areas. Journal of Research in Rural Education, 23. Retrieved from http:// www.jrre.psu.edu/articles/23-4.pdf

Puma, M., Bell, S., Cook, R., & Heid, C. Office of Planning, Research and Evaluation, Administration for Children and Family, U.S. Department of Health and Human Services. (2010). *Head start impact study final report*. Washington, D.C.: Head Start Research.

Rosenberg, M. (2006). Scholastic Research Foundation Paper. Sound and Letter Time: *Building Phonemic Awareness and Alphabet Recognition Through Purposeful Play*. Retrieved

Reynolds, A. (1995). One year of preschool intervention or two: Does it matter? *Early Childhood Quarterly*, *10*, 1-31.

Ryan, R., Fauth, R., & Brooks-Gunn, J. (2006). Childhood poverty: Implications for school readiness and early childhood education. In B. Spodek & O. Saracho (Eds.), *Handbook of Research on the Education of Young Children* (2nd ed., pp. 323-346). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Tarullo, L., Aikens, N., Moiduddin, E., & West, J. (2010). *A second year in head start: Characteristics and outcomes of children who entered the program at age three* . Washington, D.C.: Mathematica Policy Research, office of Planning, Research and Evaluation, Administration for Children and Family, U.S. Department of Health and Human Services.

Tarullo, L., West, J., Aikens, N., & Hulsey, L. (2008). *Beginning head start: Children, families and programs in fall 2006*. Washington, D.C.: FACES 2006 Baseline Report from office of Planning, Research and Evaluation, Administration for Children and Family, U.S. Department of Health and Human Services.

Teale, H, & Sulzby (1986). *Emergent Literacy: Writing and Reading*. Norwood, NJ: Ablex.

The National Advisory Committee on Rural Health and Human Services. (2007). *The 2007 Report to the Secretary: Rural Health and Human Service Issues.*

United States Census Bureau. (2010*). 2010 census urban and rural classification and urban area criteria*. Retrieved from http://www.census.gov/geo/reference/ua/urban-rural-2010.html

United States Census Bureau, U.S. Department of Commerce. *State & county quickfacts*. Retrieved from website: http://quickfacts.census.gov/qfd/index.html

Welsch, J., Sullivan, A., & Justice, L. (2003). That's my letter!: What preschoolers' name writing representations tell us about emergent literacy knowledge. *Journal of Literacy Research*, *35*, 757-776.

Whitehurst, G. J. & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development*, 69, 848-872.

Wood, J., & McLemore, B. (2001). Critical components in early literacy — knowledge of the letters of the alphabet and phonics instruction. *The Florida Reading Quarterly*, *38*(2).

Table 1

Level I models for each outcome measure.

Outcome Measure		Intercept	Return Effect	Age in Months	IEP Status	ESL Status
Uppercase Letter Recognition	Coef.	5.017***	5.174**	0.351***	-2.430*	-0.571
	SE	1.334	1.464	0.046	1.254	1.107
Lowercase Letter Recognition	Coef.	3.698**	3.721***	0.286***	-2.441**	0.232
	SE	1.139	1.024	0.042	0.957	1.124
Book Knowledge	Coe.	3.985***	1.432***	0.113***	-1.280***	-0.633
	SE	0.265	0.221	0.012	0.324	0.387
Expressive Language	Coef.	1.475***	0.706***	0.060***	-0.442**	-0.226
	SE	0.210	0.121	0.008	0.158	0.191
Beginning Sounds	Coef.	2.481***	1.123***	0.062***	-1.144***	-0.800*
	SE	0.553	0.216	0.009	0.230	0.327
Phonemic Awareness	Coef.	1.593***	0.470**	0.050***	-0.712*	-0.768***
	SE	0.341	0.159	0.009	0.368	0.221

Rhyming	Coef.	1.679***	0.604**	0.056***	-0.521***	-0.569***
	SE	0.302	0.215	0.006	0.160	0.122
Total Emergent Literacy	Coef.	11.223***	4.318***	0.342***	-4.010***	-2.992***
	SE	1.441	0.549	0.0291	0.594	0.229

Note: *** - *p*< .001, ** - p< .01, * - p< .05.
Coef.: Coefficient

Table 2

Level II models coefficients

Predictors			Suburban	Rural	Percent of IEP	Percent of ESL	Average Age
Uppercase Letter Recognition	Level I β_0	Coef.	-0.201	0.151	9.811*	-2.757	0.425**
		SE	1.353	1.416	4.508	2.215	0.125
	Return	Coef.	-2.059	-4.339**	5.180	17.509**	-0.088
	Effect	SE	1.479	1.692	14.145	6.625	0.235
Lowercase Letter Recognition	Level I β_0	Coef.	-0.436	0.054	10.703**	-1.501	0.313**
		SE	1.151	1.202	3.624	2.702	0.102
		Coef.	-1.184	-3.426**	6.596	12.321**	-0.139
		SE	1.061	1.174	10.116	4.601	0.194
Book Knowledge	Level I β_0	Coef.	0.406	0.363	8.699**	-1.687	0.168**
		SE	0.333	0.326	3.084	1.057	0.065
	Return	Coef.	-0.787**	-1.085*	0.987	1.821	-0.161*
	Effect	SE	0.249	0.333	4.390	1.863	0.070
Expressive Language	Level I β_0	Coef.	0.055	0.020	1.017	-0.009	0.056*
		SE	0.247	0.264	2.261	-1.754	0.108
	Return	Coef.	-0.383**	-0.134	1.589	2.700	-0.072
	Effect	SE	0.145	0.199	1.842	1.697	0.053
Beginning Sounds	Level I β_0	Coef.	-0.231	-0.055	7.903*	-2.643	0.161
		SE	0.576	0.644	3.455	1.552	0.085
	Return	Coef.	-0.406	-1.048***	-3.583	4.127**	-0.197**
	Effect	SE	0.254	0.321	2.810	1.499	0.068

Phonemic Awareness	Level I β_0	Coef.	-0.122	-0.377	0.023	0.029	0.019
		SE	0.381	0.282	0.024	0.020	0.068
	Return Effect	Coef.	-0.009	-0.117	-0.007	0.021	-0.008
		SE	0.183	0.333	0.026	0.026	0.087
Rhyming	Level I β_0	Coef.	0.020	0.097	2.414	-0.625	0.122*
		SE	0.329	0.364	1.817	1.097	0.047
	Return Effect	Coef.	-0.238	-0.494*	0.261	1.760*	-0.084*
		SE	0.235	0.291	2.100	0.775	0.040
Total Emergent Literacy	Level I β_0	Coef.	0.113	0.048	19.112	-5.652	0.634*
		SE	1.594	1.699	9.874	4.062	0.265
	Return Effect	Coef.	-1.807**	-2.729***	0.305	4.441*	-0.572**
		SE	0.665	0.845	8.502	2.843	0.194

Note: *** - $p < .001$ ** - $p < .01$, * - $p < .05$.
Coef: Coefficient

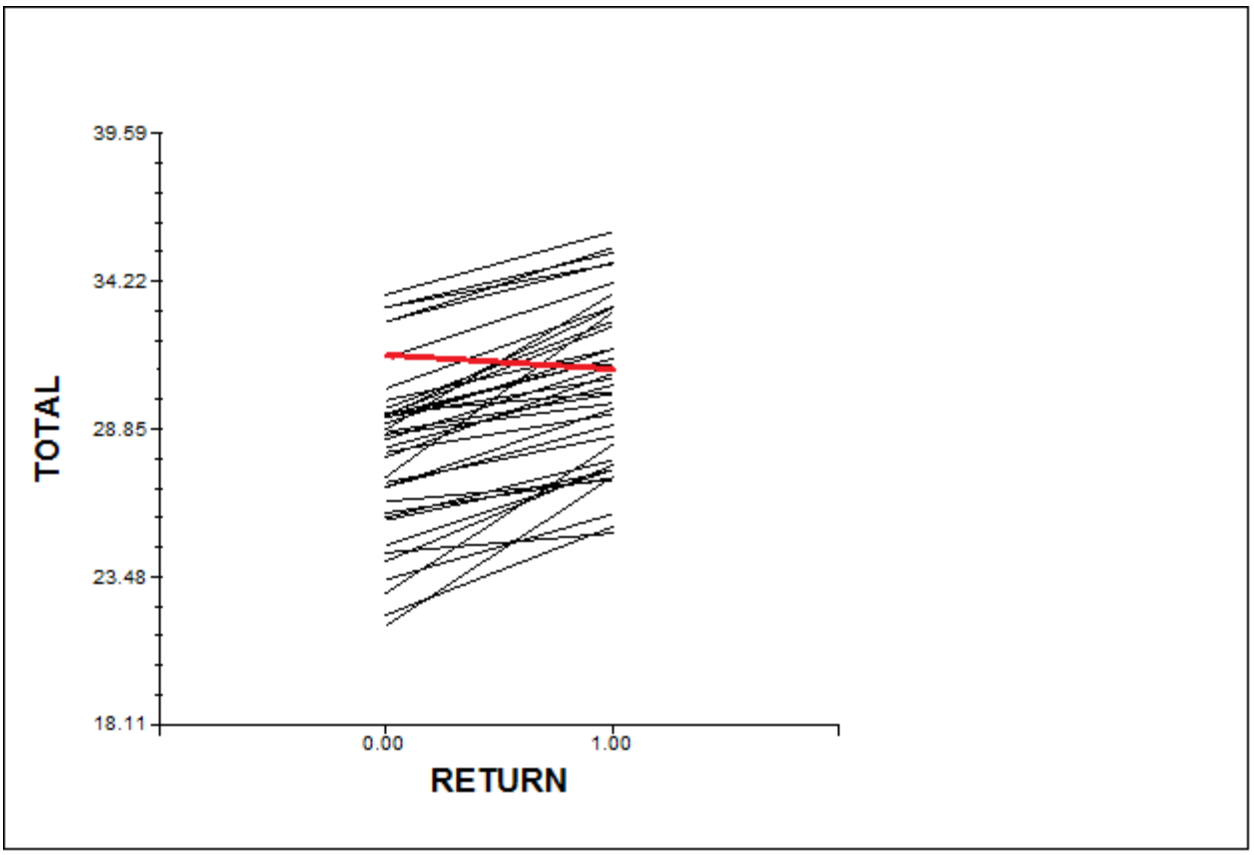

Figure 1. Return Effect Model