

A Study on Role of Mother's Education for the Psycho-Social and Cognitive Development in Children

S.Mohamed Saleem¹ and Dr.Syed Khalid Perwez²

¹ VIT UNIVERSITY

Received: 12 August 2011 Accepted: 5 September 2011 Published: 17 September 2011

Abstract

The present evaluation of Early Head Start concerns the effects of household income and mother's education on child cognitive development. A secondary data analysis is performed on the Early Head Start Research and Evaluation study public use file, in which cognitive development is measured using the Bayley Mental Development Index and the Peabody Picture Vocabulary Test. Household income is measured as a percentage of the federal poverty level, with households earning up to 100 percent of the poverty level annually considered low income. Mother's education is determined by possession of a high school diploma. Results of multiple and simultaneous linear regressions are presented. Early Head Start is found to positively affect cognitive development among children whose mothers have earned a high school diploma, while its effectiveness for low income households is less significant. Implications for early childhood interventions are discussed, as well as areas for future research.

Index terms— Early Head Start, Mental Development Index, Peabody Picture Vocabulary Test.

1 INTRODUCTION

When we speak of early child development we speak broadly of both cognitive and social/behavioral development in the first three years of life. We are concerned presently with cognitive development, which is characterized primarily by the development of language and pattern recognition (Whitehurst & Lonigan, 1998). The extent to which these cognitive abilities are expressed at an early age has implications for cognitive development throughout elementary school and beyond. Children with more advanced cognitive functioning relative to their peers prior to elementary school go on to perform better in school (Blachman, 1984; Latchford & Plewis, 1990). Importantly, research suggests cognitive development is not achieved at the same rate or to the same extent equally among all children. Numerous studies (Duncan et al, 1994; Duncan, 1997; To et al, 2004). A similar correlation exists between parents' education and cognitive development in children (Sharp et al, 1979; Evans et al 2000; Acharach & Baumeister, 1998). This, again, has implications for later achievement in school. Consequently, the purpose of our evaluation is to consider both the effect of Early Head Start (EHS) participation on cognitive development among children from low income households, and also the effect of EHS participation on cognitive development with respect to mother's education.

2 II.

3 BACKGROUND

Interventions to improve cognitive functioning in children younger than three years of age such as EHS are necessarily two-generational. That is, the interventions involve both the mother and child. EHS developers observed that the program effect was weak among existing interventions that served families and very young

children, but the program models themselves varied considerably in terms of the following: 1) the duration and intensity of services; 2) the timing of services; 3) their status as home-or centerbased (or both); 4) the duration and intensity of the parenting component; 5) the extent of reliance on case management; and 6) the nature of self-sufficiency components (i.e. adult education and job training) (U.S. Department of Health and Human Services, 2001).

EHS was created in 1995. The intervention model involves intensive services that begin before the child is born through the first three years of the child's life. Services include child development and parenting services—during home visits or in program centers; case management; group parenting activities; child care and center-based developmental services; health services including immunization and dentistry for children and mental health services for parents; The Administration of Children, Youth, and Families (ACYF) of the U.S. Department of Health and Human Services (HHS) conducted its own evaluation of EHS, the Early Head Start Research and Evaluation (EHSRE) study. This evaluation was much broader in scope than is ours; we utilize a secondary data analysis of the EHSRE data set to answer our research questions, and focus attention more specifically on income and education. We hypothesize that EHS participation will significantly affect cognitive development among children in low income and/or low educated households.

4 III.

5 METHODOLOGY

The EHSRE evaluation method was as follows. An experimental design was used to measure the effectiveness of EHS. Beginning in 1995, seventeen sites were selected across the United States, and 2,997 participants were recruited then randomly assigned either to receive EHS services (1,503 participants) or to a comparison group (1,474 participants) that did not receive EHS services. This controlled for the variables of greatest concern to our research interests, namely household income and mother's education. Indeed, 2,451 participants were within 100 percent of the federal poverty level, which in 1995 was \$15,569 per year for a household of four (U.S. Census, 2010). Of these, 1,248 were in the treatment group while 1,203 were in the comparison group.

Similarly, of the 1,023 participants who had received their high school diploma 534 were in the treatment group and 489 were in the comparison group. The evaluation itself occurred from 1996 to 2001.

Because participants were recruited when Index (MDI; Bayley, 1993) at fourteen, twenty-four, and thirty-six month intervals after birth. The Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1997) was also used at thirty-six months.

In terms of design, the EHSRE study was as follows:

The value of the Bayley MDI and PPVT for our purposes is that they are normative on age-adjusted scales, and were administered by the EHSRE evaluation team on the children themselves. As measures of cognitive development, the instruments have been evaluated for their validity and reliability and have been found to be comparable to similar measures ?? presented R X O1 X O2 X O3 R O1 O2 O3

they were prenatal, the baseline measurement of with four pictures and asked to point to the picture that matches the word spoken by the interviewer.

As mentioned, the Bayley MDI is normed so that a value of 100 represents the age-adjusted mean, with a standard deviation of 15. An adjusted mean value below 85 thus indicates delayed performance. The same scoring is used for the PPVT. We employ a multiple linear regression to measure the significance of EHS participation among children from low income households. Accordingly, the Bayley MDI and PPVT serve as dependent variables, while the effect of baseline knowledge (in the case of the MDI) and EHS participation are held constant. Household income as an independent variable is included up to 100 percent of the federal poverty level. The same method is used to measure the effect of EHS participation among children from low educated households, with possession of a high school diploma serving as the independent variable. $IV.Y_i = \alpha_0 + \alpha_1 I_i + \alpha_2 X_i + \alpha_3$

6 RESULTS

To begin with, the overall program effect on cognitive development at thirty-six months was not significant (see Table ??), absent either household cognitive development was taken at fourteen months after birth. In the EHSRE study cognitive development was measured using the Bayley Mental Development perform the regression holding household income constant. We see in Table ?? that the program effect at thirty-six months was not significant ($p < 0.05$) for income or mother's education. This holds true when we In terms of correlation between income and education, there remains an observable program effect. Even while controlling for income, we can see a very significant ($p < 0.001$) program effect in Table ?? and in Table 4 among children whose mothers have earned a high school diploma. Again, this means that within the program group children whose mothers had earned a high school diploma yet remained low income scored 3.30 points higher on the Bayley MDI and 4.78 points higher on the PPVT than similar children in the comparison group. The program effect on household income is less significant when controlling for education. There are limitations to our results that should be taken into consideration. First, there is a significant amount of missing information from the EHSRE data set. Of the 2,977 participants, 898 did not indicate whether or not they had earned their high school diploma. Furthermore, 1,197 results were missing on the twenty-four-month measure of the MDI; 1,319 from the thirty-six-month measure; and 1,553 from the PPVT. Information from these participants could significantly change the results of our analysis.

Finally, because the intervention began while some participants were prenatal the baseline measure of cognitive development may not represent a true baseline.

7 vi. CONCLUSION

If the mothers educated, she can bring up children’s much better. Being aware of the events and thoughts prevailing in the world, she can help to broaden the horizon can her children’s. Early Head Start has a very positive effect on cognitive development among children whose mothers have earned a high school diploma.

The influence of an educated mother in the child is greater and her education is most important because she is the first teacher of her child. Effect on children from low income households is less significant. To the extent possible, interventions like EHS should consider opportunities for participants to further their education. mediating processes in cognitive performance of children of low-income African-American families.

Child Development, 68(5)¹



Figure 1: W

Figure 2:

261

	Baseline (14 Months)		knowledge constant 24 Months		36 Months	
Program	Coefficient	P	Coefficient	p	Coefficient	P
Poverty HS	0.159	0.757	1.49	0.025*	1.21	0.07
Diploma	0.555	0.046*	0.99	0.006**	0.35	0.325
	1.400	0.014*	4.33	0.000***	4.08	0.000***

*p<0.05; **p<0.01; ***p<0.001

Figure 3: 26 Table 1 :

¹© 2011 Global Journals Inc. (US)

2

	Coefficient	p
Program	1.26	0.12
Poverty	1.03	0.02*
*p<0.05; ***p<0.001		

Table 3 : Results of a simultaneous linear regression for the following variables on assignment and baseline knowledge constant

	Baseline (14 Months)	24 Months	36 Months
	Coefficient	p	Coefficient p
Program	0.22	0.73	1.45 0.068 0.41 0.59
Poverty	0.66	0.03*	1.19 0.002* 0.29 0.43
HS	1.49	0.02*	3.49 0.000* 3.30 0.000***
Diploma			
*p<0.05; * *p<0.01; ***p<0.001			

Figure 4: Table 2 :

4

children of low income households. The significance seen at baseline and at twenty-four months does not carry over. In this respect it is helpful there are two measures of cognitive development to draw from; Table 2 suggests the effect of EHS participation was significant ($p<0.05$) on cognitive development at thirty-six months on the PPVT. If one were to use the results from Table 2 alone he might conclude the program effect was more significant than it really is. say, children from within the program group whose mothers had earned a high school diploma scored 4.08 points higher on the Bayley MDI than similar children in the comparison group and 4.68 points higher on , the PPVT

respectively.
 program assignment constant
 Coefficient
 Program 0.53 0.59
 Poverty 0.58 0.22
 HS 4.78 0.000***
 Diploma
 ***p<0.001

Figure 5: Table 4 :

-
1. Aram, D. & Nation, J. (1980). Preschool language disorders and subsequent language and academic difficulties. *Journal of Communication Disorders*, 13, 159-170.
 2. Bacharach, V.R. & Baumeister, A.A. (1998). Effects of maternal intelligence, marital status, income, and home environment on cognitive development of low birthweight infants. *Journal of Pediatric Psychology*, 23(3), 197-205.
 3. Barbara, J., Jefferis, H., Power, C. & Hertzman, C. (2002). Birth weight, childhood socioeconomic environment, and cognitive development in the 1958 British cohort study. *British Medical Journal*, 325(7359), 305-308.

In any case, our results confirm the importance of education on child cognitive development found elsewhere (Duncan et al, 1994; Entwisle & Alexander, 1995; Korenman et al, 1995; Blau, 1999; Fazio et al, 1996; To et al, 2004; Phipps & Lethbridge 2006; Evans et al 2000; Sharp et al, 2005; Bacharach &

4. Bayley, N. (1993). *Bayley Scales of Infant Development*, 2 nd Edition: Manual. New York: T
- 5
6. Blatchford, P. & Plewis, I. (1990). Pre-school reading-

-
- [Canadian Journal of Experimental Psychology] , *Canadian Journal of Experimental Psychology* 54 (2) p. .
- [Reading Research Quarterly] , *Reading Research Quarterly* 34 (4) p. .
- [Whitehurst and Lonigan ()] , J Whitehurst , C Lonigan . *Psychological Reports* 1998. 28 p. .
- [Entwisle and Alexander ()] *A parent's economic shadow: Family structure versus family resources as influences on early school achievement*, D Entwisle , K Alexander . 1995.
- [A Study on Role of Mother's Education for the Psycho-Social and Cognitive Development in Children] *A Study on Role of Mother's Education for the Psycho-Social and Cognitive Development in Children*,
- [US ()] *Administration for Children & Families. Administration of Children, Youth & Families. Commissioner's Office of Research and Evaluation and the Head Start Bureau*, US . 2001. I. (Technical report) (Building their futures: How Early Head Start programs are enhancing the lives of infants and toddlers in low-income families)
- [Evans and Carr ()] 'Cognitive abilities, conditions of learning, and the early development of reading skill'. M A Evans , T H Carr . *Reading Research Quarterly* 1985. 20 (3) p. .
- [Miller and Lee ()] 'Construct validation of the Peabody Picture Vocabulary Test-Revised: A structural equation model of the acquisition order of words'. L T Miller , C J Lee . *Psychological Assessment* 1993. 5 (4) p. .
- [US ()] *Department of Health and Human Services. Administration for Children and Families. Early Head Start Research and Evaluation Project*, US . 2006.
- [Duncan et al. ()] 'Economic deprivation and early childhood development'. G Duncan , J Brooks-Gunn , P Klebanov . *Child Development* 1994. 65 (2) p. .
- [Sharp et al. ()] *Education and cognitive development: The evidence from experimental research. Monographs of the Society for Research in Child Development*, D Sharp , M Cole , C Lave , H P Ginsburg , A L Brown , L A French . 1979. 44 p. .
- [Leslie and Allen ()] *Factors that predict success in an early literacy intervention project*, L Leslie , L Allen . 1999.
- [Dunst et al. ()] 'Family resources, personal well-being, and early intervention'. C Dunst , H Leet , C Trivette . *Journal of Marriage and Family* 1988. 22 (1) p. . (Journal of Special Education)
- [Weitoft et al. ()] 'Health and social outcomes among children in low-income families and families receiving social assistance: A Swedish national cohort study'. G Weitoft , A Hjern , I Batljan , B Vinnerljung . *Social Science and Medicine* 2008. 66 p. .
- [Evans et al. ()] *Home literacy activities and their influence on early literary skills*, M Evans , D Shaw , M Bell . 2000.
- [Korenman et al. ()] 'Longterm poverty and child development in the United States: Results from the NLSY'. S Korenman , J Miller , J Sjaastad . *Children and Youth Services Review* 1995. 17 (1/2) p. .
- [Dunn and Dunn ()] *Peabody Picture Vocabulary Test, 3rd Edition*, L M Dunn , L M Dunn . 1997. Circle Pines, MN: American Guidance Service.
- [Garrett et al. ()] 'Poverty experiences of young children and the quality of their home environments'. P Garrett , N Ng'andu , J Ferron . *Child Development* 1994. 65 (2) p. .
- [Harris et al. ()] 'Stability of the Bayley II scales of infant development in a sample of low-risk and high-risk infants'. S R Harris , A M Megens , C L Backman , V E Hayes . *Developmental Medicine & Child Neurology* 2005. 47 p. .
- [Supporting language and cognitive development in Early Head Start. Accessed on (2010)] http://www.acf.hhs.gov/programs/opre/ehs/ehs_resrch/index.html *Supporting language and cognitive development in Early Head Start. Accessed on*, February 22. 2010.
- [Fazio et al. ()] 'Tracking children from poverty at risk for specific language impairment: A 3-year longitudinal study'. B Fazio , R Naremore , P Connell . *Journal of Speech and Hearing Research* 1996. 39 p. .
- [To et al. ()] 'What factors are associated with poor developmental attainment in young Canadian children?'. T To , A Guttman , P Dick , J Rosenfeld , P Parkin , H Cao , T Vidykhan , M Tassoudji , J Harris . *Canadian Journal of Public Health* 2004. 95 (4) p. .