Briefing Report

for the
New Mexico Family Impact Seminar

*Early Childhood Development: The Economic, Social and Psychological Impact of Education and Care** +

The New Mexico Family Impact Seminar is a service project for state policymakers
provided by
the Department of Extension Home Economic
the Department of Family & Consumer Sciences
in the College of Agriculture and Home Economics
at New Mexico State University

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∗ Third Annual New Mexico Family Impact Seminar

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Purpose and Presenters

Early Childhood Development: The Economic, Social and Psychological Impact of Education and Care is New Mexico State University's third annual Family Impact Seminar. Family Impact Seminars – which do not lobby for particular policies – provide up-to-date, objective and nonpartisan, solution-oriented research information on current issues that affect families. The Family Impact Seminars are intended for state legislators and their aides, Governor and Lieutenant Governor's Office staff, legislative service agency personnel, and state agency representatives. Briefing Reports supplement the seminars.

One of the ultimate goals of New Mexico State University's Departments of Extension Home Economics and Family & Consumer Sciences in the College of Agriculture and Extension Home Economics is to enhance the quality of life of families in New Mexico. To this end, we bring the Family Impact Seminar to New Mexico.

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For further information on bringing a family perspective to policymaking, see the Policy Institute for Family Impact Seminars website at: http://www.familyimpactseminars.org

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Executive Summary

A growing body of evidence shows that quality early childhood education and care is associated with positive psychosocial and emotional development, and academic success. These outcomes are associated with success in adult years, which in turn influences community and economic development. This report provides three perspectives on childhood development within the context of early childhood education and care.

In chapter 1, Dr. Arthur Reynolds**,** a professor at the Institute of Child Development / College of Education and Human Development, University of Minnesota, discusses the cost-effectiveness of early childhood development programs. Specifically, he reviews evidence on the effectiveness and cost-effectiveness of early childhood development programs on school readiness, school achievement and performance, and long-term life course development. Three questions are addressed: (1) *What are the effects and economic benefits of preschool programs?*; (2) *What are the effects and economic benefits of kindergarten and school-age programs?*; and (3) *Which elements and principles of effectiveness are key to long-term effects*? Policy recommendations are discussed.

In chapter 2, Dr. Riley – a Child Development Specialist in Wisconsin's Cooperative Extension Service and Rothermel-Bascom Professor of Human Ecology at the University of Wisconsin-Madison – describes how quality child development programs can have a life-changing impact on children. In complementing information provided in chapter 1, Dr. Riley provides evidence that (1) early childhood programs are effective – highlighting three programs – and (2) early childhood programs are cost-effective. Following his section on how these programs can make such an impact, he offers potential strategies for states to increase the quality of child care.

The Hispanic population is rapidly growing in the United States. Hispanic children (0-8 years) make up 20% of the nation's young. On average, Hispanic students' achievement is at much lower level than Whites. In New Mexico, among children 0-9 years, 54% are Hispanic. In chapter 3, Dr. Eugene Garcia, Vice President for Education Partnerships at Arizona State University, discusses early education challenges and opportunities regarding Hispanic children. Following a review of achievement gaps, Dr. Garcia discusses factors influencing school readiness and achievement. Within the context of these influencing factors, various educational strategies are provided.

The checklist on the following page is a useful guide for viewing public policy or potential public policy through a family lens. With it, policymakers and those who implement policies can assess the impact of policy on families…

A Checklist for Assessing the Impact of Policies on Families

The first step in developing family-friendly policies is to ask the right questions:

- What can government and communities do to enhance the family's capacity to help itself and others?
- What effect does (or will) this policy (or proposed program) have for families? Will it help or hurt, strengthen or weaken family life?

These questions sound simple, but they can be difficult to answer.
The Family Criteria (Ad Hoc) Task Force of the Consortium of Family Organizations (COFO) developed a checklist to assess the intended and unintended consequences of policies and programs on family stability, family relationships, and family responsibilities. The checklist includes six basic principles that serve as the criteria of how sensitive to and supportive of families policies and programs are. Each principle is accompanied by a series of family impact questions. The principles are not rank ordered and sometimes they conflict with each other, requiring trade-offs. Cost effectiveness also must be considered. Some questions are value-neutral and others incorporate specific values. People may not always agree on these values, so sometimes the questions will require rephrasing. This tool, however, reflects a broad nonpartisan consensus, and it can be useful to people across the political spectrum.

This checklist can be used to conduct a family impact analysis of policies and programs.
✓ For questions that apply to your policy or program, record the impact on family well-being.

Principle 1. Family support and responsibilities.
Policies and programs should aim to support and supplement family functioning and provide substitute services only as a last resort.
Does the proposal or program:

- support and supplement parents' and other family members' ability to carry out their responsibilities?
- provide incentives for other persons to take over family functioning when doing so may not be necessary?
- set unrealistic expectations for families to assume financial and/or caregiving responsibilities for dependent, seriously ill, or disabled family members?
- enforce absent parents' obligations to provide financial support for their children?

Principle 2. Family membership and stability.
Whenever possible, policies and programs should encourage and reinforce marital, parental, and family commitment and stability, especially when children are involved. Intervention in family membership and living arrangements is usually justified only to protect family members from serious harm or at the request of the family itself.
Does the policy or program:

- provide incentives or disincentives to marry, separate, or divorce?
- provide incentives or disincentives to give birth to, foster, or adopt children?
- strengthen marital commitment or parental obligations?
- use appropriate criteria to justify removal of a child or adult from the family?
- allocate resources to help keep the marriage or family together when this is the appropriate goal?
- recognize that major changes in family relationships such as divorce or adoption are processes that extend over time and require continuing support and attention?

Principle 3. Family involvement and interdependence.
Policies and programs must recognize the interdependence of family relationships, the strength and persistence of family ties and obligations, and the wealth of resources that families can mobilize to help their members.
To what extent does the policy or program:

- recognize the reciprocal influence of family needs on individual needs, and the influence of individual needs on family needs?
- recognize the complexity and responsibilities involved in caring for family members with special needs (e.g., physically or mentally disabled, or chronically ill)?
- involve immediate and extended family members in working toward a solution?
- acknowledge the power and persistence of family ties, even when they are problematic or destructive?
- build on informal social support networks (such as community/neighborhood organizations, religious communities) that are essential to families' lives?
- respect family decisions about the division of labor?
- address issues of power inequity in families?
- ensure perspectives of all family members are represented?
- assess and balance the competing needs, rights, and interests of various family members?
- protect the rights and safety of families while respecting parents' rights and family integrity?

Principle 4. Family partnership and empowerment.
Policies and programs must encourage individuals and their close family members to collaborate as partners with program professionals in delivery of services to an individual. In addition, parent and family representatives are an essential resource in policy development, program planning, and evaluation.
In what specific ways does the policy or program:

- provide full information and a range of choices to families?
- respect family autonomy and allow families to make their own decisions? On what principles are family autonomy breached and program staff allowed to intervene and make decisions?
- encourage professionals to work in collaboration with the families of their clients, patients, or students?
- take into account the family's need to coordinate the multiple services they may require and integrate well with other programs and services that the families use?
- make services easily accessible to families in terms of location, operating hours, and easy-to-use application and intake forms?
- prevent participating families from being devalued, stigmatized, or subjected to humiliating circumstances?
- involve parents and family representatives in policy and program development, implementation, and evaluation?

Principle 5. Family diversity.
Families come in many forms and configurations, and policies and programs must take into account their varying effects on different types of families. Policies and programs must acknowledge and value the diversity of family life and not discriminate against or
penalize families solely for reasons of structure, roles, cultural values, or life stage.
How does the policy or program:

- affect various types of families?
- acknowledge intergenerational relationships and responsibilities among family members?
- provide good justification for targeting only certain family types, for example, only employed parents or single parents? Does it discriminate against or penalize other types of families for insufficient reason?
- identify and respect the different values, attitudes, and behavior of families from various racial, ethnic, religious, cultural, and geographic backgrounds that are relevant to program effectiveness?

Principle 6. Support of vulnerable families.
Families in greatest economic and social need, as well as those determined to be most vulnerable to breakdown, should be included in government policies and programs.
Does the policy or program:

- identify and publicly support services for families in the most extreme economic or social need?
- give support to families who are most vulnerable to breakdown and have the fewest resources?
- target efforts and resources toward preventing family problems before they become serious crises or chronic situations?

Cost-Effectiveness of Early Childhood Development Programs

Arthur J. Reynolds, Ph.D.

Introduction

For over four decades, the positive effects of early childhood development programs on school readiness and performance have been documented in hundreds of research studies and in dozens of research syntheses (Karoly et al., 2005; Reynolds, Wang, & Walberg, 2003; Zigler, Gilliam, & Jones, 2006). In the past decade, findings of the accumulated evidence have been more widely disseminated to practitioners and policy makers (Carroll et al., 2003; Governor's Task Force, 2002). During this time, states began to substantially increase investments in preschool programs for both at-risk children and those at lower risk.

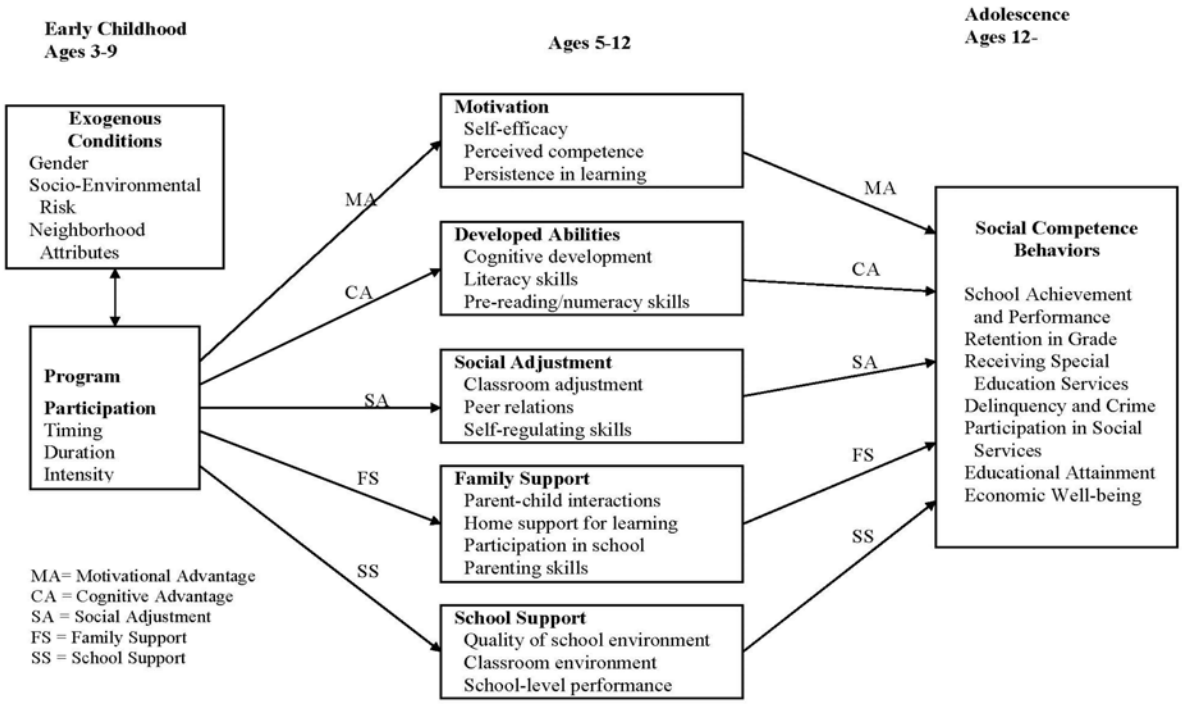
Today 38 states fund voluntary preschool programs for 3- and 4 year-olds. In 2005-2006, state-funded programs served 943,000 children at an annual expenditure of $3.3 billion dollars (Barnett et al., 2007). This is a 13% increase in expenditures from the previous year. These programs complement the federally-funded Head Start program, early childhood special education, and related investments at the local level.

In this report, I review evidence on the effectiveness and cost-effectiveness of early childhood development (ECD) programs on school readiness, school achievement and performance, and long-term life course development. The focus is on preschool or prekindergarten programs for 3- and 4-year-olds and full-day kindergarten. Three questions are addressed: (1) What are the effects and economic benefits of preschool programs?, (2) What are the effects and economic benefits of kindergarten and school-age programs?, and (3) Which elements and principles of effectiveness are key to long-term effects? In summarizing results, I emphasize findings from cost-benefit analyses.

How Program Participation Influence Academic and Social Competence

Considerable research has documented that ECD programs impact later school performance and related outcomes through at least one of five processes or pathways (Reynolds, 2000). In short, these can be viewed as the "active" ingredients contributing to impacts of child development. As shown in Figure 1, the first is the cognitive advantage pathway, which indicates that the longer-term effects of ECD programs are due primarily to the enhancement of cognitive skills, including literacy skills, school readiness, and language and numeracy.

Figure 1. Paths from Program Participation t Social Competence Behavior



The family support pathway indicates that impacts on child outcomes derive from greater parental investments in children's development, such as greater parent involvement in education, increased parenting skills, and greater resource supports for parents.
The school support pathway suggests that longer-term effects would occur to the degree that post-program school experiences reinforce learning gains. Enrollment in higher-quality schools and schools with positive learning environments would strengthen or maintain learning gains while enrollment in schools lower in quality would neutralize earlier learning gains.

The social adjustment and motivational advantage hypotheses indicate that noncognitive skills can be the mechanism of effects of ECD programs, such as increased classroom and peer social skills, positive teacher-child relationships, achievement motivation, and school commitment. The greater the magnitude of effect of program experiences on a particular pathway or multiple pathways, the more likely that enduring effects would occur.

Notably, programs that provide comprehensive services would be expected to impact several of the pathways simultaneously. This is one explanation for why comprehensive programs have been found to be more likely to have longer-term effects.

Cumulative Evidence on Preschool Impacts

Given the voluminous knowledge base, the effects of preschool ECD programs are summarized through findings from 19 reviews of preschool impacts published in the past decade (1995-2006). These reviews were selected as among the most thorough in assessing short- and longer-term effects of both model and large-scale programs (contact the author for additional information). Table 1 shows the most frequently cited programs along with the last age of follow up as of 2006. To be included, the programs had to include a center-based early education or preschool component.

Program	Type	Age	Citations
Avance Family Support and Education	Large Scale	5	3
Carolina Abecedarian Project	Model	21	13
Chicago Child-Parent Centers (CPC)	Large Scale	21	14
Comprehensive Child Development Program (CCDP)	Large Scale	5	8
Consortium for Longitudinal Studies	Model	27	6
Early Training Project	Model	20	8
Educational Testing Service Head Start Study	Large Scale	8	6
Prenatal/ Early Infancy Project (PEIP)/Nurse-Family Partnership Program(NFP)	Model	15	8
Even Start	Large Scale	7	4
Harlem Training Project	Model	12	4
High/Scope Perry Preschool Program	Model	40	19
Houston Parent-Child Development Center (PCDC)	Model	11	12
Infant and Health Development Program	Model	8	11
Institute for Developmental Studies	Model	13	5
Louisville Experiment (Head Start)	Model	16	5
Maryland Head Start	Large Scale	17	4
Milwaukee Project	Model	14	8
New Haven Follow-Through Study	Large Scale	17	6
New York State Experimental Prekindergarten	Large Scale	9	3
Philadelphia Project	Model	18	7
PSID Head Start Longitudinal Study	Large Scale	25	3
Yale Child Welfare Research Project	Model	10	4

Two major conclusions are evident. First, many programs have assessed long-term effects into adulthood. Three quarters of the reviews reported effects at 5 or more years after the end of participation. This is rare for social programs and indicates that impacts on life course development and economic benefits can be accurately assessed. Second, the accumulated evidence includes both model programs, developed for research demonstration, and large-scale programs, developed for routine implementation by schools and other institutions. Consequently, the generalizability of the evidence for policy recommendations is much stronger today than a decade ago.

What are the main findings of the reviews? Of the hundreds of studies synthesized in the reviews, there is substantial evidence that preschool programs for mostly children at risk, positively impact cognitive skills, school achievement, social and emotional development as well as educational attainment, employment, and later social behavior. The average effect size on cognitive skills at or near school entry was 0.42 standard deviations, which is roughly equivalent to one-half of a year of growth associated with preschool participation. Average effects were also statistically and practically significant for social and emotional development, school achievement, delinquency and crime, grade retention, special education, school completion, and employment and earnings.

Effects and Economic Benefits of Three Preschool Programs

Before discussing the results of the cost-benefit analysis, Table 2 summarizes the three preschool programs and studies. In brief (see Reynolds & Temple, 2006; Temple & Reynolds, 2007 for details), all three programs provided high quality educational enrichment to children at risk in group settings characterized by small class sizes, a focus on language and cognitive skills, and well-qualified and compensated teachers. The Carolina Abecedarian Project (ABC) was the most intensive and lengthy, providing full-day, year round care for five years (Campbell & Ramey, 1995; Ramey, Campbell, & Blair, 1998). The High/Scope Perry Preschool Program (PPP) provided the most established and organized curriculum, which followed the Piagetian cognitive principle of child-initiated learning (Schweinhart et al., 1993). The Chicago Child-Parent Centers (CPC) provide the most comprehensive services by implementing an intensive parent involvement component, outreach services, and attention to health and nutrition (Reynolds, 2000; Reynolds et al., 2002; Sullivan, 1971). It also is the only program that became established in public schools.

A significant difference among programs was child to staff ratios. CPC had 17 children and a certified teacher and aide (8.5 to 1 ratio), which is most consistent with current practice. ABC, implemented in a university-based child care center, had 12 children and two teachers (6 to 1 ratio), neither of whom were certified. PPP had the most unusual structure with 24 children and 4 master's level certified teachers in the classroom for an average ratio of 5.7 to 1. Moreover, unlike the other programs, Perry children were selected because they had IQ scores of 70 to 85.

Table 2. Background and Characteristics of Three Preschool Programs

Characteristic	**Perry Preschool**	**Abecedarian**	**Child-Parent Centers**
Years of operation	1962-1967	1972-1977	1983-1985
City and context	Ypsilanti, MI Urban	Chapel Hill, NC Rural	Chicago, IL Inner city
Location	Elementary school	University Center	Elementary school or adjacent to

Characteristic	Perry Preschool	Abecedarian	Child-Parent Centers
Number of sites	1	1	24
Child attributes	Low SES IQs of 70-85	Low SES High risk	Low SES Reside in Title I area
Race/ethnicity	100% Black	96% Black	93% Black 7% Hispanic
Entry age	3 years	1-4 months	3 years
Mean duration	1.8 years	5 years	1.6 years
Length of day	Part-day	Full-day	Part-day
Other components	Weekly home visits	Medical services Nutrition	Parent program Outreach Occasional home visits Health services
Mean class size	22	12 (Infancy) 12 (Preschool)	17
Mean child to staff ratio	5.7 to 1	3 to 1 (Infancy) 6 to 1 (Preschool)	8.5 to 1
Curriculum emphasis	Cognitive and social Child-initiated	Language and social Traditional	Language and social Teacher-directed
Staff compensation	Public school	Competitive with public schools	Public school
School-age services	None	K to grade 2	K, grades 1 to 3

Preschool Participation Enhances Children's Well-Being into Adulthood

The major long-term findings of the studies leading to economic benefits are shown in Table 3 (also see Masse & Barnett, 2002; Reynolds et al., 2002; Schweinhart et al; 1993). The estimated impacts of the programs are large and occurred 17 to 25 years after the end of preschool participation. Group differences are specific to preschool participation and are adjusted for child and family background differences between groups such as pre-program IQ, family SES, and other factors.

Table 3. Adjusted Means or Percentages for Program and Comparison Groups on Key Outcomes for Cost-Benefit Analysis

Outcome	**Perry Preschool**	**Abecedarian**	**Child-Parent Centers**
Original sample sizes (Program, Control)	58, 65	57, 54	989, 550
Sample recovery for high school completion (%)	94	95	87
Special education services by age 15/18 (%)	15 vs 34	25 vs 48	14 vs 25
Grade retention by age 15 (%)	ns	31 vs 55	23 vs 38
Child maltreatment by age 17	n/a	n/a	7 vs 14
Arrested by age 19	31 vs 51	ns	17 vs 25
Highest grade completed by age 21/27 (mean)	11.9 vs 11.0	12.2 vs 11.6	11.3 vs 10.9
High school completion by age 21/27 (%)	71 vs 54	70 vs 67 (graduation)	66 vs 54
Attend college by age 21/27 (%)	33 vs 28	36 vs 14 (4-year)	24 vs 18
Employed at age 21/27 (%)	71 vs 59	70 vs 58 (teen mothers)	n/a
Monthly earnings at age 27 ($)	1219 vs 766	n/a	n/a

Note. For Perry, special education is for EMI placement by age 15. Ages for educational attainment and employment are 27 for Perry, 21 for Abecedarian, and 22 for Chicago.
ns = not significant; n/a = not available

Although the magnitude of estimated effects varied, participation in all three programs was associated with significantly lower rates of special education services up to and including adolescence. The impact on special education was large, as preschool participants had rates of special education that were 40-60% lower than the comparison group. Similar reductions in grade retention were observed for ABC and CPC programs. The Consortium for Longitudinal Studies (1983) showed similar results.

Participation in each program also was linked to significantly higher rates of high school completion up to age 27 as well as more years of education. Preschool participation was associated with about a one-half (CPC and ABC) to full year increase (PPP) in educational attainment. Program participants also had higher rates of postsecondary and college attendance, with ABC showing large differences in attendance at 4-year colleges.

On employment and earnings, only PPP has shown significant group differences but this may reflect the age at follow up assessment (27 versus 21/22 for the ABC and CPC). For ABC, differences in employment were largest for teen mothers of program participants. Employment and earnings are not currently available for CPC.

Finally, both PPP and CPC have demonstrated significant program effects on crime. These effects are large. Participation in PPP was associated with a 40% decrease in arrests by age 19 (from 51% to 31% ever arrested) whereas CPC was associated with at 33% reduction in juvenile petitions by age 18 (from 25% to 17% with 1 or more petitions). Only PPP has collected data on adult crime, and findings are consistent with those of earlier ages. The lack of crime prevention benefits in ABC may be due to the low base rates of crime in Chapel Hill, North Carolina or, more likely, to the relative absence of family services in the program. Overall, these findings show that the programs enhanced participants' general social competence over the first two decades of life.

Not shown are the substantial effect sizes for program participation on cognitive skills at the time of kindergarten entry, and on school achievement through the elementary grades. CPC participation also was associated with higher levels of parent involvement in school.

Summary of Results of Cost-Benefit Analyses

At a minimum, the economic return should equal the amount invested in the program--a return of at least one dollar per dollar invested. Estimates of economic benefits derive from three sources. Benefits to participants are returned to the child and parent attending the program but do not directly benefit others in society. These benefits include increased earnings capacity in adulthood projected from educational attainment as well as the benefit to parents from the provision of part-day care for children. Benefits to the general public include averted expenditures of remedial education and social welfare spending by governments, reduced tangible expenditures to crime victims as a result of lower rates of crime, and increased tax revenues to state and federal governments as a result of higher earnings capacity. Benefits to society at large include the sum of benefits to program participants and to the general public. Societal benefits are emphasized, which represent the total economic contribution of programs (Footnote 1).

As shown in Table 4, all three programs showed substantial economic returns of preschool into adulthood through government savings in education, justice system, and health expenditures and in increased economic well-being. The values are those reported in the CBAs for each program. All values are the average economic return per program participant in 2002 dollars using the procedures discussed earlier in the chapter.

Table 4. Summary of Costs and Benefits Per Participant in 2002 Dollars for Three Preschool Programs

Costs and Benefits	High/Scope Perry Preschool	Chicago Child-Parent Centers	Abecedarian Project
Program Costs ($)			
Average program participant	15,844	7,384	35,864
For one year of participation	9,759	4,856	13,900
Program Benefits ($)			
Total benefits	138,486	74,981	135,546
Net benefits (benefits-costs)	122,642	67,595	99,682
Total benefit per dollar invested	8.74	10.15	3.78
Public benefit per dollar invested (Benefit-cost ratio)	7.16	6.87	2.69

Note. Costs are program expenditures and do not include estimated costs for comparison-group experiences. Ages of study participants for economic analyses were 27, 21, and 22, respectively. The Abecedarian cost is relative to control group. The total cost per participant was $67,225. Based on the actual costs, total and public benefits of Abecedarian Project per dollar invested are $2.02 and $1.44, respectively.

Although the costs of the programs are significantly different from each other, the economic returns of each program far exceeded the initial investment. The total economic benefits per participant, both measured and projected over the life course, ranged from $74,981 to $138,486. The net economic benefit per participant (benefits minus costs) for Perry was $122,642 and for Abecedarian was $99,682. The net economic benefit for the Child-Parent Centers, an established Title I program, was $67,595. The benefit for ABC is especially salient given its relatively high cost. Despite the cost of full-day year-round care for five years, the program returned per participant nearly $100,000. Indeed, using the actual cost of ABC ($67,225) rather than the marginal cost (actual cost minus the costs of care for the comparison group) benefits substantially exceeded costs.

Table 5 also shows the economic benefits as a ratio of program costs. These ratios can be interpreted as the economic return per dollar invested, which is an indication of program efficiency. Benefit to cost ratios index the return on investment, whereby $2 dollars per dollar invested would be a 100% return. All three programs showed a large return on investment based on data collected into adulthood, ranging from a total societal benefit of $4 per dollar invested to $10.15 per dollar invested. These are equivalent to a 278% to 915%

return on the dollar. The CPC program showed the highest benefit-cost ratio, reflected its relatively lower costs. The lower costs are primarily a result of a higher child to staff ratio in the classroom (8.5 to 1 versus less than 6 to 1 for Perry and Abecedarian). That a routinely implemented school-based program demonstrates positive returns is encouraging. The other school-based program, Perry Preschool, demonstrated an economic return of $8.74 per dollar invested. At $3.78 per dollar invested, ABC had the lowest benefit-cost ratio. This is not surprising given its high cost. In terms of public benefits alone (i.e., government and crime victim savings), benefit-cost ratios ranged from $2.69 to $7.16 per dollar invested.

In summary, the CBA findings show the high returns of investments in preschool education despite the differences in timing, duration, geography, time period, and content of the three programs. This consistent pattern of results strengthens the generalizability of findings to contemporary programs.

Effects of Contemporary State-Financed Preschool Programs

The consistent findings of the economic analyses of the Perry, Chicago, and Abecedarian programs despite their major differences in social context and instructional approach are encouraging evidence in favor of expanding preschool access. Nevertheless, the participants of the three programs were almost exclusively low-income, African American children. While there is no comparable evidence from studies of middle income families or from more diverse samples, research on the short term effects of state-funded preschool programs, which include more diverse samples by socioeconomic status and race/ethnicity, provide an indication of the extent to which the findings could provide a similar pattern of effects. Because intensive programs achieve their long-term effects initially from enhancing school readiness skills and because studies of current state-funded programs lack information on longer-term effects, I compare the estimated effect sizes on school readiness between intensive preschool programs with those more routinely implemented state-funded programs (e.g., Gilliam & Zigler, 2001).

Findings are reported in Table 5. For consistency, the impacts are reported in standard deviation units whereby a value of .20 or above is considered an educational meaningful difference in favor of program participants. Gilliam and Zigler (2001) assessed the impact of state-funded preschool on school readiness in preschool and kindergarten up to 998 in six states and the District of Columbia. Although the programs primarily served children at risk, participants were more heterogeneous on family income and race and ethnicity than those of intensive programs. They reported an average effect size of .36 standard deviations.

Table 5. *Effect Sizes for State-Funded and Intensive Preschool Programs on School Readiness (Values are Standard Deviation Units)*

Program/Study	Urbanicity / N of sites	SES attributes	Language-cognitive skills at age 5
State-Funded Preschool			
Gilliam & Zigler, 2001	Mixed 7 states and cities	Lower income	.36
Hustedt et al. 2007	Mixed New Mexico	Lower/Middle	.37
Hustedt et al. 2007	Mixed Arkansas	Lower/Middle	.30
Frede et al. 2007	Urban New Jersey	Lower income	.32
Barnett et al. 2006	Mixed Oklahoma	Lower/Middle	.26
Gormley et al. 2005	Urban Tulsa, OK	All SES	.58
Intensive Preschools			
CPC/Perry Preschool/ Abecedarian Mean	Mixed 22 sites	Low income	.66
Consortium for Longitudinal Studies (1983)	Mixed 13 sites	Low income	.50

Note. Language-cognitive skills was measured by one of following: IQ tests (only Perry, Abecedarian, and Consortium), cognitive, vocabulary/language skills, literacy, or early academic achievement. Age of assessments vary between end of preschool and beginning of kindergarten. Most of state-funded programs were average of receptive vocabulary and math skills.

Effects sizes for evaluations of state-funded programs for 4-year-olds implemented from 2002 to 2006 in New Mexico, Arkansas, New Jersey, and Oklahoma ranged from .26 to .58. These are statistically and educationally meaningful. Note that the effect sizes for language/vocabulary and math skills are averaged, as the assessments were identical across states. The strong effect size for the Tulsa was for the universal Oklahoma prekindergarten program (Gormley et al., 2005) that served children from all SES backgrounds.

While findings are generally limited to short-term effects, recent studies show benefits at the end of kindergarten and beyond for state-funded programs (Frede et al., 2007; Schweinhart, 2002) and for other large-scale programs (see Table 1).

In summary, findings of the evaluations consistently show positive and meaningful effects in many states for both universal and targeted programs. However, effects sizes are smaller than for intensive preschool programs but the reach of the state-funded programs is greater.

Cost-Benefit Analyses from Policy Simulations

To estimate the economic benefits of high-quality but routinely implemented preschool programs, several researchers have conducted cost-benefit simulations that either modify assumptions of actual the cost-benefit analyses of longitudinal analyses of model programs or make projections from correlational data linking short-term outcomes such as achievement scores to educational attainment, income and criminal behavior, which are more easily translated to economic benefits. Three such analyses are summarized below. All indicate that more widely implemented preschool programs for 3- and 4-year olds would be likely to yield benefits than significantly exceed costs.

Using short- and long-term data from 58 evaluation studies published from 1967 to 2003, Aos et al. (2004) estimated an economic return of $2.36 return per dollar invested for preschool programs for low-income 3- and 4-year-olds. In 2003 dollars, the estimated cost per child was $7,301 (which was based on the CPC program) and societal benefits of $17,202. It should be noted that the estimates were based on studies that investigated long-term outcomes such as educational attainment and studies limited to short-term outcomes such as achievement, which were used to make long-term projections. Moreover, some benefit categories such as intangible crime-victim benefits, were not included.

Karoly and Bigelow (2005) estimated the economic benefits of universal access to one year of preschool education at age 4 in California. Based in part on cost-benefit findings from the CPC program and assuming a 70% participation rate, the estimated return to California society at large was $2.62 per dollar invested. The most conservative estimates were about $2 return per dollar invested and the most liberal were about a $4 return per dollar invested.

A broader national analysis by Lynch (2007) used modified estimates from the cost-benefit analysis of the CPC program (Reynolds et al., 2002) to generalize across states and in the country at large. It was estimated that by the year 2050, a high quality targeted preschool program for 4-year-olds would cost $6,300 (2006 dollars) per child and provide a return per tax dollar invested of $3.18 in government budget savings alone. For a universal access program, the return per tax dollar invested was estimated at $2.00 for government budget savings. Considering all societal benefits (budget savings, justice system and child welfare savings, and increased earnings), the long-range annual benefit per tax dollar invested was estimated at $12.10 for a targeted program and $8.20 for a universal access program.

The Effects of Full-Day Kindergarten

Although there are no cost-benefit studies of the effect of full-day kindergarten (FDK) over half-day kindergarten, many studies have examining achievement gains at the end of kindergarten and in the early school grades. Aos et al. (2007) synthesized the results of 23 well-designed comparison-group studies of the effects of FDK on academic achievement and related outcomes. The average effect size of FDK on achievement at the end of kindergarten was .18 standard deviations for all children and .17 for economically disadvantaged children. This is equivalent to roughly a 2-month increase in achievement. This relatively small

advantage largely disappeared by first grade and did not re-emerge later. The average effect size was .01 at the end of first grade, .048 at second to third grade, and .00 at fourth and fifth grade. These findings include analyses of the Early Childhood Longitudinal Study, which tracks a national sample of 20,000 kindergartners from 1998. Aos et al. (2007) reported that the net cost per child for implementing FDK is $2,611 in Washington State. This cost would be expected to vary by state. Based on the available evidence, the benefit-cost ratio of FDK relative to half-day kindergarten is approximately zero. Assuming no other benefits are achieved, the economic return is likely to close to zero.

Key Principles of Effectiveness of Early Childhood Development Programs

Findings summarized in this review indicate that greater investments in high-quality preschool and school transition programs are warranted. Since nearly two in five children do not enroll in center based preschool programs, and the quality of services that many receive is not high, the ECD programs summarized in the review provide effective models to be used in the design of coordinated early childhood systems. Research on these three programs and on many others suggest five major principles that can enhance the effectiveness of early childhood development programs and to increase long-term economic benefits.

The first main principle is that a coordinated system of early education is in place beginning at age 3 and continuing to the early school grades. Program implementation within a single administrative system in partnerships with communities can promote stability in children's learning environment which can provide smooth transitions from preschool to kindergarten and from kindergarten to the early grades. The three major programs we reviewed were either housed in elementary schools or provided continuity of services between preschool and formal schooling. This is a "first decade" strategy of promoting child development. In the movement to universal access to early education, schools could take a leadership role in partnership with community agencies. More generally, programs that provide coordinated or "wrap-around" services may be more effective under a centralized leadership structure rather than under a case-management framework. The CPC program, for example, is an established program in the third largest school system in the nation. Findings from the cost-benefit analysis of a complete cohort CPC participants gives a good indication of the size of effects that could be possible in public schools, the largest administrative system of any universal access program.

A second major principle of effective ECD programs is that the teaching staff should be trained and compensated well, preferably with earned bachelor's degrees, certification in early childhood, and competitive salaries. These characteristics are much more likely under a public school model of universal access, notwithstanding the need for established partnerships with community child-care agencies. It is no coincidence that the three major programs reviewed in the chapter followed this principle. Being located in public schools, the Perry and CPC programs were implemented by teachers with at least bachelor's degrees and appropriate certification in early childhood. They were paid on the public school salary scale, and Perry teachers received a 10% bonus for working in the program.

Third, educational content should be responsive to all of children's learning needs but special

emphasis should be given to cognitive and school readiness skills through a structured but diverse set of learning activities. All of the cost-effective programs reviewed had a strong emphasis on the development of cognitive and language skills necessary to do well in school within a responsive learning environment. Child to staff ratios of less than 9 to 1 in preschool help as well. The curriculum appeared to less important since the programs spanned from Perry's child-initiated approach to Chicago's blended, teacher-directed approach.

A fourth principle for effective preschool education is that comprehensive family services should be provided to meet the different needs of children. As child development programs, preschool programs must be tailored to family circumstances and thus provide opportunities for positive learning experiences in school and at home. Those with special needs or who are most at risk benefit from intensive and comprehensive services.

Finally, greater commitment to on-going evaluations of effectiveness and cost-effectiveness is needed. Even today, cost-benefit analyses are rarely conducted. This state of affairs limits full consideration of the effects of alternative programs. Paramount in conducting cost-benefit analyses is the availability of longitudinal studies of programs for children and youth. These studies are more likely to accurately assess the total impact of program participation.

Policy Recommendations

1. Increase state and federal investment in high-quality, evidence-based preschool programs and school transition programs and practices. The amount of evidence of positive and enduring effects of high-quality preschool programs is unprecedented. There is not only a critical mass of evidence from long-term cost-benefit analyses, but increasingly strong evidence from state-financed prekindergarten that participation is associated with sizeable increases in school readiness and transition to elementary school. These demonstrated increases in many programs are critical to the emergence of enduring effects. Economic analyses of the likely economic effects of upscaled and sustained programs consistently show that even under modest assumptions, prekindergarten programs for 4-year-olds would be expected to return more than $2.00 per dollar invested. Considering a wider spectrum of effects that have been tested in other programs such as CPC, the return is likely to be more than $4.00 per dollar invested.

2. Use results of cost-benefit analysis to better prioritize funding of education and social programs. In a time of increasingly limited fiscal resources, greater scrutiny of existing programs and services becomes essential. Cost-benefit analysis and other impact evaluations are especially important because they can identify the most efficient use of taxpayer dollars for crime prevention and other outcomes. Although there are many criteria to be used in funding decisions and not all effective programs are analyzed for returns, increased funding for and use of economic analyses of social programs are some of the best ways to determine the most efficient use of public investments in young people.

3. Develop funding mechanisms to support the implementation of early childhood development programs in a more timely manner. Because the effects of early education occur for educational, economic, and social outcomes, policy makers should consider a

broader array of funding mechanisms to increase investments in the organization and implementation of effective ECD programs. It is important for state policy-makers to understand how long-term savings are achieved from initial investments. A similar issue arises at the level of state agencies. Most high quality ECD programs are broad in their impact, leading to reductions in a range of problematic outcomes and the promotion of a variety of positive developmental consequences. For example, investments in quality preschool programs not only benefit the educational system but also the welfare, juvenile justice and corrections systems. Among the new funding mechanisms to consider are the following:

–Issue state bonds for early childhood development programs that have a high probability of repayment within five to ten years.

--Develop a check-off box on the state income tax form for voluntary contributions to early childhood development funding.

--Redirect a portion of funds from remediation and treatment to ECD programs. would provide needed funds for early education. For example, in K-12 education, state Departments of Education and local school districts receive approximately $13 billion dollars per year in Title I block grants but less than 5% goes to preschool.

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Early Childhood Programs as Interventions:
How They Work, and Options for State Policy

David Riley, Ph.D.

In the last decade, research studies from several fields --from neuroscience to lifespan psychology to economics-- have produced a body of knowledge with a surprising conclusion: that high quality early childhood programs, delivered to children from low income families, are one of the most *effective* and *cost-effective* public investments anyone has tested.

Before describing how these programs can have such life-changing impacts on children, and listing some of the options available to state policy makers, I will start with a more fundamental, and possibly unexpected question: since child care in America is primarily a service purchased by consumers, how can government justify intervening in that private marketplace?

I. What is the public interest in child care?

Insuring an adequate supply of child care is crucial for state economic development.
By making employed parenthood possible, child care expands the labor pool. For business development, child care is in the same category as having TIF District or a 24-inch force-main sewer in a light industrial park: they are basic infra-structural supports for commerce. If you shut down all the child care facilities in the state for a day, the people who would complain loudest would not be the parents, but the employers.

Regulating quality helps insure the basic safety and health of children in child care settings.
New Mexico has licensing standards for this purpose already, just as it has health and safety standards for restaurants, hotels, and nursing homes.

Higher quality child care also promotes tangible social goods such as increased school readiness, and lowered future crime rates, particularly for children from low income families (as shown in Dr. Reynold's paper). In fact, the evidence from several large experiments is so strong and consistent that economists now argue that these programs, when operated correctly, save the taxpayer more than they cost.

II. The evidence that early childhood programs are effective.

Prof. Reynolds described to us the lifespan impacts (so far) from his evaluation of the Chicago Child-Parent Center program. I consider this experiment to be the most important study in this field, in part because they used existing school funding (not special or additional funds) and they took the experiment up to scale, operating in 21 elementary schools and serving over 100,000 children since 1967. This experiment tests a practical and affordable program.

The evidence comes from other studies as well. Let me describe some of the results from two other true experiments, in which children were randomly assigned to programs of

differing quality, and then researchers followed them into their school years and adulthood to see how they turned out.

The Perry Preschool program in Michigan began by randomly assigning toddlers from low income families to either the Perry Preschool program or to the comparison group, so the two groups had identical characteristics –identical potential—at the start. These same children have now been followed up to age 40, so we can look at their school records, their work careers, their criminal records, and so forth, comparing the two groups. The findings are remarkable (see Figures 1-3 at the end). The children in the Perry Preschool program:

- Experienced an immediate improvement in IQ scores.
- Completed high school far more often.
- Avoided crime and drug use far more than their peers.
- Were much more likely to have a job, a savings account, and own a home at age 40.
- The girls were 5 times more likely to be married during their prime child-bearing years.

You don't need fancy statistics to know that these results represent lives made better, whole families made better in this and the next generation.

The Carolina Abecedarian Project was another of these long-term experiments. As in the High/Scope and Chicago experiments, the children were all from low income households, and were randomly assigned to either the program or comparison group. The program was a high quality early childhood program, with a focus on early learning, and also a parent education and support component. Figure 4 (at the end) shows that, by age 21, the children who had been in the early childhood program:

- Succeeded more in their educations, even attending college.
- Were more likely to be employed.
- Were delaying childbearing by about 1.5 years, getting themselves out of school and into jobs before starting their families.

III. The evidence that early childhood programs are COST-effective.

Because they were true experiments, these three studies allow us to say with some confidence that the early childhood programs caused these differences in life outcomes. That is why many economists have become so excited, including Dr. Art Rolnick and Dr. Rob Grunewald at the Federal Reserve Bank of Minneapolis. They discovered (quite unexpectedly) that high quality early childhood programs, when delivered to children from low-income households:

- Create a higher return on investment than any other public investment they could find.
- Create savings (or investment income) to the public of 16% annually, primarily from reduced costs in the criminal justice system, the social services system, and

greater tax revenues from the children's eventual work careers.

- "You get the 16% rate of return whether you like kids or not," says Rob Gruenewald of the Federal Reserve Bank.

The Nobel-winning economist James Heckman, of the University of Chicago, came to the same conclusion after his research on human capital investments. He was studying the effect of many kinds of job training programs on economic development. He was startled to see the results for early childhood programs, and immediately began to view them as job training programs.

> "On productivity grounds alone, it appears to make sound business sense to invest in young children from disadvantaged environments.... America under-invests in the early years of its disadvantaged children. Redirecting additional funds toward the early years, before the start of traditional schooling, is a sound investment in the productivity and safety of our society." --Dr. James Heckman--

IV. HOW do early childhood programs have those startling impacts?

The earlier we intervene with children, the more effective and cost-effective the results we can expect. It is easiest to change people when they are young, the changes can become lasting structures in the brain, and even small deflections in a life can add up to big differences over time.

- Brain development. Research of the last 2 decades has found that, because babies' brains are not fully developed at birth, early experiences can change the way the brain actually grows. Important structures in the brain continue to develop for the first several years. This is the most opportune time to change lives for the better.
- Opportunities. Research following children from birth into adulthood has demonstrated how a child's early capacities tend to change the opportunities they get later. For example, children who fail to learn impulse control are likely to be excluded from helpful friendship groups and the experiences of school success. Their poor early development leads to unhelpful experiences which lead to more poor development.

Great programs for young children: What they DO that makes such a difference.

Example: Early Literacy.

- Children differ greatly in their literacy-related abilities when they first enter public school (for example in vocabulary size and complexity of grammar), and those who are behind tend to fall further behind with each year thereafter.
- Some things don't predict that preschoolers will become better readers: for example memorizing the alphabet.
- Other things DO predict future reading success by 2, 3, and 4 year olds. One of the keys: phonemic awareness skills (e.g. ability to identify rhyme, alliteration, syllable segmentation).
- How do we teach those phonemic awareness skills? Some very old-fashioned

ways: nursery rhymes, Dr. Seuss books. You should sing songs with children and have them clap on the beat, since syllables break on the beat and the physical action of clapping will teach children to notice syllable segmentation.

Conclusion: the foundations of reading are laid very early, and the foundations are not a dumbed-down version of the first grade curriculum. The foundation is oral language competence, which comes before written language competence. A great early childhood program, with songs and clapping and story books, may not look educational to the untrained eye. It may look like just fun, but this is just the stuff that will cause a school district's reading performance scores to shoot up in the years ahead.

Example: Self Regulation.

- Self-regulation is the ability of children to control their impulses, to plan their actions, to delay gratification by working toward a long range goal, to tolerate frustration without falling apart, and a host of other abilities to self-control themselves.
- Researchers find that these abilities are learned, and they are one of the keys to predicting which children will succeed in school and life, and which children will not.
- How do great early childhood programs help children learn to be more self-regulating in the years before formal schooling? Once again, many of the most effective activities look, to the naïve eye, like they are just play. Games like"Red light – Green light" and "Red rover, red rover, let blue come over" teach self-control (behavioral impulse control). When early childhood teachers have children dance with scarves, slowly to slow music and fast to faster music, they are again teaching behavioral self-control.

You might observe all these activities in an early childhood program, without ever realizing how systematic they are, or how sophisticated the teachers' skills are, and without ever thinking what a huge difference the teachers are making in those children's lives. Once again, a great early childhood program can have a huge impact on children's futures, but does so using methods and working on skills that are different from what a great first-grade classroom does.

V. What might the state do to increase the quality of child care?

You can't expect a well-tested program to deliver the promised results if you change it in key ways. What are the key features that all the highly effective early childhood programs have in common?

Characteristics of effective early childhood programs.

- High quality staff and program. Excellent staff, well trained, with a clear sense of their objectives and methods, and monitored for performance.
- Earlier is better. The most effective interventions start very early. For the

children most at risk, starting to intervene at age 3 might be too late.

- Targeting programs to at-risk children (usually defined in terms of household poverty) returns the most on investment.
- Parent program too. All the programs demonstrating these strong impacts have been programs not just for the children, but for parents too. If you think about it, the child is in the program for 2 or 3 years, but continues to be influenced by the parent for many years to come, so helping the parent learn and grow is one of the keys.

Promising initiatives for state policy.

1. The well-tested Chicago Child-Parent Centers program (describe by Dr. Reynolds in this Briefing Booklet) is the only program that has been shown to be highly cost-effective when delivered by a public agency across many sites. It is based in Title I schools, so it uses an existing infrastructure. It also used existing funds, although this means that some other programs (i.e. existing Title 1 programs) were reduced to make this program possible. It is our one well-tested model of a realistic, do-able early care and education program that has a spectacular return-on-investment for taxpayers.

2. Quality Rating System for Consumers. According to economists, one of the reasons the private marketplace doesn't supply higher quality child care, even though parents want it, is the lack of consumer knowledge about quality. Parents are unsure how to judge the quality of child care, and so considerations of cost and convenience dominate their purchase decisions. Their lack of ability to distinguish quality then tends to drive quality out of the market.

At least 16 states have implemented a quality rating system with more than 2 levels of quality, most often on the model of the 5-start rating systems for hotels and restaurants. One goal of an objective rating system is to unleash the forces of marketplace choice. In other words, if parents could see the ratings, they would want to leave their children in the better programs, and would be willing to pay a premium for this. This should drive the market to provide higher quality care, and in fact that is what other states have found when they tested these systems: rapid, year-to-year improvements in objective indicators of quality.

In states that provide a child care subsidy to low income, working parents, this system can also be used to pay more for higher quality services, and less to lower quality programs. This can be a revenue-neutral policy in which the state's existing, yearly investment (in subsidized child care) is used to create a better functioning marketplace for care and education, in which quality is rewarded.

3. Public supplement to the private marketplace: a mixed economic model. Most states currently invest about $8,000 to $10,000 per 6-year-old in a year of elementary school. That is roughly twice what our society invests (through parents' fees) in the average 4-year-old. Of course, this makes no rational sense, because the teacher of a 4-year-old has at least as large an impact on the child's future, and very probably a larger impact (since earlier influences tend to have larger impacts). Economists point out that families at the beginning

of their work lives make too little to pay more for early childhood programs, so a system based only on parent fees will never have sufficient investment for the kind of quality programs that can make a big difference for children and for our society.

A public supplement to the private marketplace could spread the burden of cost, and make a big difference in child outcomes (in ways that benefit society at large). Actually, we conducted an experiment in my state of Wisconsin a few years ago that showed the promise of this idea. Our then-Governor Tommy Thompson initiated a series of reforms to welfare policy, including the provision of child care to low-income working parents. Hoping that high quality care and education would reduce welfare in the following generation, Governor Thompson proposed and funded an experiment called the Early Childhood Excellence Initiative. It provided grants to 32 childcare programs in the state, each serving primarily children whose families were at or near the poverty line. The programs had to seek national accreditation, emphasize early literacy activities, add parenting programs, and improve in other ways, but the grants encouraged them to seek excellence in ways that were consistent with the local cultures they served. So the Menominee Tribal Child Care, and the Montessori School in Eau Claire, and Escuela La Causa child care each created their own paths to excellence. Their state grants increased their budgets by about 16% (over $1,000 per child per year), a modest public supplement. That was enough, however, so our research team observed significant increases in quality over just a one or two year span. The programs improved over time until they were significantly higher quality than the comparison group programs that received no grants. This state policy, and the program improvements it caused, have not been tested for long term impacts on children.

The 16% public supplement might be thought of the same way we think of public university education. In most states, the public provides around 20% to 30% of the cost of higher education, a public supplement to university budgets that makes a critical difference in the quality of those programs.

4. 4-Year-Old Kindergarten and/or state support for Project Head Start (to reduce waiting lists of un-served families). Each of these programs has some evidence for positive impacts, although not the strong impacts of the Chicago Child-Parent Centers and other flagship programs. These programs probably start too late in the child's life, and lack the emphasis on parent development. One of the advantages of investing in them is that the public schools and Head Start are existing programs.

5. Teacher Development Programs. The quality of the teaching staff is the kernel of the issue, and many states have experimented with ways to deliver training to those teachers. In the short run, these programs work. The problem is that wages and benefits are so low for early childhood teachers that programs suffer from a staff turnover rate of approximately 35-40% per year. Under these conditions, the benefits of these staff development programs erode over time as trained staff quit to take better paying jobs.

Let me now summarize and close.

Quality matters in child care, and it matters in ways that are important to the public good,

such as preparing children to succeed in their later schooling, to avoid criminal careers, and to become self-sufficient as adults who pay taxes back into the system. Quality of early care and education matters in terms of lives made better, and future public spending averted.

The private marketplace does not currently produce nearly enough child care of high enough quality. Furthermore, the best economists in the country tell us that government will save much more than it spends if it spends more on early childhood programs (particularly for children from low-income households). These programs will shrink the size of future government, largely by reducing crime, decreasing social services, and increasing income tax revenues.

We know several programs which have been tested and shown to be effective. In particular, we have 3 large, lifespan experiments that have produced very consistent and powerful findings. This gives us some confidence that these programs really work, if delivered with care.

Info on programs cited in this paper:

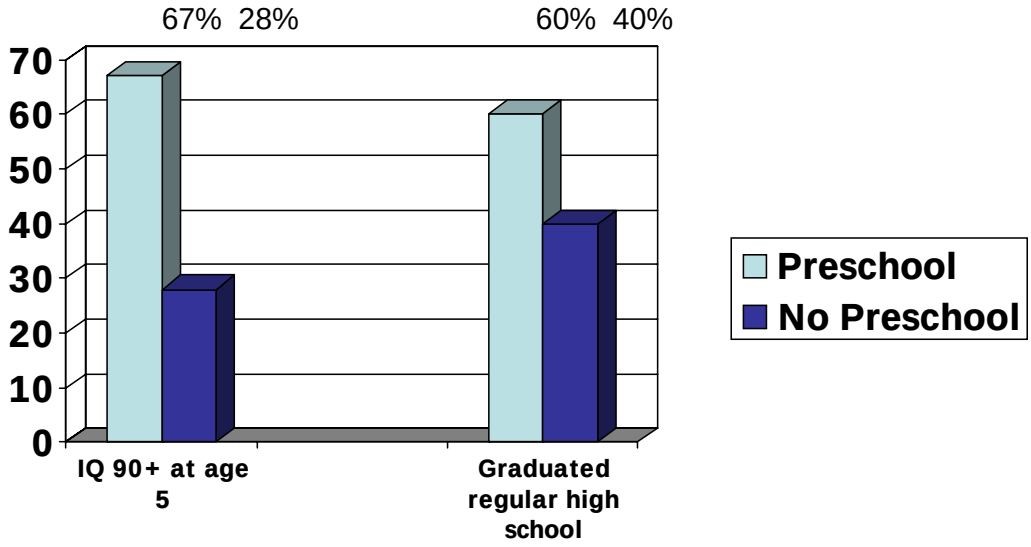
- *Perry Preschool Program*: http://www.highscope.org
- *Abecedarian Project*: http://www.fpg.unc.edu/~abc
- *Chicago Child-Parent Centers Program:*
  -- Reynolds, A.J., & Temple, J.A. Priorities for a new century of early childhood programs. *Infants & Young Children, 18*, 104-118.
  -- Reynolds, A.J., Temple, J.A., Robertson, D.L., & Mann, E.A. (2001). Long-term effects of an early childhood intervention on educational achievement and juvenile arrest. *Journal of the American Medical Association*, V*ol 285*, No. 18 (May 9, 2001), 2339-2346. Available at: http://jama.ama-assn.org/content/vol285/issue18/index.dtl
- *Reports of the Federal Reserve Bank of Minneapolis*: http://www.minneapolisfed.org/research/studies/earlychild
- *Reports of Nobel -winning economist James Heckman:* http://jenni.uchicago.edu/Invest/FILES/dugger_2004-12-02_dvm.pdf
- *Why the marketplace doesn't supply higher quality early education & care:* http://www.aspe.hhs.gov/hsp/ccquality00
- *The Wisconsin test of a public supplement to the private marketplace:*
  -- Roach, M.R., Riley, D., Adams, D., & Edie, D. (2005). Evaluation of a state initiative to increase the child care quality. *Early Education & Development, 16*, 69-84.
  -- Roach, M.R., Kim, Y.B., & Riley, D. (2006). Once attained, can quality child care be maintained? *Early Education & Development, 17*, 553-570.

Access to Resources:

- National Conference of State Legislatures, web site of state initiatives on child care and early education: http://www.ncsl.org/programs/cyf/cc.htm
- *National Association for Early Education Research: http://nieer.org*
- *National Task Force on Early Childhood Education for Hispanics: www.ecehispanic.org*
- *Policy-related studies of early care and education by Prof. Riley in Wisconsin data:* http://www.uwex.edu/ces/flp/wccrp/publications.html

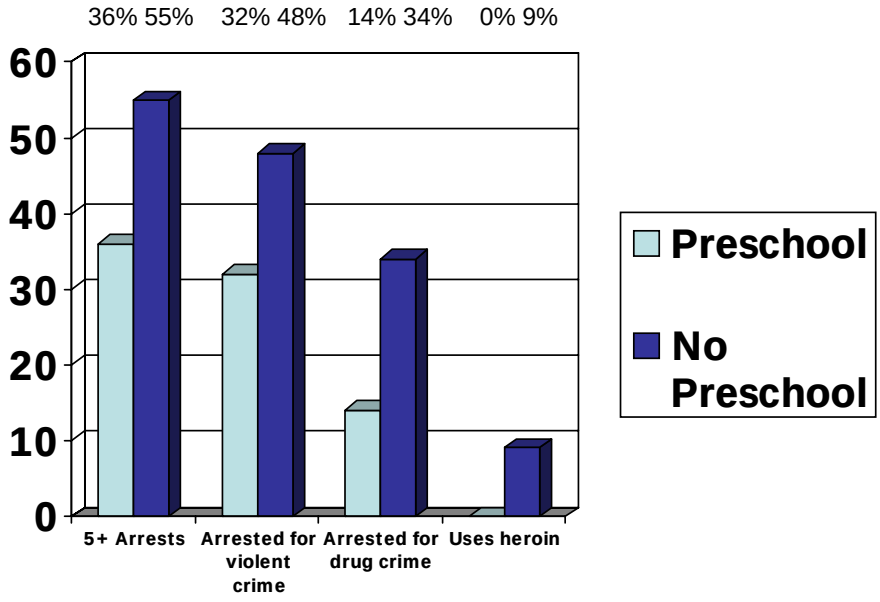
Educational Benefits of the Perry Preschool Program at age 40

Percentages of Each Group

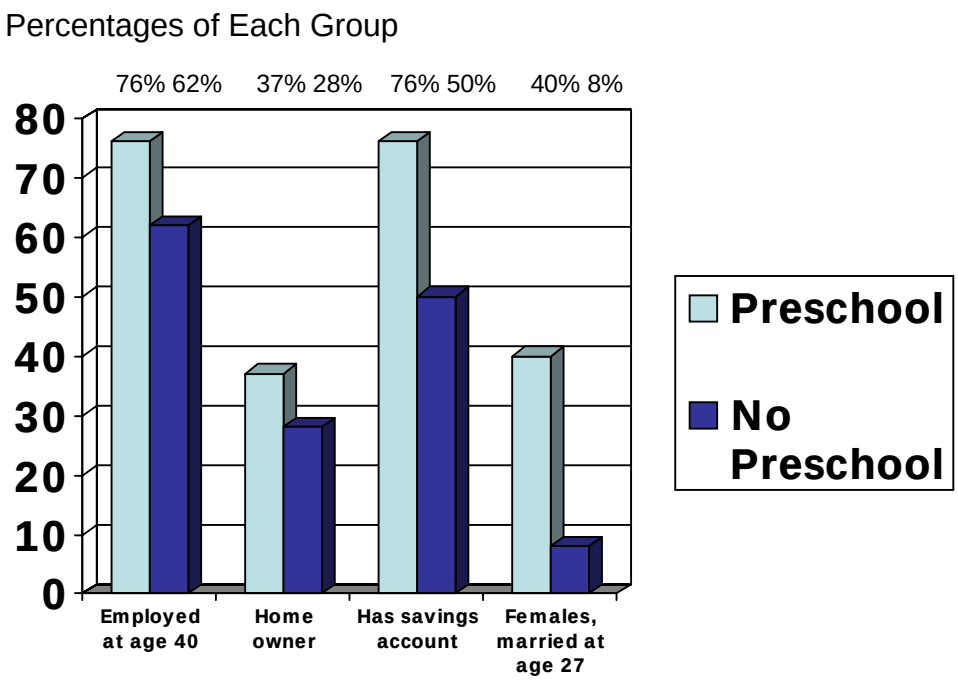


Crime Reduction Benefits of the Perry Preschool Program at age 40

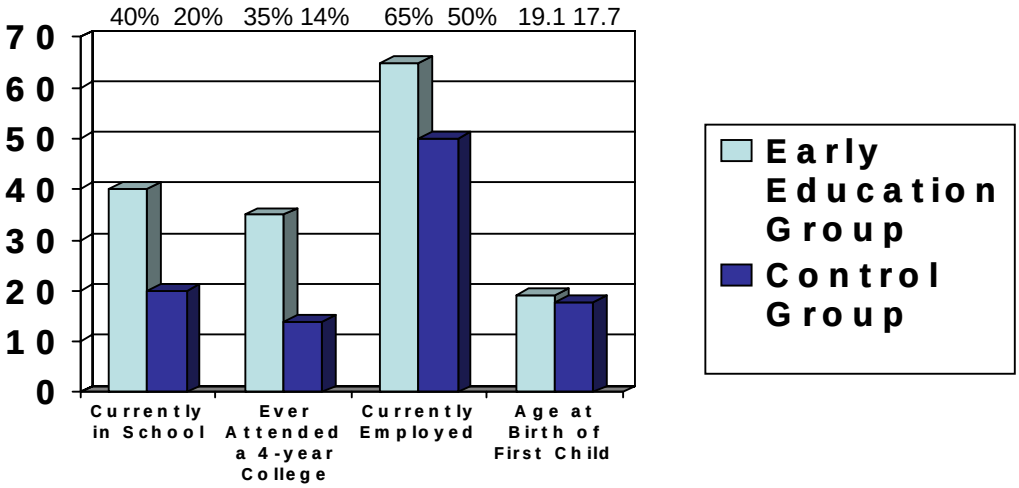
Percentages of Each Group



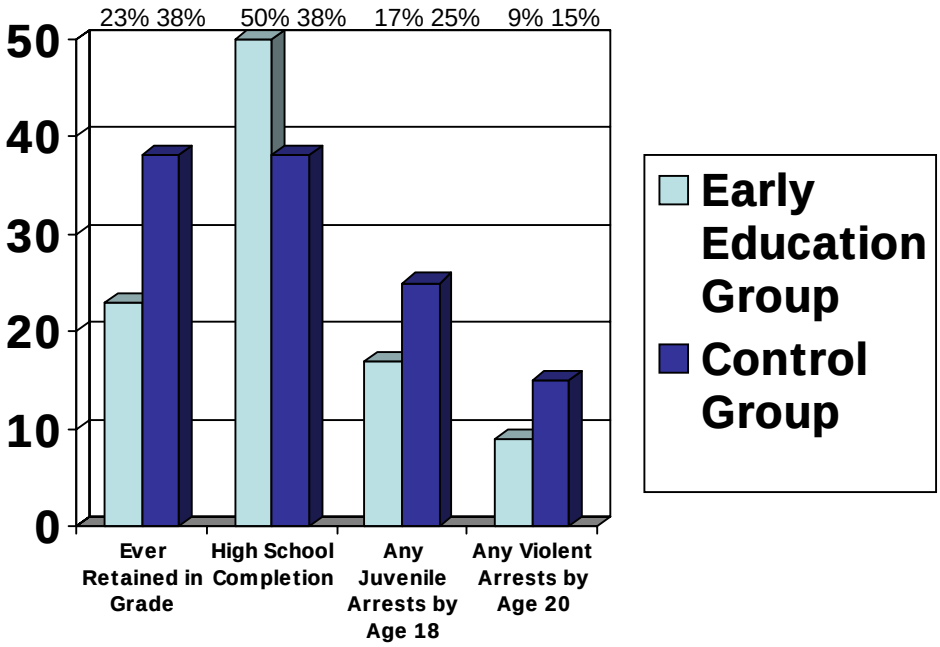
Work / Income Impacts of the Perry Preschool Program at age 40



Benefits of the Carolina Abecedarian Project at Age 21



Benefits of the Chicago Child-Parent Center Program at Age 20



Early Education Challenges and Opportunities with a Focus on Hispanics[1]

Eugene Garcia, Ph.D.

The Hispanic population is rapidly growing in the United States. Currently, Hispanic children make up 20% of the nation's young (infant through 8 years old), with about one-fourth of newborns being Hispanic. In a little over 25 years, this percentage is projected to go up to 25%; that is, one out of every four children in the United States will be Hispanic. For New Mexico, current population estimates[2] show a much greater percentage of Hispanic children:

- for all kids under 5 years of age, 54% are of Hispanic origin;
- likewise, for all kids ages 5-9, 54 % are of Hispanic origin.

It is important for individuals, families, communities and society that Hispanic children's school readiness and school achievement are at their best. However, this is currently not the case. Data show that Hispanic children lag far behind their White counterparts in K-12, and subsequently in their college years. This extant situation has far reaching economic and social ramifications, e.g., negatively affecting the work-force (and therefore our economic health), social injustice, and a lack of opportunity for those affected children to participate fully in our society as they move forward in life.

Policymakers can make a difference in closing the achievement gap by improving academic outcomes for Hispanic children in the early childhood years. There are promising approaches for improving education in the primary grades, in prekindergarten, and in programs for infants and toddlers, which can be translated into policy.

How are Hispanic children faring in school readiness and school achievement?

Achievement Gaps at the Elementary School Level

On average, Hispanic students' achievement is at much lower level than Whites across the K-5 years. A recent analysis report, commissioned by the *National Task Force on Early Childhood Education for Hispanics,* which utilizes data from a large national longitudinal study, reports that:

- compared to their White counterparts, Hispanic children lagged behind on measures of reading and math skills at the start of kindergarten;
- a large achievement gap still persisted in reading and math at the end of the fifth grade; the following figure depicts the reading skills differential gap:

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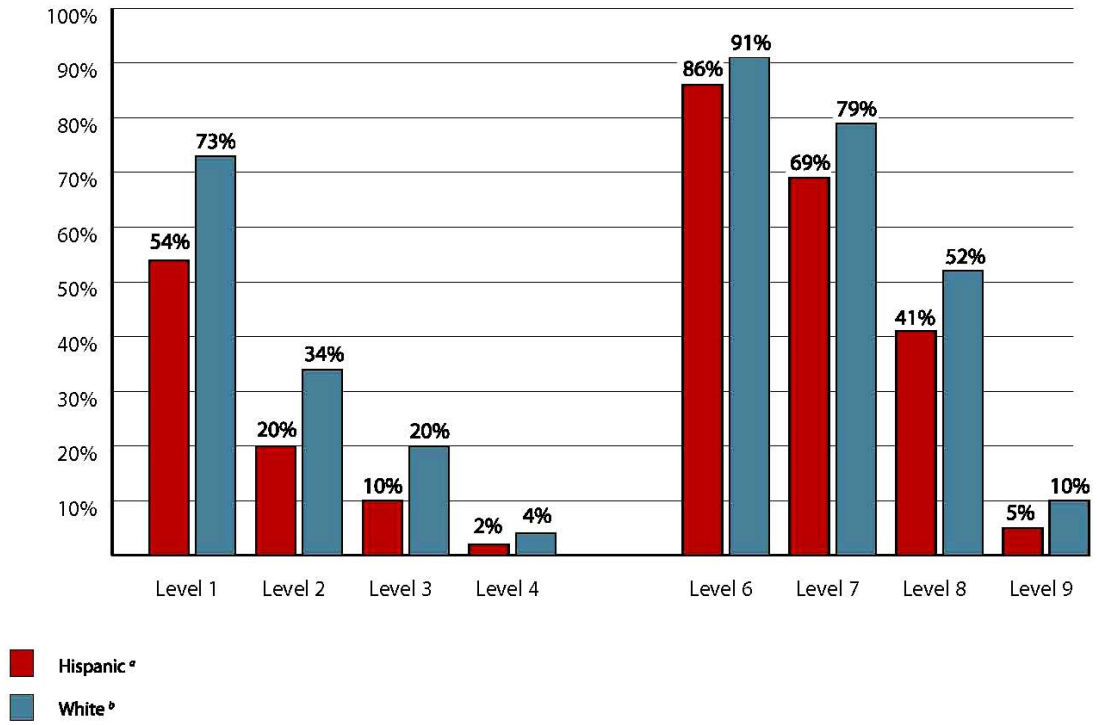
[1]The information in this paper highlights selected information contained in the publication, *Para Nuestros Niños: Expanding and Improving Early Education for Hispanics*; any additional information contained herein, not from the *Para Nuestros Niños report*, is otherwise noted. *Para Nuestros Niños* was published March, 2007 by the *National Task Force on Early Childhood Education for Hispanics* and is available at http://www.ecehispanic.org. [Editor's note: Dr. Garcia is the current Chair of the aforementioned task force.]

[2] University of New Mexico (March, 2007). 2000 to 2006 State and County Population Estimates by Age, Sex, Race and Hispanic Origin from the Census Bureau. Available at http://www.unm.edu/~bber/demo/coestchar.htm.

Figure 1: Reading Skills at the Start of Kindergarten and at the End of Fifth Grade



Key: Percent scoring at or above each of the following ECLS-K reading proficiency levels for K-5 years[c]

Level 1: Recognition of letters
Level 2: Understanding beginning sounds of words
Level 3: Understanding ending sounds of words
Level 4: Sight recognition of words
Level 5: Comprehension of words in context
Level 6: Literal inference from words in text
Level 7: Extrapolating from text to derive meaning
Level 8: Evaluating and interpreting beyond text
Level 9: Evaluating nonfiction

[a] The Hispanic data do not include the 30% of the Hispanic children in the ECLS-K sample that did not have oral English skills strong enough for them to take the English-language reading readiness assessment as they entered kindergarten.
[b] The White students in the study were limited to those who were third generation Americans, because they represent the "baseline" group within the White population.
[c] Levels defined in Princiotta, D., and Flanagan, K. (2006). Findings from the Fifth-Grade Follow-up of the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Source: Reardon, S.F., and Galindo, C. (2006). Patterns of Hispanic Students' Math and English Literacy Test Scores. Report to the National Task Force on Early Childhood Education for Hispanics. Tempe, AZ: Arizona State University.

- social economic status was associated with achievement differences for both Hispanics and Whites (low SES was associated with much lower reading and math achievement); 36% of the Hispanics were in the lowest SES quintile compared to 8% of Whites; 9% of the Hispanics were in the highest quintile compared to 30% of the Whites;

- Mexican American children had the lowest reading and math achievement levels among Hispanic children from the various Hispanic national origin groups;
- intergenerational progress: third generation Mexican Americans had higher reading and math achievement than first and second generation Mexican Americans at the start of kindergarten and across the elementary years (third generation Mexican Americans had stronger family SES profiles than first and second generation Mexican Americans).

Achievement Gaps at the Secondary School Level

Achievement gaps at the secondary level have been shown by other studies as well. One such major study, the Educational Longitudinal Study,[3] has shown Hispanics scoring much lower in reading proficiency measures compared to Whites, including within same SES quartiles. In 2003, an international study conducted by the Organization for Economic development (OECD) measuring math literacy, problem solving, reading literacy, and science literacy, found that among 15 year olds, U.S. Hispanics (and African-Americans) scored much lower than Whites and Asian Americans.

Achievement Gaps and English Language Proficiency

In the *Reading Skills at the Start of Kindergarten and at the End of Fifth Grade* figure above regarding the ECLS-K study, it is noted that 30% of the Hispanic children in the sample did not have oral English skills strong enough for them to participate in the assessment when they started kindergarten. Throughout their elementary years, and at the end of the fifth grade, these children were performing far below White children's averages in reading and math *and* below the averages for the other 70% of Hispanic children.

What factors influence school readiness and achievement?

Foundational patterns of school readiness and achievement occur during 0-3 years of age. Families, therefore, play an important role in providing fertile ground for developing positive outcomes for school readiness and achievement. Parenting practices incorporating language and literacy development opportunities (e.g., talking and reading to children, having literacy-related materials in the home) will positively influence the child's reading skills throughout the timeline of his or her school years.

Studies have shown an association between well-educated parents (with college and graduate degrees) and their children having a larger vocabulary and stronger prereading skills at the start of kindergarten (which are predicators for later reading achievement outcomes) compared to children with less well-educated parents.

[3] Ingels, S.J., Burns, L.J., Chen, X., Cataldi, E.F., and Charleston, S. (2005). Initial Results from the Base Year of the Education Longitudinal Study of 2002. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

When there is a gap on measures of reading readiness, math concepts, and general knowledge at the start of kindergarten, this pattern is entrenched by the end of the third grade. The consequence of the situation of these early years reverberates throughout subsequent elementary and secondary school years, negatively impacting academic progress. Therefore, it is of the utmost importance to optimize development opportunities related to school readiness and achievement during the Pre-K through grade 3 years in order to solidify a strong early childhood foundation for academic progress; these early years are critical.

What are some educational strategies to address the achievement gaps?

In light of the influential factors discussed above for school readiness and achievement, the following early education strategies can be employed to address achievement gaps:

- expand access to infant/toddler programs designed for school readiness (e.g., Early Head Start) that serve, or have the potential to serve, Hispanic families. Such programs can expand language and literacy development opportunities. Provide information to Hispanic parents about available programs;
- expand Pre-K access for Hispanic children to increase their enrollment (historically, within the total population of the respective ethnicities, a lower percentage of Hispanic children attend Pre-K programs compared to White children);
- increase the number of bilingual (Spanish and English) teachers and second language acquisition specialists, which can attenuate or eliminate the language barrier (a learning barrier) for children who are not proficient in English when they start school. Also, provide the economic incentives to recruit and maintain well-educated, Pre-K professionals;
- at the K-3 level, incorporate a strong literacy development focus and provide some form of English-plus-Spanish instruction;
- establish/enhance monitoring of the readiness and achievement progress of subpopulations by establishing an information system for Pre-K and kindergarten (and optimally K-3). The system would disaggregate students into subpopulations defined in terms of: race/ethnicity; parent education level; family income; first, second, or third generation status; and primary language spoken in the home.

How can the above strategies be translated into policy (and implementation)?

- Create incentives for the development of relevant professionals in your institutions of higher education.
- Connect the Pre-K sector with the K-3 education sector enhancing joint training opportunities.
- Begin movement towards a universal Pre-K opportunity for all children.

Selected Resources

New Mexico Organizations

New Mexico Children, Youth & Families Department
Office of Child Development
1120 Paseo de Peralta, rm 111
Santa Fe, NM 87502
(505) 827-7946
http://nmkids.unm.edu

New Mexico Public Education Department
Instructional Support Division
Early Childhood Education Bureau
300 Don Gaspar
Santa Fe, New Mexico 87501
(505) 827-6673

Out-of-State Organizations

Arizona State University
Office of Education Partnerships
P.O. Box 877905
Tempe, Arizona 85287-7905
(480) 965-3538
http://vpep.asu.edu

Center for Law and Social Policy
1015 15th Street NW
Suite 400
Washington, DC 20005
(202) 906-8000
http://www.clasp.org

Center for the Study of Child Care Employment
Institute for Research on Labor and Employment
2521 Channing Way, # 5555
Berkeley, CA 94720-5555
(510) 643-8293
cscceinfo@berkeley.edu

Center on the Developing Child at Harvard University
50 Church St., 4th Floor
Cambridge, MA 02138
(617) 496-2070
http://www.developingchild.harvard.edu

Child Trends
4301 Connecticut Avenue, NW
Suite 350
Washington, D.C. 20008
(202) 572-6000
http://www.childtrends.org

Education Commission of the States
700 Broadway, #1200
Denver, CO 80203-3460
(303) 299-3600
http://ecs.org

The Edward Zigler Center in Child Development and Social Policy
Yale Child Study Center
310 Prospect Street
New Haven, CT 06511
(203) 432-9935
http://ziglercenter.yale.edu

Foundation for Child Development
145 East 32nd Street
14th Floor
New York, NY 10016-6055
(212) 213-8337
http://www.fcd-us.org

National Task Force on Early Childhood Education for Hispanics
c/o College of Education
Arizona State University
P.O. Box 870211
Tempe, Arizona 85287-0211
http://www.ecehispanic.org

Wisconsin's Early Childhood Excellence Initiative
University of Wisconsin – Cooperative Extension Service
http://www.uwex.edu/ces/flp/ece/index.html

University of Minnesota-Twin Cities
Institute of Child Development
51 East River Road
Minneapolis, MN 55455-0345
(612) 624-0526
http://cehd.umn.edu/ICD/default.html