

Dr. Craig Ramey is Professor and Director of the Civitan International Research Center at the University of Alabama at Birmingham. He has presented his findings, based on research with 14,000 children and families, in over 40 states, at 10 state legislatures and at the National Governor's Association, the National Conference of State Legislatures, the National Association of Attorneys General, and the Council of Chief State School Officers. Dr. Ramey is the recipient of the American Psychological Association's Award for Exemplary Prevention Research.



Why Early Childhood Intervention is a Key Investment for State and Local Policymakers

Craig Ramey

The Abecedarian Project compared infants from low-income families who were randomly assigned to a high-quality child care setting with infants in a non-treated control group. Families in the study had multiple risk factors in addition to poverty. By following the children's progress through age 21, the study found that high-quality, multi-faceted early intervention significantly improves the course of intellectual development in young children. Positive effects included higher IQ and cognitive performance; improved language; fewer instances of grade retention; decreased need for special education; higher reading and math achievement scores; higher levels of formal education; delayed parenthood; and, for teen mothers, higher rates of post-high school education. In replications of the Abecedarian Project, researchers found that African-American, Hispanic and Caucasian children who were at the highest risk benefited the most from early intervention.

The Problem

Young children who live in poverty lag behind their peers from their earliest school years and poor children often do not enter school adequately prepared for success [1]. In attempts to improve the academic odds for low-income children, many types of early childhood education programs have been developed. These programs are based on the idea that providing early intellectual stimulation should enhance cognitive development, allowing children to enter school better prepared to learn. Increasing the likelihood of early school success, in turn, eventually should result in increased success in adulthood. However, few early childhood programs have been scientifically controlled in such a way that researchers could evaluate the extent to which long-term outcomes result from the program itself rather than other forces. Experiments that include these controls are the best because they can prove a cause and effect relationship.

High-quality, multi-faceted early intervention significantly improves the course of intellectual development in young children.

What Is the Abecedarian Project?

The Abecedarian Project, conducted at the University of North Carolina in Chapel Hill, was a carefully controlled study of 57 infants from low-income

Children in the Abecedarian program had five years of exposure to early education in a high-quality child care setting, whereas most other programs are of shorter duration.

High Risk Characteristics of Abecedarian Families

Poverty
 Low maternal IQ
 Low maternal education
 Single parent families
 Teen motherhood
 Authoritarian child-rearing attitudes
 External locus of control

Figure 1. High Risk Characteristics of Abecedarian Families

families who were randomly assigned to receive early intervention in a high-quality child care setting, and 54 infants in a control group that did not receive the treatment. Families in the study had multiple risk factors in addition to poverty (Figure 1), including mothers who had lower IQs, mothers who had low levels of formal education, single-parent families, teen mothers, and authoritarian child-rearing attitudes [39]. Children's progress was monitored in follow-up studies at ages 12, 15 and 21.

Like other high quality early childhood programs (such as Project CARE and the Infant Health and Development Program), the Abecedarian Project had these program features:

- A multidisciplinary, intergenerational, and individualized approach;
- Programming that was embedded in local service delivery systems;
- Preschool treatment that included family support social services, pediatric care and referral, center-based early childhood education, and supplemental meals and snacks;*
- A low child/teacher ratio;
- Year-around programming every weekday from 7:30 a.m. to 5:30 p.m. that met or exceeded the standards of the National Association for the Education of Young Children (NAEYC);
- Daily transportation; and
- Developmentally-appropriate activities consisting of games incorporated into the child's day that focused on social, emotional and cognitive development, with a particular emphasis on language.

The Abecedarian Project differed from other early childhood programs in that:

- It began in early infancy, whereas other programs begin at age 2 or older; and
- Children in the program had five years of exposure to early education in a high-quality child care setting, whereas most other programs are of shorter duration.

What Positive Effects Result from High Quality Early Intervention?

As Figure 2 shows, the Abecedarian study found that high-quality, multi-faceted early intervention significantly improves the course of intellectual development in young children. Positive effects resulting from the project included:

- **Higher IQ, enhanced learning performance, and improved language development**

Young adults who had received intervention had significantly higher cognitive test scores than their untreated peers, effects that lasted from toddlerhood through age 21.

*It should be noted that, for ethnical reasons, children in the control groups of these studies also received family support social services, pediatric care and referral, and supplemental meals and snacks. The findings of the Abecedarian Project, therefore, actually are conservative estimates because the program was carried out in a high-resource community with lots of other services. Thus, the program was compared to a control group which received more services than many programs provide.

■ **Decreases in grade retention**

Those in intervention had a 30% retention rate by age 15, compared with 56% in the control group.

■ **Decreased need for special education**

Only 12% of those in early intervention were placed in special education by age 15, compared with 48% in the control group.

■ **Higher reading and math achievement scores**

Early intervention resulted in large increases in reading scores and moderate increases in math scores, effects that were sustained over time.

■ **Higher levels of formal education**

Those in the treatment group were more likely to be in school at 21 years of age: 40% of the intervention group compared with 20% of the control group. Approximately 35% of the young adults in the intervention group either had graduated from or were attending four-year colleges and universities at the time of assessment, compared with 12% of the control group.

■ **Delayed parenthood**

On average, those in the intervention group were 19.1 years old when their first child was born, compared to 17.7 years of age for those in the control group.

■ **Higher rates of post-high school education for teen mothers**

Fifteen years after enrollment in the project, more than 80% of teen mothers who had received early intervention had engaged in post-high school education, compared with 30% of control group participants.

The project had no measurable impact in other areas. For example, it did not affect maternal attachment to children, parental child-rearing attitudes, or the family's home environment.

Only 12% of those in early intervention were placed in special education by age 15, compared with 48% in the control group.

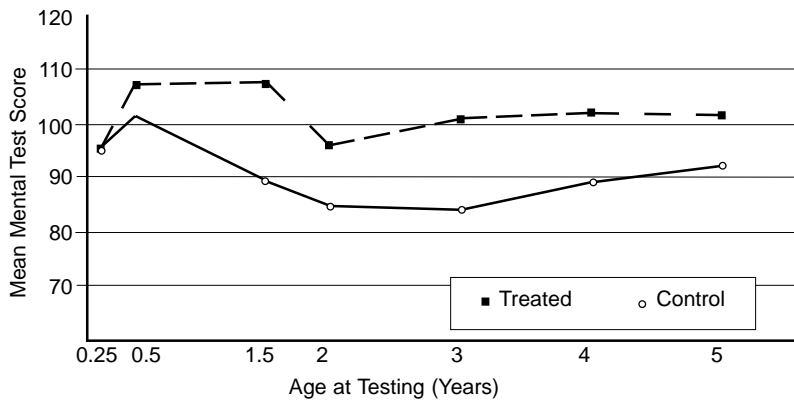


Figure 2. Mean Mental Test Scores for Abecedarian and Control Groups

Which Families Benefited the Most from Early Intervention?

The Abecedarian Project was replicated in the Infant Health Development Project. Researchers found that:

- African-American, Hispanic and Caucasian children who were at highest risk benefited the most from early intervention; and
- Benefits continued when children were in high-resource school environments, but diminished if children moved to low-resource schools.

African-American, Hispanic and Caucasian children who were at highest risk benefited the most from early intervention.

Moreover, a number of research studies have found that the most effective early intervention programs combine high-quality child care with a family approach, particularly one that includes home visiting. For extremely isolated and socially disadvantaged families, home visiting by itself does not appear to be sufficient [53], but in combination with high quality child care, the children in such families can fare better.

How Do the Timing and Duration of the Program Affect Child Outcomes?

In a recent study, Dr. Ramey and colleagues followed up the preschool program with additional educational support, both at home and in school, for the first three years the child attended public school. In this K-2 Program, master teachers with graduate degrees in education and experience working with high-risk families provided consultation and technical assistance to classroom teachers and to parents in order to increase parents' support of learning, to individualize school experiences during the year, and to provide additional support over the summer.

The study found that at age 8, when the program ended, the most effective approach for improving reading achievement was the *combined preschool and K-2* condition, followed by the *preschool only* and the *K-2 only* conditions, with children in the *control group* scoring lowest. As Figure 3 shows, at age 15, there was a strong significant effect of the *preschool only* condition and the *combined preschool and K-2* conditions. The *K-2 alone* condition, however, had no lasting practical benefit [38]. Thus, it appears that early interventions are important and that the longer the treatment is in effect, the more benefits accrue.

Interventions that begin earliest in a child's life and continue longer tend to produce the greatest benefits. Specifically, programs that begin before age 3 and continue at least until school age have shown the greatest benefits.

What Are the Elements of Successful Early Intervention Programs for Children in Poverty?

The importance of high quality, educational child care from early infancy is now clear. The Abecedarian study provides scientific evidence that early childhood education significantly improves the scholastic success and educational attainment of poor children even into early adulthood. Welfare reform means that, more than ever, children growing up in low-income families will need early child care. Providing early learning experiences with the following elements can increase their chances for later success:

■ Early and sustained intervention

Interventions that begin earliest in a child's life and continue longer tend to produce the greatest benefits. Specifically, programs that begin before age 3 and continue at least until school age have shown the greatest benefits. Some of the largest effects of early intervention were

produced by five major studies, all of which enrolled children in infancy. Educational interventions provided at somewhat older ages also can be beneficial, but the important point is that the younger the child's age, the more likely the benefits will be sizable.

■ **Intense intervention**

Programs that are more intensive—based on the number of home visits per week, the number of hours per day, the number of days per week, and the number of weeks per year—produce larger positive effects than less intensive interventions. In addition, the families and children who participate most actively and regularly are the ones who show the greatest progress. Ramey and colleagues found that the amount of intervention each child and family received had a strong, positive relationship to the child's intellectual and social development at age 3 [37]. The highest participation group had nearly a nine-fold reduction in the percentage of low-birth weight children with mental retardation, compared with a control group that received no home visits or center-based daily education. Another long-term analysis of this same group of families found that children's intellectual development was strongly linked to the amount and length of time they participated in early intervention [4].

Children's intellectual development was strongly linked to the amount and length of time they participated in early intervention.

■ **Direct educational experience**

Children who receive direct educational experience have larger and longer-term benefits than children in programs relying on intermediary routes, such as parent training. Successful direct intervention can take different forms, such as center-based day care with trained staff; home-based program to enhance children's everyday learning opportunities; and programs that combine both components.

Long Term Benefits of the Abecedarian Early Childhood Program

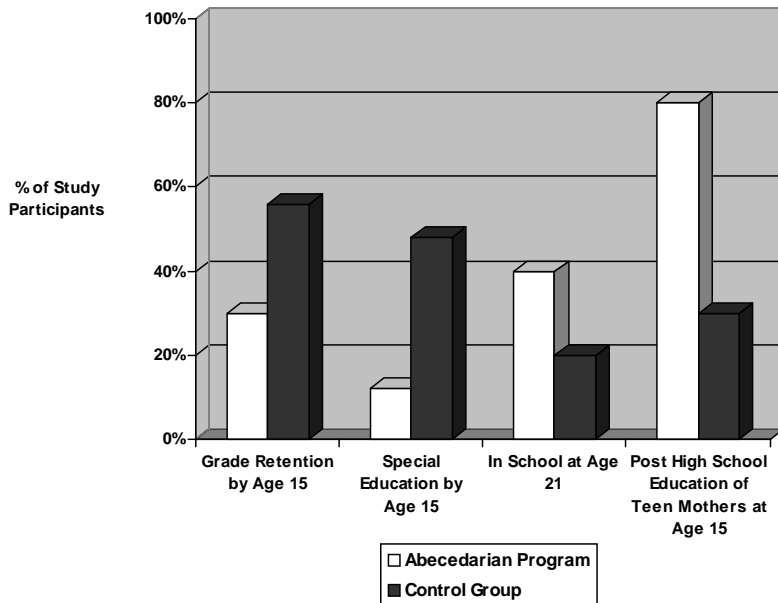


Figure 3. Long Term Benefits of the Abecedarian Early Childhood Program

Over time, the effects of early intervention diminish if no adequate environmental supports are in place to maintain the child's gains and to encourage continued learning.

■ Comprehensive intervention

Interventions that provide comprehensive services have larger effects than those that are narrower in focus, such as home visiting only or parent education only. Projects that have had the biggest impacts have adopted a multi-pronged approach including health and social services, transportation, assistance with urgent family needs, individualized developmental therapies, and parent services and training, in addition to strong educational programs for children.

■ Individualized intervention

Studies have found that some at-risk individuals show greater gains from early intervention than do others. For instance, children in the Abecedarian Project who had mothers with the most limited intellect (IQ scores below 70) benefited most from the program. Children whose mothers had cognitive disabilities performed at least 20 IQ points higher than control-group participants with similar mothers [26].

■ Intervention that includes environmental supports

Over time, the effects of early intervention diminish if no adequate environmental supports are in place to maintain the child's gains and to encourage continued learning. Challenges such as poor school environments, poor health, dysfunctional home life, and poverty affect the behavior of children at all ages. One study found that children who had received continuous environmental supports during all 8 years of life performed best in reading and math, followed by those who had received intervention the first 5 years of those 8 years. The lowest scores were obtained by children who had received intervention only during the first 3 years of elementary school [37].

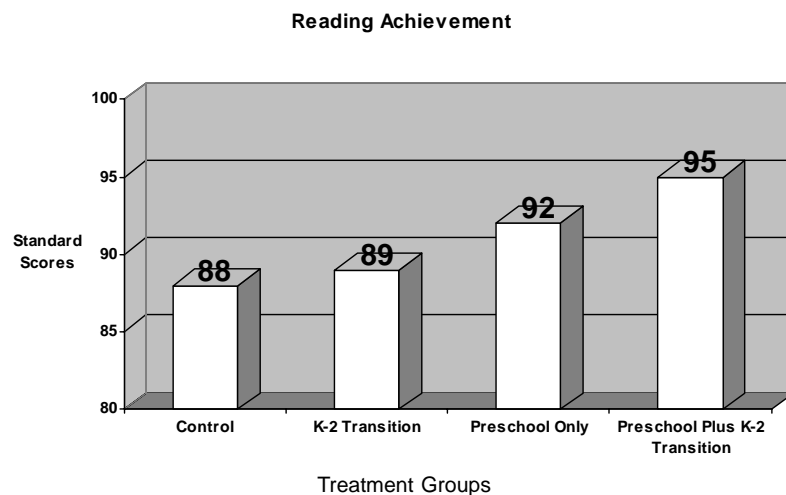


Figure 4. Woodcock-Johnson Age-Referenced Reading Standard Scores at Age 15

Why is Early Childhood Education a Key Investment for State and Local Policymakers?

Comprehensive, intensive, long-term early intervention is not an inexpensive solution to the problems of high-risk children in poverty. It is, however, an effective community investment in both fiscal and human terms.

Figure 4 shows that quality child development and school readiness programs boost academic achievement and social competence for children attending quality elementary and secondary schools. In turn, the increased costs associated with children living in poverty drop significantly, costs such as high school absenteeism, grade retention, special education, school drop-out, juvenile and adult crime, and teen pregnancy. When these social problems decrease, welfare, health care and anti-crime security costs drop as children enter their teen and young adult years. In addition, the parenting skills of these individuals as young adults increase. Ultimately, work force participation increases, and the competitiveness of the local economy rises. Thus, dollars spent on quality early and sustained intervention result in savings down the road (Figure 5).

Craig Ramey, Ph.D.
 Professor and Director
 Civitan International Research
 Center
 University of Alabama at
 Birmingham
 1719 6th Avenue South
 Suite 137
 Birmingham, AL 35294-0021
 (205) 934-8900
 cramey@uab.edu
<http://www.circ.uab.edu>

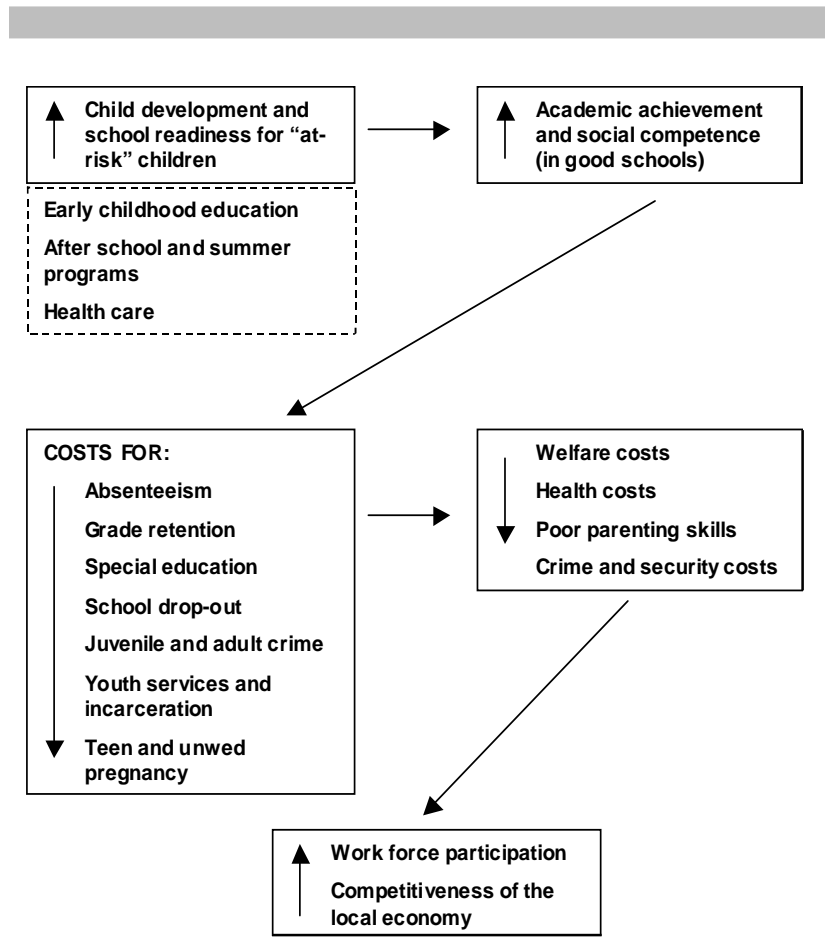


Figure 5. Why Early Childhood Education is a Key Investment for States and Communities