Helping Children Get Started Right: The Benefits of Early Childhood Intervention

By Craig Ramey

Ramey's 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 alters the course of intellectual development in young children. Positive effects included higher IQ and cognitive performance; improved language; decreased grade retention; decreased need for special education; higher reading and math achievement scores; higher levels of formal education; delayed parenthood; and higher rates of post-high school education for teen mothers. In replications, researchers found that African-American, Hispanic and Caucasian children who were at the highest risk benefitted the most from early intervention. The chapter concludes with several key components of successful early intervention programs for children in poverty.

Young children who live in poverty lag behind their peers from their earliest school years, according to numerous studies, suggesting that poor children do not enter school adequately prepared for success (Alexander & Entwisle, 1988). 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 would enhance cognitive development, allowing children to enter school better prepared to learn. Increasing the likelihood of early school success, in turn, would eventually result in increased formal education and success in adulthood. However, few early childhood programs have been well-controlled enough to allow researchers to evaluate the extent to which long-term outcomes are the result of the program itself.

What Does Effective Early Intervention Look Like?

One effective long-term program, The Abecedarian Project from the University of North Carolina in Chapel Hill, was a carefully controlled study of 57 infants from low-income 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. Experiments of this sort are the best kind of study because they prove a cause and effect relationship between early childhood education and later school success. Families in the study had multiple risk factors in addition to poverty, including mothers who had lower IQs, mothers who had low levels of formal education, single-parent families, teen mothers, and authoritarian child-rearing attitudes (Ramey & Ramey, 1999). Children's progress was monitored in follow-up studies at ages 12, 15 and 21.

Figure 1. 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

Ramey & Ramey (1999)

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

1. It began in early infancy, whereas other programs begin at age 2 or older; and

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

High-quality multi-faceted intervention alters the course of intellectual development in young children.

Each child had an individualized program of educational activities, consisting of games incorporated into the child's day. These activities focused on social, emotional and cognitive areas of development, with a particular emphasis on language. Several studies of our early childhood programs including the Abecedarian Project, Project CARE, and Infant Health and Development Program, all had these program features in common:

- 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 and year-around programming every weekday from 7:30 a.m. to 5:30 p.m. that met or exceeded NAEYC standards and provided daily transportation.;
- Developmentally-appropriate practices and a curriculum and practices that put emphasis on language development.

Children in the control groups of these studies received family support social services, pediatric care and referral, and supplemental meals and snacks.

How Effective Can Early Intervention Be?

The Abecedarian study found that high-quality, multi-faceted early intervention does indeed alter the course of intellectual development in young children. Positive effects resulting from the project included:

Higher IQ, learning performance, and improved language development. Young adults who received intervention had significantly higher cognitive test scores from toddlerhood through age 21 than did untreated peers.

Decreased grade retention. Those in intervention had a 30-percent retention rate by age 15, compared with 56 percent in the control group. Decreased need for special education. Twelve percent of those in early intervention were placed in special education by age 15, compared with 48 percent in the control group.

Higher reading and math achievement scores. The effect of early intervention remained large for reading from primary school through age 21. The size of the effect on math scores was medium in contrast to the large effect on reading.

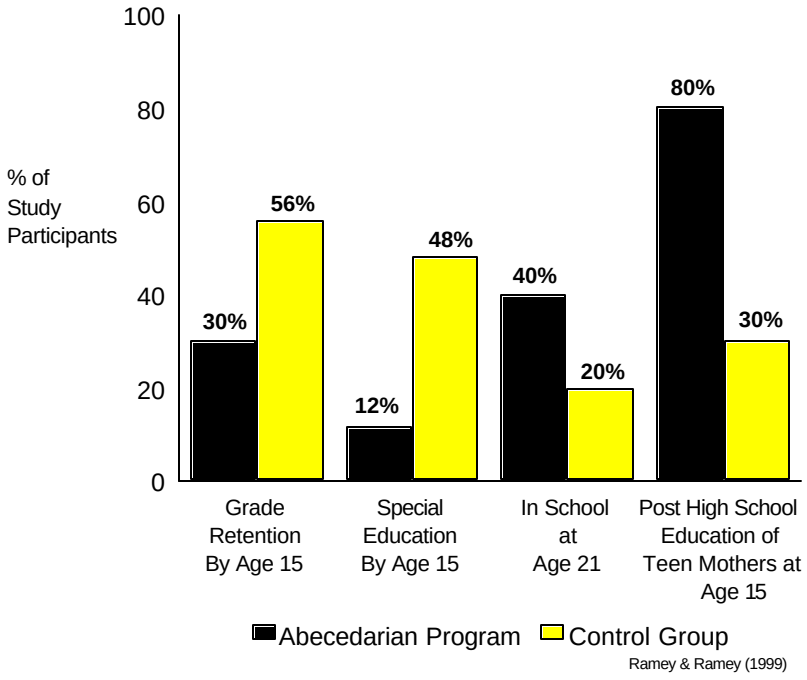
Higher levels of formal education. Those in the treatment group were more likely to be in school at age 21—40 percent of the intervention group compared with 20 percent of the control group. About 35 percent of the young adults in the intervention group either graduated from or at the time of assessment were attending four-year colleges and universities, compared with 12 percent of the control group.

Delayed parenthood. On average, those in the intervention group were 19.1 when their first child was born, compared to 17.7 for those in the control group.

Higher rates of post-high school education for teen mothers. More than 80 percent of teen mothers who received early intervention had post-high school education 15 years after enrollment in the project, compared with 30 percent of control group participants.

The project had no effects on maternal attachment to children; parental child-rearing attitudes; or the family's home environment. These findings are actually 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.

Figure 2. Long Term Benefits of the Abecedarian Early Childhood Program



Ramey & Ramey (1999)

What Families Benefit the Most?

When this study was replicated in the Infant Health Development Project, researchers found that African-American, Hispanic and Caucasian children who were at highest risk benefitted the most from early intervention. The study also found that benefits continue when children are in high-resource school environments, but diminish if children move to low-resource schools.

How Important is a Family Component in the Success of Early Intervention?

The Abecedarian Project and other research studies have found that the most effective early intervention programs combine high-quality child care with a family approach, particularly home visiting. For extremely isolated and socially disadvantaged families, home visiting by itself does not appear to be sufficient (Wasik, Ramey, Bryant, & Sparling, 1990).

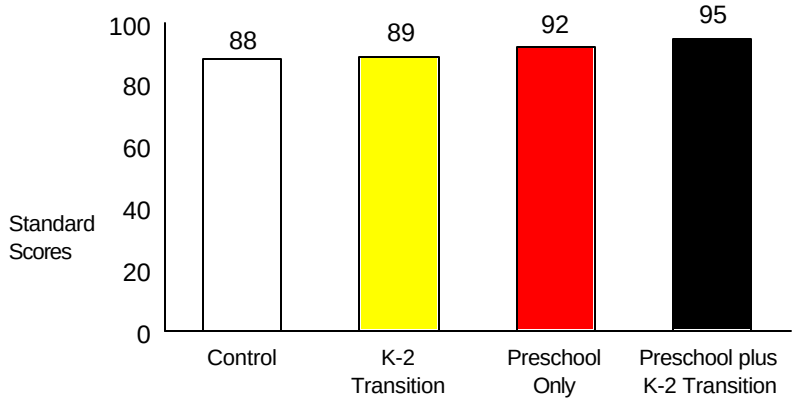
How Does the Timing and Duration of the Program Affect Child Outcomes?

African-American, Hispanic, and Caucasian children at high risk benefitted the most.

In a recent study, we followed up our preschool program with additional educational support in both home and 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. The program was designed to influence the parents' support of learning, to individualize school experiences during the year, and to provide additional support over the summer.

At age 8, when the program ended, the most effective treatment for reading achievement was the combined preschool and K-2 condition followed by the preschool only and the K-2 condition only with children in the control group scoring lowest. 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 program alone, however, had no lasting practical benefit (Ramey, Campbell, Burchinal, Skinner, Gardner, & Ramey, in press). Thus, it appears that early interventions are important and that the longer the treatment, the more beneficial (Ramey, Campbell, Burchinal, Skinner, Gardner, & Ramey, in press).

Figure 3. Timing and Duration Effects



Ramey et al., Applied Developmental Science, in press.

What Are the Principles of Successful Early Intervention?

Key components of successful early intervention programs for children in poverty, developed by Ramey and Ramey (1998) include:

1. The principle of developmental timing. 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 until school age have shown the greatest benefits. Five major studies that produced some of the largest effects of early intervention all enrolled children in infancy. However, there is no evidence that educational interventions provided after a certain age cannot be beneficial. Rather, the earlier a child's age, the more likely that the benefits will be sizable.

Interventions that begin earlier and continue longer produce the greatest benefits.

2. The principle of intensity. 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 et al. (1992) 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. The highest participation group had nearly a nine-fold reduction in the percentage of low-birth weight children with mental retardation, compared with the control group that received no home visits or center-based daily education. Another long-term analysis of this same group of families by Blair, Ramey, and Hardin (1995) found that children's intellectual development was strongly linked to the amount and length of time they participated in early intervention.

3. The principle of providing direct learning experiences. Children who receive direct educational experience have larger and longer-term benefits than do 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.

4. The principle of program breadth and depth. 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, parent services and training, in addition to strong educational programs for children.

5. The principle of individual differences in program benefits. Studies have found that some individuals respond differently to a program than others, based on risk factors. For instance, children in the Abecedarian Project (Martin, Ramey, & Ramey, 1990) who had mothers with the most limited intellect (IQ scores below 70) benefitted most from the program. Children whose mothers had cognitive disabilities performed at least 20 IQ points higher than control-group participants.

6. The principle of the importance of children's environments in order to maintain development. Over time, the effects of early intervention diminish if no adequate environmental supports are in place to maintain the child's positive attitudes and behavior and to encourage continued learning. Challenges such as poor school environments, poor health, dysfunctional home life, and poverty affect the behavior of children and adults at all ages.

One study that did look at continued intervention into elementary school found that at age 8, children who had received continuous intervention all eight years of life performed best in reading and math, followed next by those who received intervention the first five years of life. Next were those children who received elementary school intervention for three years.

7. The principle of cultural appropriateness. Interventions for children and families must recognize and build on cultural beliefs, traditions and practices in order to achieve desired outcomes. They are less likely to achieve long-term success if they do not build upon cultural values and strengths.

Early childhood improves the school success and educational attainment of poor children even into early adulthood.

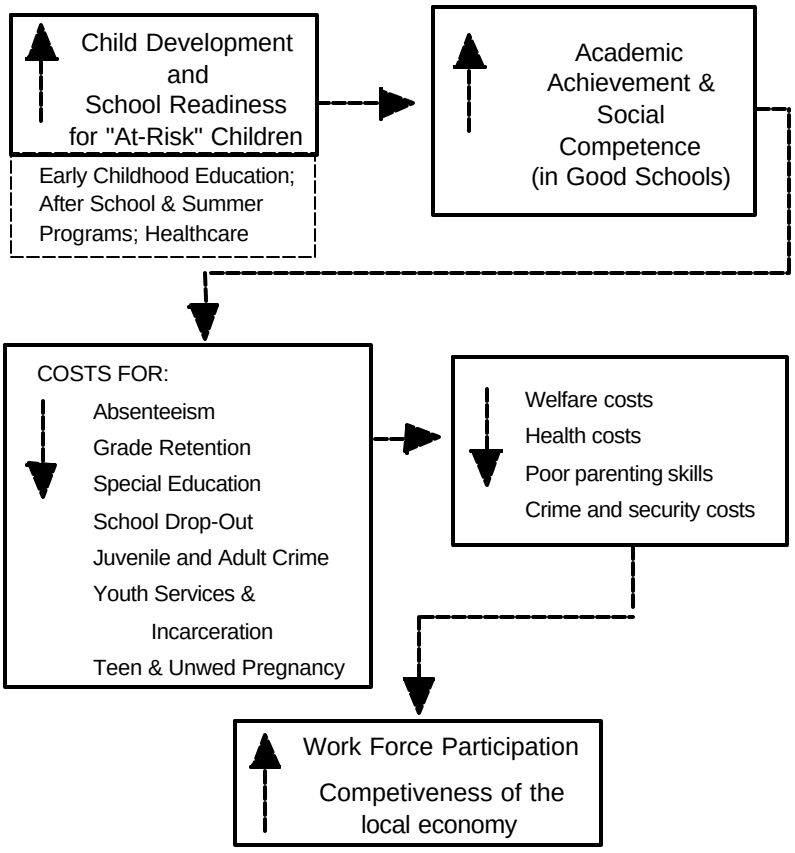
Why is Early Childhood Education a Key Investment for State and Local Policymakers?

Comprehensive, intensive, long-term early intervention may appear costly on the face of it. But quality early childhood education for children in poverty is an effective community investment.

As shown in Figure 4, 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—high school absenteeism, grade retention, special education, school drop-out, juvenile and adult crime, and teen pregnancy—drop significantly. 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.

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 can increase their chances for later success.

Figure 4. Why Early Childhood Education is a Key Investment for States and Communities



Ramey & Ramey (1999)

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