Abecedarian Program

A Summary of:

"The Development of Cognitive and Academic Abilities: Growth Curves from an Early Childhood Educational Experiment" (2001) *Developmental Psychology* 37(2) 231-242. By Frances A. Campbell, Elizabeth P. Pungello, Shari Miller-Johnson, Margaret Burchinal, and Craig T. Ramey.

"Early Intervention and Mediating Processes in Cognitive Performance of Children of Low-Income African American Families" (October 1997) *Child Development* 68(5): 935-954. By Margaret R. Burchinal, Frances A. Campbell, Donna M. Bryant, Barbara H. Wasik, and Craig T. Ramey.

"Cognitive and School Outcomes for High-Risk African American Students at Middle Adolescence: Positive Effects of Early Intervention" (Winter 1995) *American Educational Research Journal* 32(4): 743-772. By Frances A. Campbell and Craig T. Ramey.

Focus

- ✓ Early Childhood
- ✓ Primary School
- Middle School
- Secondary School
- Postsecondary
- Extended Learning

Overview

Begun in 1972, the Abecedarian program was an experimental pre-school program serving the children of low-income, African American families in Chapel Hill, North Carolina. The full-day, year-round program served the children from their infancy until the age of five. The program provided free diapers, food, and transportation as well as academic, physical, and social enrichment activities. As children entered kindergarten, the program further divided the control and treatment groups, providing "school-age support" to half of each group, so evaluators could determine the different effects of pre-school and primary school interventions. The "school-age support" was provided by a Home-School Resource Teacher from the program who served as a liaison between the students' families and school officials for the first three years that the children attended public schools. Abecedarian staff also provided parents with individualized curriculum packets to help them work with their children at home on academic lessons. The experimental program ended by design in the mid-1980s in order for researchers to track the

POPULATION

At the outset of the longitudinal study, the directors selected 111 healthy infants (average age of 4.4 months), who were found to be at "high risk" because of family income and maternal education level. (The mothers were all low-income. They had on average a tenth grade education and their average age was 20.) Although ethnicity was not a selection criterion, 98% of the children were African American, because a higher percentage of poor people in the locality served were African Americans. Of the 111 infants in the original sample, 57 were randomly assigned to enroll in the Abecedarian program and the remaining 54 were assigned to the control group. The control group children experienced a range of early care including parental care and other child-care programs available in low-income communities. Half of the children in each group were chosen at random to receive additional academic support in the first 3 elementary school grades. For the 21-year follow up study, the evaluators interviewed and tested 104 of the original participants in Abecedarian.

effects of the program on cognitive ability and academic performance of participating students as they continued up the educational ladder. The basic elements of this program were replicated in the Infant Health and Development program provided for nearly 1000 low-birth-weight children at 8 sites across the nation.

Key Findings

The strongest effects of the Abecedarian preschool program occurred while the youth and their families were participating in the project. But the studies summarized here focus on the academic achievement effects that endured through the teen years and early twenties, more than a decade after participants had left the program.

> *"The [Abecedarian] outcomes show that high quality educational childcare can make a dramatic difference in the lives of young African American adults reared in poverty."*
> —Frances Campbell and Craig Ramey, evaluators

Relative to their peers in the control group at age 15, the program participants:

- Had a lower rate of grade retention in grades K-9 (31.2% vs. 54.5%; p=.02).
- Were less likely to need special education in grades K-9 (24.5% vs. 47.7%; p=.02).
- Had a higher adjusted mean reading score on the Woodcock-Johnson test (93.5 vs. 86.7; effect size of .45).
- Had a higher adjusted mean math score on the Woodcock-Johnson test (91.6 vs. 86.1; effect size of .37).

Relative to their peers in the control group at the age of 21, the program participants:

- Had completed more years of school (12.2 vs. 11.6; p<.05).
- Were more likely to have attended a four-year college (35.9% vs. 13.7%, p<.05).
- Were more likely to be in school (42% vs. 20%, p<.05).
- Were more likely to be engaged in skilled jobs (47% vs. 27%; p<.05),

In terms of gender, women who had been in the preschool program earned 1.2 years more education than their peers in the control group (12.6 vs. 11.3; p<.05), but the difference for men was not significant.

Program Components

The Abecedarian program was designed as an experiment to determine the effect of high quality educational childcare on children from low-income families. These longitudinal studies include all of the program participants and a randomly assigned control group that did not participate in the early childhood program. The program provided half of each group with additional academic support from first through third grade in a "school-age intervention" to determine the impact of intervention timing.

- From infancy to age 5 (when public kindergarten began), children attended the program eight hours a day, five days a week, fifty weeks a year.
- At infancy, the caregiver to child ratio was 1:3. A specially designed Abecedarian infant curriculum covered cognitive and fine motor development, social and self-help skills, language and gross motor skills. Diapers, food and transportation were provided to all participants.

- As children grew to become toddlers, the staff to child ratio decreased to 1:6. The curriculum included interest centers for art, housekeeping, blocks, fine-motor manipulatives, language and literacy. A special emphasis on language acquisition required daily or semi-weekly individual sessions with each child.

- Before the participants entered kindergarten, they participated in a six-week summer transition program that included other children from the community to facilitate socialization of the Abecedarian participants.

- Parents of Abecedarian students served on the center's advisory board, attended social events at the center and received counseling by the center's medical staff on child health and development.

- Half of the participants and the control group also received a "school-age intervention" from grades K-3 (with a staff to child ratio of 1:14). This phase of the program was designed to involve parents in their children's education. One Home-School Resource Teacher (HST) served groups of 14 children and their families, providing them with individualized curriculum activities to reinforce math and reading skills learned in school. The HST visited classrooms every other week to consult with teachers about the students' needs and on alternate weeks delivered a curriculum to the parents. The HST also "functioned like a social worker" serving other needs of the family and referring them to appropriate agencies for services.

Contributing Factors

Early Intervention
Evaluators determined that "the preschool treatment was more strongly associated with the improvement in academic achievement than was the later school-age intervention." Yet they admit that variables such as duration and strategy of intervention (direct instruction vs. parent-mediated home activities) made it difficult to determine why this was so.

Long-term Support
Full-time, year-round childcare for five years was available to children from low-income families, and the continuity of service seemed to be a factor in the program's results.

Individualized Attention
The high staff to student ratios at every stage of the Abecedarian program allowed staff to individualize enrichment activities, language lessons and higher level academic curriculum activities for each child.

STUDY METHODOLOGY

For an explanation of the random selection of 111 participants in the treatment and control groups, see the "Population" section of this summary. The evaluators measured the social and intellectual development of both groups at ages 3, 4, 5, 6.5 and 8 years old with the Stanford-Binet intelligence scale and the Wechsler Preschool and Primary Scale of Intelligence. The Woodcock-Johnson Psycho-Educational Battery (a standardized achievement test) was administered to the students at age 8, 12, 15, and 21 to measure math and reading achievement. Of the initial 111 participants in the treatment and control groups, 104 were available for testing and interviews at the age of 21.

EVALUATION FUNDING

The 21-year follow-up studies of the Abecedarian Project were funded by the Maternal and Child Health Bureau of the Department of Health and Human Services, the Office of Educational Research and Improvement, the Department of Education and the David and Lucile Packard Foundation. The program and earlier phases of the research were primarily funded by a series of grants from the Mental Retardation and Developmental Disabilities Branch of the National Institutes of Child Health and Human Development and the State of North Carolina.

GEOGRAPHIC AREAS

Chapel Hill, NC

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