

Opening Session

Greetings and Introduction: John W. Hagen, Aletha C. Huston, Channell Wilkins, Naomi Goldstein

Keynote Speaker: Craig T. Ramey

Ramey: The task of researchers and practitioners is to serve the Head Start children and their families as best as is humanly possible, both for reasons that have to do with morality, doing the right thing, and efficiency, doing it in ways that are affordable and effective. It is clear that better health and education are strongly linked to one another. Good health is associated with higher education and lifetime achievement. More years of education are associated with greater health, more happiness, higher incomes, and greater longevity. Conceptions of health, as embodied by the World Health Organization, are not always shared by the United States. It is important to be as broad as possible and include social and mental well-being when talking about health, since health is more than the absence of illness or disease. That includes being a robust functioning person in society, being a contributor, and having a sense of accomplishment and commitment.

Health contributes toward education in a number of ways that have been well documented. Children who are healthier pay better attention in class and in school in general; they attend school more frequently, and they end up being more attractive to peers and teachers. Recent advances in knowledge lead us closer to knowing in greater depth that as children are healthier and better educated, they have higher energy levels for all types of school-based activities, not only for physical education, but for sustained engagement in classrooms as well. It is clear that education influences health. The more one knows about healthy lifestyles and choices, the more likely one is to act in a manner according to that knowledge. The more people are able to read and think about health information, the more likely they are to incorporate it into their repertoires and the more likely they are to be able to make informed choices about how to use healthcare delivery systems, no matter how complex or, at times, dysfunctional. Being more educated results in spending more time in positive and healthy environments, which contributes both to health and to education.

Over the last 40-plus years since Head Start was initially conceptualized as a program to get children ready for school, research has taught that there are certain characteristics (at the level of the child, family, and school) that are related to school readiness. Children ready for school are eager to learn; ask lots of questions; work hard and know effort matters; have good social-emotional skills; can assess their own skills reasonably well; have parents who are role models for learning themselves and promote learning at home; have family routines that support doing well in school; have parents that set and maintain fair limits; and are in schools that have high student expectations, support teacher development, and communicate frequently with parents. The human developmental trajectory is contributed to by a wide array of forces, some acting positively and some not. It has also become clear that the early years lay a foundation for later learning and success in school and life, and that learning is a lifelong process. However, no one has argued that the early years are the only time that count, although you frequently read statements like that in the popular media. Learning is lifelong process, but it is also true that

what happens early establishes the trajectory that becomes difficult to change as children become 5, 10, 15, 20, and so on. There is also some clear evidence that brain development is itself clearly influenced by the kinds of experiences and health conditions that children are exposed to. According to Huttenlocher, different regions of the brain undergo synaptogenesis at somewhat different rates, and those areas of the brain, like the visual cortex, which are needed to negotiate life for sighted people, tend to mature very early. But the prefrontal cortex area where we do most of our abstract thinking tends to come to its peak in terms of synaptogenesis, the number of synapses per cubic millimeter, a little bit later. It takes millions and millions of particular experiences to get that foundation laid. However, what is central are the transactions that children have with their caregivers, be they parents, teachers or others, in whose presence they spend time. And those transactions, as Sameroff reminds us, add up over time to change both child and caregiver in ways that are quite dramatic and important. Some children make typical developmental progress, about 1 year of developmental progress for 1 year of chronological age. However, some children in this country start off healthy with a “normal” trajectory, but sometime in the 1st year of life they begin to fall off that trajectory, and without some additional special help, those children can arrive at school 2 or more years behind their peers. Then they face an uphill battle.

The “achievement gap” is a result of a variety of factors, including the quality of the schools and the experiences children have. There also is an abundance of evidence that suggests that these negative trajectories can be systematically altered. In the mid-1940s, animal research revealed that animals had very different developmental outcomes depending on if they were in enriched environments or not. There also are many demonstration projects at the human level. Both naturalistic and longitudinal studies and, increasingly, a vast number of randomized controlled trials show that it is possible to alter the course of human development.

In reviewing the results of the Abecedarian Project, what differentiated the control group from the treatment group was the special child development center that was created for children from 6 months of age to kindergarten. They attended 5 days a week, 50 weeks a year. In that program, an individualized curriculum was provided for each child, each day, similar in concept to Head Start: addressing cognitive, social, emotional, motor, and language development. The children’s development was followed, the oldest of whom are now in their mid-30s. Their children are now being followed. During the 1st year of life, the intervention and control groups were not distinguishable. But beginning in the 2nd year, they began to diverge to about a standard deviation’s difference, and they maintained that difference over much of the rest of the preschool years. Effect sizes beginning at about 18 months ranged from about one-and-a-half to about 0.73 at age 3. Analyses of the control condition revealed that children who were enrolled in some other high-quality program tended to benefit from that, but because at the time that we began the study, no children were enrolled as early in age as the Abecedarian children, no child in the control condition ever had the full amount of exposure equivalent to the Abecedarian children. What that established, at least in a correlational sense, was the dosage effect. Additionally, the average differences of the mean differences in some ways did not fully capture the impact of this kind of early education for high-risk children. Taking the mental score of 85 or so as the cut point below which the children are unlikely to do well in school, over the first 4 years of life there is a systematic decline in the likelihood of children continuing to score in the normal cognitive range, such

that by 4 years of age, a little less than half of the children are scoring as such in the controlled condition, compared with about 95% in the educationally treated condition still within normal limits. Using the HOME to assess family contributions, looking at from 12 months to 48 months, there is a changing pattern of contribution such that the factors of whether the child is in the preschool program or not, are becoming increasingly important. Children coming from cognitively challenged mothers are paying a toll, and that toll is partially offset by the quality of the environment to which the mother contributes but may not be the only contributor. Actually, there are at least three independent factors. At age 5, the two preschool groups were broken in half randomly, and one half of each group got a school-age program during kindergarten, 1st, and 2nd grades; and one half did not. Those children were followed through age 21. During the transition period, an individualized focus on academic and learning activities both in school and at home was provided. Emphasis was put on the gateway skills of reading, mathematics, and writing. Masters in PhD level students were recruited and called home-school resource teachers. Each had a caseload of 12 children and families per year. They worked closely with the child's classroom teacher and with the parents to develop an individualized and documented supplemental curriculum. Various family-support services were continually provided.

Every summer, because Entwistle's research in Baltimore showed that disadvantaged children tended to lose ground in the summer compared to advantaged children, summer camp experiences were provided that were embedded with cognitive, social, and other support activities, as well as fun. At age 8, at the end of the treatment condition, the scores for reading achievement were at the 11th percentile for the lowest group (control/no K-through-2 enrichment) and from that group there was a stair-step pattern. The K-through-2 program provides a bit of a boost. The preschool only provides a bit more, and the preschool plus the school-age program provides even more. Intensity of services was clearly linked to performance.

In terms of an effect size, the children who had only the K-through-2 program ended up being marginally better at age 8, having an effect size a bit above 0.2, but that effect size erodes to non-significance over time, so even these very intensive services begun at kindergarten have a short-lived and not practical level impact on the child's development. These results are true for math as well, and there is no so-called "fade out" effect. Practical effects include a fairly substantial reduction in retention in grade, cutting it into about half, and cutting special education placement by about a relative 75% from about 48% to 12%. At age 21, there were a higher percentage of children who had had preschool in skilled jobs or higher education; they postponed the birth of their first child until they were out of high school.

One of the hallmarks of science is replication. The Abecedarian Project was replicated in a program called Project Care using the same admissions criteria, extremely high-risk families, and randomized controlled trial. In Project Care, there were three groups: a home-visit-only group (with the same curriculum as the child development center attending group), a home-visit-and-child-development-center-attending group, and the control group. Results showed that for these extremely disadvantaged families, there was no impact on family functioning or the child's developmental outcomes. It seems that for extremely disadvantaged, challenged families, there needs to be more in order to get children ready for school. The prediction was

that the home-visit program by itself would produce intermediate results between the control condition and the more intensively treated group.

The Abecedarian Project and Project Care were replicated in an eight-site randomized control trial known as the Infant Health and Development Program (IHDP). Nine hundred eighty-five children were enrolled, concentrating on low-birth-weight and premature children from birth to age 3. This was the first multi-site randomized controlled trial in child development to ask whether the findings obtained in the local program were replicable. Children were divided into heavier low-birth-weight children, those children between 2,000 and 2,500 grams and children who were less than 2,000 grams. At age 3 there was a similar pattern to what was found in the Abecedarian Project and Project Care, that for the lighter low-birth-weight children the effect was about half as much, indicating that their challenges were especially difficult. Although in virtually all cases, the pattern of result is the same and is significant at each site with one exception, and the one exception is for the lighter low-birth-weight children who were at the Harvard site.

In subsequent analyses, a plausible explanation was developed for that result. Massachusetts had probably the best early intervention program in the country, and one of the criteria for being eligible for it was to have a birth weight under 2,000 grams; therefore, virtually all children in the Harvard site were in the control condition. That was not true for the heavier children. The heavier children showed the same pattern as the Abecedarian Project and Project Care, therefore there were 15 out of 16 matches, the one exception having an understandable rationale undergirding it. Because children were randomly enrolled who met the low birth weight and prematurity criteria, there was a chance to look simultaneously at the influence of low birth weight and the influence of social factors at the same time. Social factors are indexed by the level of the mother's education. By age 2 there was already a positive relationship between level of family education and developmental outcome. However, it was not there at age 12 months; it emerges over time. The effect of the intervention has been to pull up the average performance of the children and to have them perform slightly above national average and close to the performance of children who come from college-educated parents. That is, the program had a differential benefit: those who were most at risk were the ones who benefited the most. Additionally, by 36 months, many different developmental domains have been positively affected by the intensive intervention. The children who benefited the most tended to be the children who came from the most challenged families, measured both by mother's education, vocabulary size, and a number of biological measures like APGAR scores. Those children who scored non-optimally both in the Abecedarian Project, Project Care, and IHDP samples are the ones who tend to benefit the most.

Results from research in Romanian orphanages in randomized controlled trials revealed that during the Ceausescu regime, children were put in orphanage-like institutions, but the children were not orphans. They were children born to parents who did not have the food and money resources to keep them; therefore, their children were placed in institutions. The institutions had a 40:1 ratio for infants. By age 2, the children were rocking and showing self-injurious behaviors. The principles learned from the American studies were applied to the Romanian orphanage randomized controlled trials, looking at the children between birth and

age 3. Results showed that with intensive intervention, we could return the developmental trajectory to a normal rate within the course of a year. However, the children never completely caught up and continued to stay developmentally behind.

Another issue for focus is whether the same randomized controlled trial technology could be used to ask the questions of whether it is possible to study child care and early childhood education programs and improve the skills of people who have not had the benefit of a college education in order to help them to become more effective teachers.

Ramey has developed a technique call the “immersion technique,” where coaches work all day at a childcare center or family daycare. Results indicated that, in comparison to more traditional ways of providing technical assistance, coaching produced measurable gains in caregiver behavior that are associated with better developmental outcomes for children. Therefore, intensity of a high-quality program is important.

Both quality and quantity are important, particularly for children who are most disadvantaged, and it is possible to deliver such programs at scale. It is difficult to do a good job as preschool teachers have a demanding and difficult job, and without knowledge of human development and early education, it becomes even more difficult. All of the issues covered are consonant with the philosophy that originally undergirded Head Start and that continues to undergird Head Start. It is about comprehensive high-quality services delivered by informed and caring people where formative evaluation is used to make adjustments when warranted. However, at this point in time, the early childhood programs, Head Start, state-sponsored pre-K, and family daycare are not always of the best quality. However, Head Start has been a leader and continues to be a leader.