VALIDITY OF THE HIGH/SCOPE PRESCHOOL EDUCATION MODEL[1]

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Executive Summary

The High/Scope model of preschool education is an open framework of educational ideas and practices based on the natural development of young children, developed by David Weikart and his colleagues in the 1960s. Based on the child development ideas of Jean Piaget, the High/Scope preschool model views children as active learners, who learn best from activities that they themselves plan, carry out, and reflect upon. Adults arrange interest areas in the learning environment; maintain a daily routine that permits children to learn actively; and join in children's activities, asking questions that extend children's plans and help them think through what they do. They encourage children to engage in a variety of key experiences that contribute to their own development.

- *Compared to other preschool programs*, preschool programs using the High/Scope model significantly contribute to the overall development of children from families of both low and middle socioeconomic status, particularly to the development of their initiative, social relations, and music and movement abilities. Use of the model helps improve the intellectual and social abilities of middle-class children with and without disabilities.

- *Compared to no preschool program*, preschool programs using the High/Scope model enable participants born in poverty to perform better intellectually at school entry and on achievement tests in the teen years, avoid classes for mental impairment, exhibit higher commitment to schooling, complete high school, achieve higher earnings and greater property wealth in adulthood, avoid welfare assistance as adults, engage in less crime, and experience half as many arrests.

- *Compared to a direct-instruction preschool curriculum*, preschool programs using the High/Scope model help participants born in poverty avoid emotional impairment in childhood and engage in fewer felonies and other acts of misconduct through age 23.

- Most of the 16,000+ early childhood teaching teams trained in the High/Scope model use its practices of room arrangement, daily routine, and key experiences; 45% of

[1]This paper is an update and adaptation of a proposal submitted to the U.S. Department of Education's Program Effectiveness Panel November 5, 1991.

them operate programs that are said to exemplify the High/Scope model. Teachers trained in the High/Scope model value and implement its various aspects more than comparison teachers without such training.

The High/Scope Model

The goal of the High/Scope preschool model is to enable young children to achieve greater school success and adult socioeconomic success and social responsibility by giving them opportunities to initiate and engage in learning activities that contribute to their cognitive, affective, and physical development. The intended audience is preschool-aged children and their families, in Head Start programs, public school prekindergartens and kindergartens, and day care centers and homes. The High/Scope model also has versions for parents and infants up to 2½ years old, for elementary school students 5 to 9 years old, and for adolescents.

The High/Scope preschool model is an open framework of educational ideas and practices based on the natural development of young children, originally developed by David Weikart and his colleagues in the 1960s for use in the High/Scope Perry preschool program (D. Weikart, Rogers, Adcock, & McClelland, 1971) and continuing its development today (M. Hohmann, 1983; M. Hohmann, Banet, & D. Weikart, 1979; M. Hohmann & D. Weikart, 1995, 2002; D. Weikart & Schweinhart, 1987, 1993, 2000). The model has been extended to include music and movement (P. Weikart, 1987, 1989, 1990; P. Weikart et al., 1988) and computers (Buckleitner, 1991; C. Hohmann, 1990). Evidence indicates that some 12,000 early childhood programs of all kinds throughout the U.S. and in other countries now use the High/Scope model (Larner & Schweinhart, 1991).

The High/Scope preschool model is a comprehensive method for contributing to the development of young children. While parents are encouraged to use the model in childrearing, it is geared towards use by early childhood teachers and caregivers. Its features include a daily routine that encourages children to learn actively, a set of key child development experiences, a child observation assessment technique, an emphasis on parent involvement, and a nationwide training network.

In order to create a setting in which children learn actively, *a consistent daily classroom routine* is maintained that varies only when the child has fair warning. This adherence to routine gives the child the control necessary to develop a sense of responsibility and to enjoy the experience of independence. The High/Scope model's daily routine emphasizes a plan-do-review sequence and has several other elements. The plan-do-review sequence is the central device that permits children opportunities to state their intentions about activities, while keeping the adult intimately involved.

Child progress in the High/Scope model is organized around a set *of key experiences* (Graves, 1989). While the plan-do-review sequence conducted within a consistent daily routine is the hallmark of the curriculum for the child, the key experiences are the central feature for the adult. Key experiences are a way of helping adults support and extend the child's self-designed

activity so that developmentally appropriate experiences and growth are constantly available to the child. They provide a way of thinking about curriculum that frees adults from the workbook of activities that characterize some early childhood programs or the scope and sequence charts that dominate the behavioral approaches. They are the framework an adult uses to observe each child.

The *High/Scope Child Observation Record* (COR; High/Scope Educational Research Foundation, 1987, 1991) measures the developmental status of young children 2½ to 6 years old as it may be affected by any type of developmentally appropriate early childhood education, whether the High/Scope model is used or not. To use the COR, over several months the adult writes brief notes describing episodes of young children's behavior in initiative, social relations, creative representation, music and movement, language and literacy, and logic and mathematics. The adult then uses these notes to classify the child's behavior on 30 5-level COR items representing these domains. The COR demonstrated its feasibility, reliability, and validity in a study just completed involving 64 teams of Head Start teachers and assistant teachers in southeastern Michigan (Schweinhart, McNair, Barnes, Larner, & Ma, 1993). Observers may also use the *High/Scope Program Implementation Profile* (High/Scope Educational Research Foundation, 1998) to rate how well adults implement the High/Scope model and maintain a high-quality program.

Parent involvement has always been one of the hallmarks of High/Scope programs (Frede, 1984; Diamondstone, 1980). As the High/Scope model developed, teachers made weekly or bi-weekly home visits to each participating family, focusing on the participating child and the mother, usually. The key to effective parent involvement is the dual nature of information flow. While the school and its staff have knowledge and training to provide to the family, the staff must also be trained by the parents about the child's and family's culture, language and goals.

Effective *training in the High/Scope model* has several key elements. Training has to be on-site and model-focused. It must be adapted to the actual work setting of the adults, physically and socially, the group of children involved (e.g., handicapped, bilingual), and the culture of the children so as to involve parents in some systematic way. Training sessions should be scheduled about once a month because participants need a period of time to think about the training experience, to put it into practice, and to share it with others. There has to be consistent delivery to the individual teacher or caregiver, maintained by observations and feedback. Over 1,000 early childhood leaders in the U.S. and other countries have successfully completed High/Scope's 7-week trainer certification program and are training adults in the High/Scope model.

Comparisons with Other Preschool Education Models

The High/Scope preschool model differs radically from much adult-directed instruction in that, like historic early childhood curricula such as those of Froebel and Montessori, it emphasizes the child as a self-initiating active learner. It differs from child-centered curricula by using cognitive-developmental theory to place primary emphasis on problem solving and independent thinking rather than social development. In the High/Scope model, adults continuously gauge the child's developmental status and present intellectual challenges intended to stretch the child's understanding. In traditional child-centered approaches, the child's active learning occurs because the adults stand out of the way and permit free play to take place, rather than encouraging it to happen.

The High/Scope preschool model embodies principles of development that should be evident in all early childhood programs, as espoused by the National Association for the Education of Young Children (NAEYC) and the Head Start Performance Standards. NAEYC's definition of developmentally appropriate practice rests on the idea that young children learn by doing and that teaching involves guidance and facilitation rather than being limited to lecture and verbal instruction (Bredekamp, 1987). Assessment is to be based on teachers' and parents' observations of children. The High/Scope model also fits into the Head Start Performance Standards that call for "a balanced daily program of child-initiated and adult-directed activities, including individual and small group activities" and provide for the development of each child's cognitive and language skills, self-control, creative self-expression, respect for the feelings and rights of others, and physical development using "various strategies including experimentation, inquiry, observation, play, and exploration."

User Requirements

Users of the High/Scope preschool model should be teachers and caregivers of children 2½ to 6 years old in Head Start, Even Start, and other prekindergartens, kindergartens, and child day care centers and homes. They can learn how to implement the curriculum by reading *Educating Young Children* (Hohmann & Weikart, 2002, 1995; Hohmann et al., 1979) and other High/Scope publications; attending workshops led by High/Scope staff; participating in High/Scope's 20-day Lead Teacher Training Program; or participating in a program led by trainers who have successfully completed High/Scope's 7-week Trainer Endorsement Program. The enrollment fee for High/Scope's Preschool Curriculum Course or Trainer Certification Course depends on the size of the training group. If a district or agency hires trained High/Scope teachers or a certified High/Scope trainer, there are no extra curriculum training costs. The High/Scope model requires no special equipment or materials, only those that are typical of most good nursery school programs. Operation costs also involve 9 follow-up days for each of the 20 adults (when school is not in session to avoid hiring substitutes).

Evidence

Findings supporting the validity of the High/Scope preschool model come from the High/Scope Training of Trainers Evaluation, the High/Scope Perry Preschool study, the High/Scope Preschool Curriculum Comparison study, the Head Start Family and Child Experiences Survey, and five other studies.

The High/Scope Training of Trainers Evaluation

Design. The High/Scope Training of Trainers Evaluation (Epstein, 1993, 1999) offers evidence for the effectiveness of the High/Scope Preschool Curriculum as practiced throughout the U.S. today. In this multi-study evaluation, we analyzed participant reports of 40 training projects; surveyed 203 certified High/Scope teacher trainers; surveyed and systematically observed the classrooms of 244 High/Scope and 122 comparison teachers; and systematically observed and tested 97 High/Scope and 103 comparison children in these classrooms.

High/Scope trainers identified 244 High/Scope teachers in Michigan, New York, and California who had been employed at their agencies for at least six months, had attended at least four High/Scope workshops, and had received three classroom visits. We selected 122 comparison teachers from lists of licensed child care centers and from agencies nominated by staff or trainers, with efforts to maintain proportions of agency types similar to those of the High/Scope teachers.

The 200 children in the child outcomes study attended preschool programs in 15 agencies in urban, suburban, and rural settings in southeastern Michigan and northwestern Ohio; 46% were in Head Start, 19% in public schools, and 35% in nonprofit centers. Children ranged in age from 2 to 6, average 4.3; 47% were male, 53% female; 43% were white, 32% black, 5% Hispanic, and 20% of other ethnic groups. Their fathers and their mothers averaged 13.7 years of schooling, identifying these parents as relatively well-educated on the average. In both groups, according to Bureau of Labor Statistics Codes, fathers' median occupational level was that of laborer, and mothers' median occupational level was that of service worker. Treatment groups did not significantly differ on any of these characteristics.

Findings. The *Registry trainer survey* found that half of High/Scope-certified trainers are in Head Start, 27% are in public schools, and 20% are in private child care agencies. Eighty-eight percent have completed college, including 37% with advanced degrees; 70% majored in early childhood. They have a median of 15 years of experience in early childhood. Seventy-eight percent of them are still in the same agency they were in when they received High/Scope endorsement; 85% have teacher-training responsibility, although they only spend an average of 8 hours a week training teachers. on the average, they make a large-group presentation for 36 staff annually, a hands-on workshop for 15 staff monthly, an observation-and-feedback classroom visit monthly, and an informal classroom visit weekly. The average teacher has attended one presentation and nine workshops and receives an observation-and-feedback visit and three informal visits per month.

All the teachers trained have tried out the High/Scope model's room arrangement and daily routine; 91% have tried out the key experiences; 63% have tried out the child observation techniques. Eighty-nine percent of them are comfortable and effective with room arrangement; 80%, with the daily routine; 56%, with the key experiences; and 37%, with the child observation techniques. Trainers say they would show visitors 45% of the classrooms of trained teachers as examples of the High/Scope preschool model, an average of 4 classrooms per trainer.

The High/Scope Registry lists 1,075 early childhood leaders in 34 states and 10 other countries who successfully completed High/Scope's 7-week Trainer Certification Program in the past decade. The average trainer has trained 15 teaching teams, so an estimated 16,125 early childhood teaching teams, including 29% of all Head Start staff, have received High/Scope model training from these trainers. Since trainers regard 45% of these classrooms as examples of the High/Scope model, they would nominate an estimated 7,256 early childhood classrooms throughout the U.S. and around the world as examples of the High/Scope model.

The *teacher survey* indicated that both High/Scope and comparison classrooms were of high quality. Both groups had at least ten years of teaching experience. Majorities of both groups had college degrees and early childhood degrees. Both groups had over 40 hours of inservice training annually. In both groups, teachers' annual salaries averaged about $20,000 a year, considerably higher than the $9,400 national average for child care teaching staff (Whitebook, Howes, & Phillips, 1989). The few group background differences seemed to compensate for each other: The High/Scope teachers had 12 years of teaching experience as compared to 10 for the comparison teachers (p=.014), but fewer High/Scope teachers had college degrees (63% vs. 79%, p=.004).

While High/Scope and comparison teachers did not differ significantly in their hours of inservice training per year, more High/Scope teachers received *inservice training* involving curriculum and teaching practices (91% vs 71%, $p < .001$), child assessment and evaluation (75% vs. 48%, $p < .001$), and professional issues (48% vs. 34%, $p = .016$). High/Scope teachers placed significantly more importance on the following topics than did comparison teachers: room arrangement ($p = .002$), children choosing their own activities ($p = .001$), adults participating in children's activities ($p = .001$), ongoing training for adults ($p = .001$), supervision and evaluation ($p = .005$), multicultural awareness ($p = .013$), and parent involvement ($p = .001$).

As shown in Figure 1, High/Scope and comparison *classrooms* differed significantly (at $p < .01$ unless otherwise noted) in classroom environment, daily routine, adult-child interaction ($p < .05$), and overall implementation, as assessed by the High/Scope Program Implementation Profile (High/Scope, 1989) adapted for generic use. High/Scope advantages in classroom environment involved dividing the classroom into activity areas, providing adequate work space in each area, arranging and labeling materials, providing enough materials in each area, providing real household and work objects, making materials accessible to children, and providing materials to promote awareness of cultural differences. High/Scope advantages in daily routine involved implementing a consistent daily routine, encouraging children to plan and review activities, and providing opportunities for planning, doing, and reviewing. High/Scope advantages in adult-child interaction differences involved observing and asking questions, participating in children's play, and balancing child and adult talk. Comparison classrooms had no significant advantages over High/Scope classrooms on this instrument. These findings indicate that the High/Scope classrooms were implementing the High/Scope Preschool Curriculum to a significantly greater extent than were the comparison classrooms.

Figure 1
Training Evaluation Program Outcomes

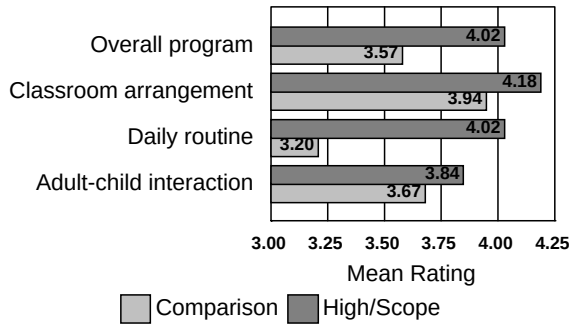
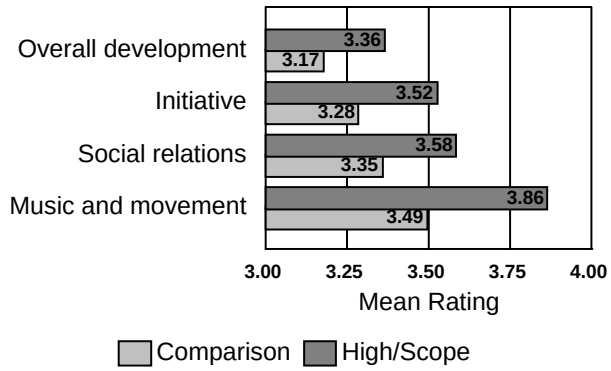


Figure 2
Training Evaluation Child Outcomes



As shown in Figure 2, the *children* in High/Scope programs significantly outperformed the children in comparison programs in initiative, social relations, music and movement, and overall child development. High/Scope advantages in initiative involved complex play and cooperating in program routines. High/Scope advantages in social relations involved relating to adults and social problem-solving. High/Scope advantages in music and movement included imitating movements to a steady beat.

Significant positive correlations of .39 to .52 were found between classroom daily routine (measuring children's opportunities to plan activities, carry out their ideas, and review what they had done each day) and children's overall development, specifically their development of creative representation, initiative, music and movement abilities, and language and literacy.

The High/Scope Perry Preschool Study

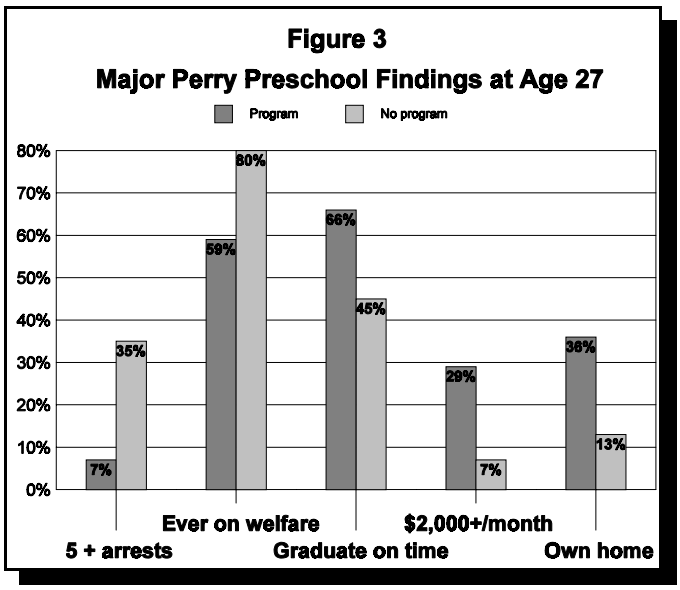
Design. The High/Scope Perry Preschool study identified young children living in poverty, randomly assigned them to a no-preschool group or a high-quality preschool program using the High/Scope Curriculum at ages 3 and 4, and collected data on them throughout their childhood, adolescence, and young adulthood. This study was first comprehensively reported by Weikart, Deloria, Lawser, and Wiegerink (1970); through age 10 by Weikart, Bond, and McNeil (1978); through age 15 by Schweinhart and Weikart (1980) with summaries elsewhere (Berrueta-Clement, Schweinhart, & Weikart, 1983; Schweinhart and Weikart, 1981a and b, 1983); through age 19 by Berrueta- Clement, Schweinhart, Barnett, Epstein, and Weikart (1984) with summaries elsewhere (Barnett, 1985; Farnsworth, Schweinhart, & Berrueta-Clement, 1985; Schweinhart, 1987; Schweinhart, Berrueta-Clement, Barnett, Epstein, & Weikart, 1985a and b; Schweinhart & Weikart, 1985, 1986, 1988a, 1991); and through age 27 by Schweinhart, Barnes, and Weikart, (1993) with summaries elsewhere (Schweinhart & Weikart, 1993, 1994; Barnett, 1993).

The longitudinal sample consists of 123 African-Americans originally from households in the attendance area of the Perry Elementary School in Ypsilanti, Michigan from 1962 to 1965. These children were invited to join the study sample because their families lived in poverty and because the children scored low on intelligence tests at study entry. The internal validity of the study rests on the random assignment of children in the study sample to groups. Each year, project staff randomly assigned pairs of children with similar intelligence-test scores either to the group receiving the High/Scope Curriculum or the group receiving no preschool program; and then switched them until the two groups had the same sex ratio and mean socioeconomic status. Groups did not differ significantly ($p < .05$) on background characteristics at program entry or at age 15, except for maternal employment at study entry only (9% in the High/Scope group, 31% in the no-preschool group). Statistical tests have detected no bias attributable to maternal employment or any other background characteristic.

In addition to children attending classes five mornings a week, the teachers worked in partnership with parents, visiting each mother and child at home once a week for up to 90 minutes to discuss the child's developmental progress and model curriculum activities. The classes for children ran 2.5 hours weekday mornings for 30 weeks a year. Data came from parent interviews when children were 3 and 15; intelligence and language tests annually at 3-10 and 14; achievement tests annually at 7-11, 14, and 19; teacher ratings annually at 6-9; participant interviews at 15, 19, and 27; and data from school, police, and social services records. The median percentage of missing cases across all data sources was under 5%, exceeding 25% on only four measures. The age-27 interview lacked only six cases.

Findings. Over the years, the evidence has accumulated that the High/Scope Perry Preschool program contributed substantially to the lives of participants – in educational performance, economic productivity, and social responsibility. As shown in Figure 3, by age 27 significantly fewer members of the program group than the no-program group experienced five or more arrests or received welfare assistance as adults; and significantly more of them

graduated from high school on time, earned $2,000 or more per month, or owned their own homes.



By age 27, the program group completed a significantly higher level of schooling than did the no-program group, with means of 11.9 versus 11.0 for the highest year of schooling (n = 123, p = .016); 71% of the program group but only 54% of the no-program group graduated from regular or adult high school or received General Educational Development certification (n = 123, p = .055). The finding of a preschool-program effect on the high school graduation rate is important because it is a gateway to other long-term effects and because it has been corroborated in three other studies of preschool-program effects (Fuerst & Fuerst, 1993; Gotts, 1989; Monroe & McDonald, 1981). In this study, this finding was solely due to females: 84% of program females but only 35% of no-program females graduated from high school or the equivalent (84% vs. 35%, n = 51, p = .000), whereas 61% of program males and 67% of no-program males did so (n = 72, p = .594). High school graduation was linked to commitment to schooling and school achievement for females but not for males (Schweinhart et al., 1993). Gender-program interaction effects were not found for test scores, earnings, or arrests.

Previous findings for educational performance indicate that, compared to the no-program group, the program group spent less time in programs for educable mental impairment; scored significantly higher on tests of educational performance at ages 4-7, 14, and 19; had a stronger commitment to schooling at age 19; and inspired their parents to have higher educational aspirations for them at age 15. The program group had only 39% as many years in programs for educable mental impairment as did the no-program group (group means of 1.1 years vs. 2.8 years, n = 112, p = .009). From ages 4 through 7, but not afterwards, the program group scored significantly better than the no-program group on the Stanford-Binet (Terman & Merrill, 1960) and similar tests of intellectual performance–an example of the infamous fade-out of the preschool program effect on intellectual performance. But not only did the program have a variety of other effects thereby negating the generality of an effect fade-out; it also had its strongest effect on school achievement when study participants were 14 years old, seven years after the cessation of the intellectual performance effect (mean raw scores on the California Achievement Test of 122.2 vs. 94.5, n = 95, p = .001; Tiegs & Clark, 1963). The program group scored significantly higher than the no-program group on general literacy as measured by the Adult Performance Level Survey (American College Testing Program, 1976) at age 19 but not at age 27. At age 19, the program group had a better attitude towards high school than the no-

program group (means of 22.3 vs. 18.9 on a 16-item scale, $n = 121$, $p = .026$). At age 15, 68% of the program group but only 40% of the no-program group reported that their schoolwork required home preparation ($n = 99$, $p = .010$). When children were 15 years old, 55% of program-group parents but only 35% of no-program group parents hoped their children would get a college degree ($n = 102$, $p = .027$).

Police and court records showed that program group members averaged 2.3 arrests, half as many as the 4.6 arrests averaged by no-program group members; only 7% of the program group had been arrested five or more times, as compared to 35% of the no-program group ($n = 123$, $p = .004$). Only 12% of the program males had been arrested five or more times, as compared to 49% of the no-program males, one fourth as many. Compared to the no-program group, the program group was cited at arrest for significantly fewer assault and/or battery misdemeanors (means of .05 vs. .48, $n = 123$, $p = .023$) and significantly fewer felonies involving dangerous drugs (means of .04 vs. .22, $n = 123$, $p = .029$). Program-group members spent significantly less time on probation than did no-program group members (12% vs. 26% ever on probation). Similarly, in the Syracuse University Family Development Research Program (Lally, Mangione, & Honig, 1988), a study of the effects of a program of high-quality day care and weekly home visits, significantly fewer program group than no-program group members had been placed on probation for delinquent offenses as teens (6% vs. 22%).

At age 27, 29% of the program group reported monthly earnings of $2,000 or more, significantly more than the 7% of the no-program group who reported earnings of this amount. The difference for males was better-paying jobs: 42% of program males as compared to only 6% of no-program males reported monthly earnings of $2,000 or more. The difference for females was in employment rates: 80% of program females but only 55% of no-program females were employed at the time of the age-27 interview. Significantly more of the program group than the no-program group owned their own homes (36% vs. 13%) and owned two cars (30% vs. 13%). According to welfare assistance records and interviews at age 27, significantly fewer program group members than no-program group members received welfare assistance as adults (59% vs. 80%); "welfare assistance" involved mostly Aid to Families with Dependent Children, food stamps, and General Assistance, with a few cases of protective services, Medicaid, and public housing.

Forty percent of program females, but only 8% of no-program females, were married at age 27. While 83% of the births to no-program females were out-of-wedlock, only 57% of the births to program females were out-of-wedlock –a 31% reduction. Although the same percentages of program males and no-program males were married (26%), the married program males were married an average of 6.2 years, but the married no-program males were married an average of only 3.3 years.

A benefit-cost analysis, conducted by W. Steven Barnett of Rutgers University, involved the estimation of the monetary value of the program and its effects, in constant dollars (updated to 2001 values here) discounted annually at 3%. Although the analysis included economic benefits to program participants, only the economic benefits to the public, as taxpayers and as

potential crime victims, are presented here. The average annual cost of the program was $8,287 per participant; 45 of the program participants attended for two years and 13 attended for one year. The discounted, weighted average cost of the program was $14,716 per participant. The average amount of economic benefits was $105,324 per participant, from the following sources

- Savings in schooling, due primarily to reduced need for special education services, and despite increased college costs for preschool-program participants
- The higher taxes paid by preschool-program participants because they had higher earnings
- Savings in welfare assistance
- Savings to the criminal justice system
- Savings to the potential victims of crimes never committed, based on in-court and out-of-court settlements for such crimes

The $105,324 in benefits divided by the $14,716 in cost per participant results in a benefit-cost ratio of $7.16 returned to the public for every dollar invested in the High/Scope Perry program. Four-fifths of the economic benefits were due to the savings to the criminal justice system and the potential crime victims.

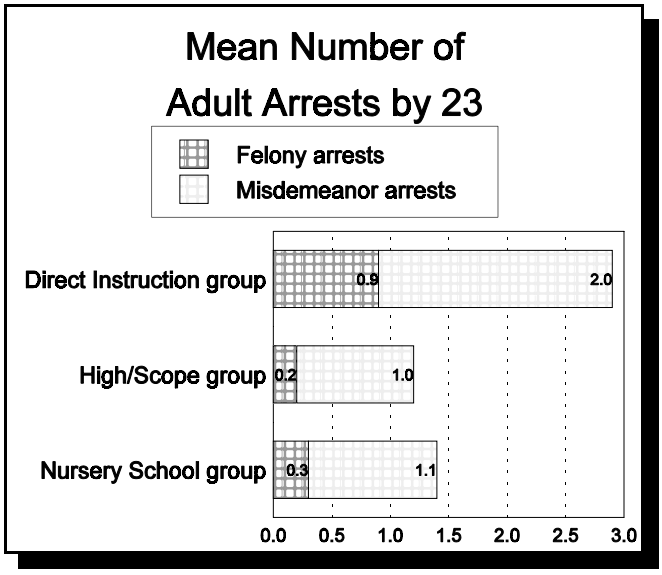
Ignoring the extraordinary financial return on investment – an illogical but nonetheless common thing to do – the $8,287 per child per year may seems high compared to what is typically spent on such programs. In 2001, Head Start spent $6,633 per child per year, four-fifths as much; and state prekindergarten programs usually do not spend as much as Head Start. Fully 83% of the cost per child was due to teaching staff. Teaching staff were paid public school teacher salaries with a 10% bonus for their involvement in a special project; and the ratio of teaching staff to children averaged 1 to 5.7. It is reasonable to believe that the ratio could have been increased to 1 teacher for every 8 children with no loss in quality or effectiveness. Had this been done, the cost per child per year would have been reduced to $5,904. Other efficiencies might have reduced the cost still lower. But an "efficiency" is a less expensive way to achieve the same results. Cost-cutting that strips away essentials and does not achieve the same results is false efficiency.

In a causal model based on the study's data (Schweinhart et al., 1993), statistically significant paths were identified from preschool experience and family socioeconomic status to intellectual performance after one preschool year. Intellectual performance after one preschool year predicted early elementary school motivation; both of them predicted years in programs for educable mental impairment (EMI); and intellectual performance after one preschool year and years in EMI programs predicted literacy at age 19. Early elementary school motivation also predicted highest year of schooling, which in turn predicted monthly earnings at age 27 and lifetime arrests. This model has three "gateway" variables: intellectual performance after one preschool year, early elementary school motivation, and highest year of schooling. However, psychological constructs like intellectual performance and motivation are not as time-specific as events like highest year of schooling; they are more like currents in a temporal flow. Thus, the immediate "gateway" outcomes of the High/Scope Perry Preschool program might best be identified as intellectual performance and educational motivation.

The High/Scope Preschool Curriculum Comparison Study

The High/Scope Preschool Curriculum Comparison Study assesses which of three theoretically distinct preschool curriculum models works best (Schweinhart & Weikart, 1988b, 1997a, 1997b; Schweinhart, Weikart, & Larner, 1986; Weikart, Epstein, Schweinhart, & Bond, 1978; Weikart & Schweinhart, 1986). Conducted by the High/Scope Educational Research Foundation since 1967, the study has followed the lives of 68 young people born in poverty who were randomly assigned at ages 3 and 4 to one of three groups, each experiencing a different curriculum model:

- In the **Direct Instruction model**, teachers followed a script to directly teach children academic skills, rewarding them for correct answers to the teacher's questions.
- In the **High/Scope model**, teachers set up the classroom and the daily routine so children could plan, do, and review their own activities and engage in key active learning experiences.
- In the **traditional Nursery School model**, teachers responded to children's self-initiated play in a loosely structured, socially supportive setting.



Program staff implemented the curriculum models independently and to high standards, in 2½-hour classes held 5 days a week and 1½-hour home visits every two weeks, when children were 3 and 4 years old. Except for the curriculum model, all aspects of the program were nearly identical. The findings presented here are corrected for differences in the gender makeup of the groups.

By age 23, the High/Scope and Nursery School groups had ten significant advantages over the Direct Instruction group – both groups had two advantages, the High/Scope group alone had another six advantages, and the Nursery School group alone had two additional advantages. However, the High/Scope and Nursery School groups, after controlling for gender makeup, did not differ significantly from each other on any outcome variable (Schweinhart & Weikart, 1997a and b).

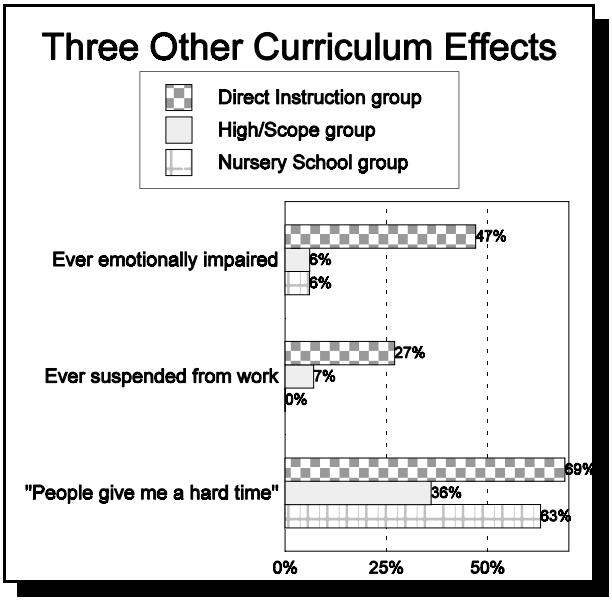
By age 23, the High/Scope and Nursery School groups both had two significant advantages over the Direct Instruction group:

- Only 6% of either group needed treatment for emotional impairment or disturbance during their schooling, as compared to 47% of the Direct Instruction group.

- 43% of the High/Scope group and 44% of the Nursery School group had ever done volunteer work, as compared to 11% of the Direct Instruction group.

The High/Scope group had six additional significant advantages over the Direct Instruction group:

- Only 10% had ever been arrested for a felony, as compared to 39% of the Direct Instruction group.
- None had ever been arrested for a property crime, as compared to 38% of the Direct Instruction group.
- 23% reported at age 15 that they had engaged in 10 or more acts of misconduct, as compared to 56% of the Direct Instruction group.
- 36% said that various kinds of people gave them a hard time, as compared to 69% of the Direct Instruction group.
- 31% of the group had married and were living with their spouses, as compared to none of the Direct Instruction group.
- 70% planned to graduate from college, as compared to 36% of the Direct Instruction group.



The Nursery School group had two additional significant advantages over the Direct Instruction group:

- Only 9% had been arrested for a felony at ages 22 - 23, as compared to 34% of the Direct Instruction group.
- None of them had ever been suspended from work, as compared to 27% of the Direct Instruction group.

Through age 10, the main finding of this study had been that the overall average IQ of the three groups rose 27 points from a borderline impairment level of 78 to a normal level of 105 after one year of their preschool program and subsequently settled in at an average of 95, still at the normal level. The only curriculum group difference through age 10 was measured as the preschool programs ended: the average IQ of the Direct Instruction group was significantly higher than the average IQ of the Nursery School group (103 vs. 93). Throughout their school years, curriculum groups did not differ significantly in school achievement, nor did their high school graduation rates differ significantly. The conclusion at that time was that well-implemented preschool curriculum models, regardless of their theoretical orientation, had similar effects on children's intellectual and academic performance. Time has proved otherwise.

Scripted teacher-directed instruction, touted by some as the surest path to school readiness, seems to purchase a temporary improvement in academic performance at the cost of a missed opportunity for long-term improvement

The Head Start Family and Child Experiences Survey (FACES)

The FACES study is an ongoing look at Head Start children and families, examining some 6,000 children who entered the program in fall 1997 and fall 2000. The study reported that 24% of Head Start classes used the High/Scope model (McKey, 2003). It found that these classrooms and Creative Curriculum classrooms had significantly higher average quality factor scores than programs that used other curricula. The quality factor score combined scores from the Early Childhood Environment Rating Scale – Revised and the Assessment Profile; quality factors scores were .27 for Creative Curriculum classrooms, .26 for High/Scope classrooms, and -.18 for all other classrooms. High/Scope and Creative Curriculum classrooms also had significantly higher language scores on the ECERS-R (McKey, 2003). The study also found that correcting for teacher and class characteristics, High/Scope classes contribute significantly to children's letter recognition skills, the only curriculum model for which such an association was found ($B = 3.70$, $p = .014$, Zill & Resnick, 2002).

Additional Studies

The High/Scope Preschool Curriculum was evaluated as part of the 1970-71 **Planned Variation Head Start study**, with a racial mix of poor children in Fort Walton Beach and Pensacola, Florida, and Greeley, Colorado. Ratings by High/Scope staff indicated that the programs attained average or better levels of curriculum implementation (Lukas, 1975). Smith (1975) reported results as follows: "one model clearly stands out as more effective than the others in raising Stanford-Binet test scores. The High/Scope Model appears to increase Stanford-Binet scores by an estimated 12-15 points, or .90 standard deviation. In other Planned Variation models and comparison classes, Stanford-Binet scores increased 3-4 points, or roughly .20 standard deviation."

In the **1975-77 High/Scope Demonstration Preschool Program study** in Ypsilanti, 16 handicapped and 22 non-handicapped middle-class children separately made statistically significant ($p<.05$, one-tailed) gains from fall to spring on all scales of the McCarthy Scales of Children's Abilities (McCarthy, 1972)–verbal, perceptual, quantitative, general cognitive, memory, and motor (handicapped children only). Handicapped children gained a average of 6.8 points (.8 standard deviation); non-handicapped children gained an average of 5.5 points (.7 standard deviation). In 1975-76, on an earlier version of the High/Scope Child Observation Record, handicapped and non-handicapped children made significant fall to spring gains on social development; complexity of plans, problem-solving, and representing with materials. In 1975-76, after correcting for child age, 28 children made significant gains in their abilities to express themselves and to hold conversations with adults, as assessed by the High/Scope Preschool Productive Language Assessment Tasks. Both the latter two measures demonstrated acceptable reliability and were strongly correlated with the McCarthy (High/Scope Educational Research Foundation, 1979).

In the **1981-82 High/Scope Preschool Curriculum study** at six sites (Old Bridge, NJ; Carrolton and Ypsilanti, MI; Stevens Point, De Pere, and Marshfield, WI), children in High/Scope classes, compared to children in comparison classes, showed greater gains (an average of .64 point per item) on 7 COR items: expressing plans, carrying out long-term projects, engaging in focused activities, social problem-solving, speaking, reading, and writing.

In a study of the effects of the **High/Scope Curriculum in South Carolina**, Frede and Barnett (1992) found that preschool programs throughout the state that were implementing the High/Scope Curriculum moderately to very well contributed more to children's school achievement at kindergarten and first grade entry than did programs with low implementation levels.

The **1994-95 Georgia Lead Teacher Training Project Evaluation** Shortly after Georgia initiated its statewide prekindergarten program in 1993, it engaged the High/Scope Foundation to work with the Georgia Academy to provide a four-week Lead Teacher Training Program to the State's new prekindergarten teaching staff, serving 1,800 participants between April 1994 and June 1995 (Epstein & Neill, 1995, 1996). Participants varied greatly in their schooling (26% with high school graduation or less, 24% with some college, 39% with a bachelor's degree, and 11% with masters' degrees) and job titles (18% teacher aides, 25% assistant teachers, 33% teachers, 22% head teachers, 2% directors). Participants reported that they had grown substantially in their knowledge of child development and teaching practices. They credited their training with positive program changes towards a more supportive learning environment, increased independence and problem solving by children, better home-school communication, and better teamwork among staff.

Interpretation and Discussion of Findings

The High/Scope preschool model was largely responsible for the success of the programs documented by these studies because it defined the day-to-day experience of children and adults. In addition, the programs were held to high standards of quality in staffing, staff planning and development, classroom operation, and parent involvement. The High/Scope model could not have been as successful if the staff-child ratio had exceeded 1 to 10; or if staff had not engaged in daily team planning and evaluation or had no commitment to the model; or if there had been no classes for children or no substantial parent involvement. These programs were successful not only because it implemented the High/Scope model, but also because they maintained standards of program quality that permitted the model to operate. This does not mean, however, that a preschool program must use the High/Scope model to achieve long-term benefits. Other studies of the effects of preschool programs used other education models and achieved some of the same results reported here (see Schweinhart et al., 1993).

The experimental designs used in the High/Scope Perry Preschool study and the High/Scope Preschool Curriculum Comparison study, essentially based on random assignment to groups, are the strongest scientific approach to eliminating rival hypotheses, such as apparent program effects actually due to maturational change. Further, neither study found statistically

significant group differences in background characteristics, either at program entry or years later. Another compelling argument is that findings over time hang together and make sense. A Perry Preschool causal model traces program effects from preschool experience and family socioeconomic status through intellectual performance after the preschool program to early elementary school motivation which joined with intellectual performance to affect years in programs for mental impairment; programs for mental impairment joined with intellectual performance to affect early adult literacy. Early elementary school motivation affected highest year of schooling which in turn affected adult monthly earnings positively and lifetime arrests negatively (Schweinhart et al., 1993).

The rapid technological change we have experienced in our lifetimes – for example, in computers, medicine, and national and international communication and travel – prompt us to worry that an educational innovation like the High/Scope preschool model may have changed since the days of the Perry Preschool Program. Fortunately, an early description by Weikart et al. (1971) reveals a curriculum essentially the same as today's version. This early curriculum was child-centered and emphasized active learning and conceptual learning rooted in active experience. It had the same daily routine, with its plan-do-review sequence, and the same kinds of classroom activity areas. Its learning domains – classification, seriation, spatial relations, temporal relations, language, and representation – are still in place and have been supplemented by social relations and music and movement. Today's key experiences developed from early ideas that specific activities should have developmental goals. The importance of curriculum supervision and the desirability of home visits have also remained constant.

Educational Significance of Findings

The evidence for the effectiveness and widespread use of the High/Scope preschool model is compelling. This model contributes to the development of a wide range of youngsters, especially their development of initiative, social relations, and music and movement ability. It helps at-risk participants achieve greater school success, socioeconomic success, and social responsibility. No other educational curriculum for children has demonstrated such a variety of important effects. Even though the High/Scope preschool model has been in existence for only three decades, 1,075 early childhood leaders are now certified to provide training in it, and it is used in over 7,000 early childhood classrooms throughout the U.S. and around the world.

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