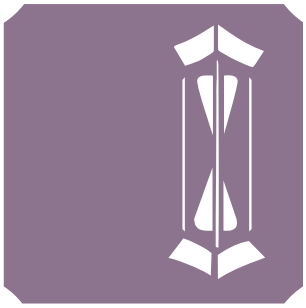

The High/Scope Perry Preschool Study Through Age 40

Summary, Conclusions, and Frequently Asked Questions

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The design and findings of the High/Scope Perry Preschool study and its conclusions are summarized here, along with answers to frequently asked questions, thereby taking advantage of the rich discussion that has surrounded the study over 4 decades. Complete information is available in the study's latest report, *Lifetime Effects: The High/Scope Perry Preschool Study Through Age 40*.[1]

Summary

The High/Scope Perry Preschool study is a scientific experiment that has identified both the short- and long-term effects of a high-quality preschool education program for young children living in poverty. From 1962 through 1967, David Weikart and his colleagues in the Ypsilanti, Michigan, school district operated the High/Scope Perry Preschool Program for young children to help them avoid school failure and related problems. They identified a sample of 123 low-income African-American children who were assessed to be at high risk of school failure and randomly assigned 58 of them to a program group that received a high-quality preschool program at ages 3 and 4 and 65 to another group that received no preschool program. Because of the random assignment strategy, children's preschool experience remains the best explanation for subsequent group differences in their performance over the years. Project staff collected data annually on both groups from ages 3 through 11 and again at ages 14, 15, 19, 27, and 40, with a missing data rate of only 6% across all measures. After each period of data collection, staff analyzed the information and wrote a comprehensive official report.

The study has produced eight monographs over the years. The findings of program effects through age 40 span the domains of education, economic performance, crime prevention, family relationships, and health. Key findings for education, economic performance, and crime prevention are summarized in Figure 1.

Education

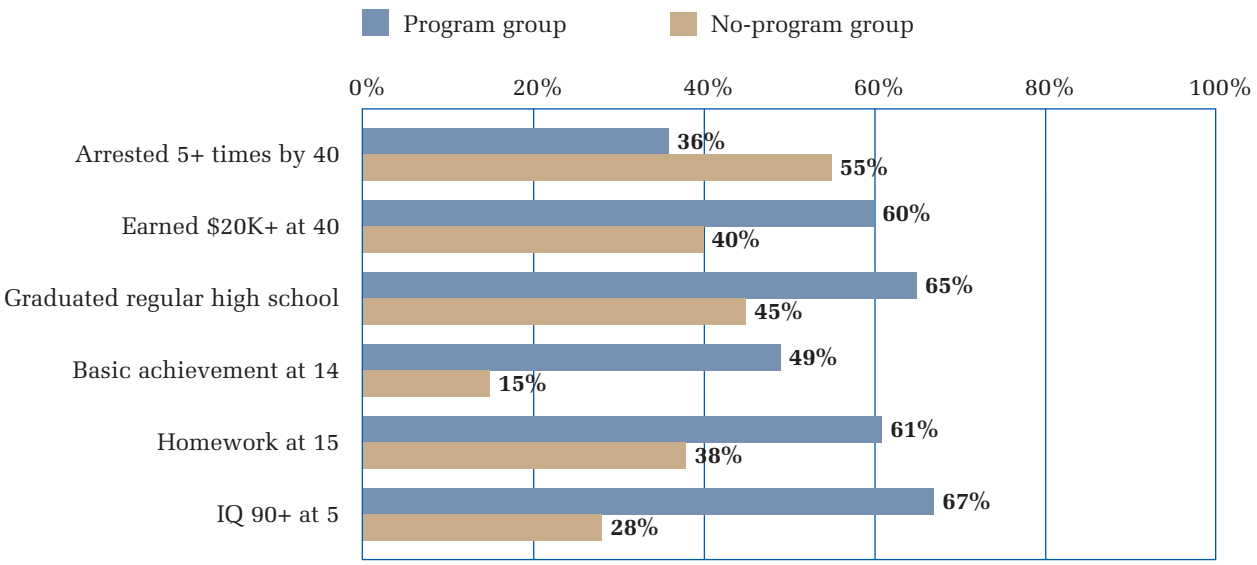
The program group significantly outperformed the no-program group on highest level of schooling completed (65% vs. 45% graduating from regular high school). Specifically, a much larger percentage of program than no-program females graduated from regular high school (84% vs. 32%). This difference was related to earlier differences between program and no-program females in the rates of treatment for mental impairment (8% vs. 36%) and grade repetition (21% vs. 41%). The program group also significantly outperformed the no-program group on various intellectual and language tests from their preschool years up to age 7; on school achievement tests at ages 9, 10, and 14; and on literacy tests at ages 19 and 27. At ages 15 and 19, the program group had significantly better attitudes toward school than the no-program group, and program-group parents had better attitudes toward their 15-year-old children's schooling than did no-program-group parents.

Economic Performance

Significantly more of the program group than the no-program group were employed at age 40 (76% vs. 62%), which continues the trend from age 27 (69% vs. 56%). At age 40, more program-group males than no-program group males were employed (70% vs. 50%), although at age 27 more program-group females than no-program-group females were employed (80% vs. 55%). The program group also had

[1] **The eighth monograph of the Perry Preschool study, *Lifetime Effects: The High/Scope Perry Preschool Study Through Age 40* by L. J. Schweinhart et al. (in press), will be published by High/Scope Press, 600 N. River St., Ypsilanti, MI 48198. Contact High/Scope at 1-800-40-PRESS or online at *www.highscope.org/welcome.asp* for publication dates and more information. E-mail Larry Schweinhart at *lschweinhart@highscope.org*.**

Figure 1
Major Findings: High/Scope Perry Preschool Study at 40



significantly higher median annual earnings than the no-program group at ages 27 and 40 ($12,000 vs. $10,000 at age 27 and $20,800 vs. $15,300 at age 40) and higher median monthly incomes at both ages ($1,020 vs. $700 at age 27 and $1,856 vs. $1,308 at age 40). There was a consistent tendency for a smaller percentage of the program group than the no-program group to receive regular income from family or friends, which was statistically significant at age 27 (2% vs. 16%).

Rather than paying rent, receiving a subsidy, living with others, or being incarcerated, the program group had significantly more stable dwelling arrangements at ages 27 and 40—that is, more of them owned their own homes (27% vs. 5% at age 27, 37% vs. 28% at age 40). At age 40, program males paid significantly more per month for their dwelling than did no-program males. Significantly more of the program group than the no-program group owned a car at age 40 (82% vs. 60%), especially males (80% vs. 50%), as they had at age 27 (73% vs. 59%). Indeed, at age 27, a significantly larger proportion of the program group than the no-program group had a second car (30% vs. 13%), especially males (36% vs. 15%). At age 40, significantly more of the program group than the no-program group had savings accounts (76% vs. 50%), especially males (73% vs. 36%).

While the evidence of less use of social services by the program group than by the no-program group is strikingly consistent across various indicators of social services usage, the evidence of a significant group difference in use of social services on individual indicators is equivocal. By age 40, fewer members of the program group than the no-program group reported receiving social services at some time in their lives (71% vs. 86%), but this difference was not significant. At age 27, significantly fewer of the program group than the no-program group reported receiving social services at some time in the previous 10 years (59% vs. 80%). Among the individual categories of social services, the only significant differences between the program group and the no-program group involved family counseling at ages 34 to 40 (13% vs. 24%) and General Assistance from ages 23 to 27 (10% vs. 23%).

Crime Prevention

The study presents strong evidence that the Perry Preschool program played a significant role in reducing overall arrests and arrests for violent crimes as well as property and drug crimes and subsequent prison or jail sentences over study participants' lifetimes up to age 40. The program group had significantly fewer lifetime arrests than the no-program group (36% vs. 55% arrested 5 or more times) and significantly fewer arrests for violent crimes (32% vs. 48% ever arrested), property crimes (36% vs. 58% ever arrested), and drug crimes (14% vs. 34% ever arrested). Significant group differences in various types of crime occurred at various times of life—crimes other than violent, property, or drug crimes in adolescence (3% vs. 11%); total arrests (7% vs. 29% with 5 or more arrests) and drug crimes (9% vs. 25%) in early adulthood; and violent crimes (14% vs. 31%) and property crimes (15% vs. 32%) in midlife. Consider also that by age 40, compared to the no-program group, the program group had significantly fewer arrests for property felonies (19% vs. 32% ever arrested), drug felonies (7% vs. 28%), violent misdemeanors (19% vs. 37%), and property misdemeanors (24% vs. 41%); significantly fewer arrests for property felonies by age 27 (14% vs. 26%); and significantly fewer arrests from ages 28 to 40 for violent felonies (2% vs. 12%), drug felonies (3% vs. 15%), and property misdemeanors (10% vs. 28%). By age 40, compared to the no-program group, the program group had participated in significantly fewer of 3 of the 78 types of crimes cited at arrest—dangerous drugs (3% vs. 20%), assault and/or battery (19% vs. 37%), and larceny under $100 (9% vs. 22%). These types of crimes had significant group differences by age 27; assault and/or battery also had a significant group difference at age 28 to 40. Moreover, the program group was sentenced to significantly fewer months in prison or jail by age 40 (28% vs. 52% ever sentenced), specifically from ages 28 to 40 (19% vs. 43%). Also, from ages 28 to 40, the program group was sentenced to significantly fewer months in prison for felonies (7% vs. 25%) and had served significantly fewer months in prison overall (9% vs. 21% ever served).

Health, Family, and Children

More program than no-program males raised their own children (57% vs. 30%) and had second marriages (29% vs. 8%). The two oldest children raised by program-group members did not differ significantly from the two oldest children raised by no-program group members in education, employment, arrests, or welfare status. At age 40, more of the program group than the no-program group said they were getting along very well with their families (75% vs. 64%). Fewer program than no-program males reported using sedatives, sleeping pills, or tranquilizers (17% vs. 43%), marijuana or hashish (48% vs. 71%), or heroin (0% vs. 9%).

Cost-Benefit Analysis

In constant 2000 dollars discounted at 3%, the economic return to society of the Perry Preschool program was $258,888 per participant on an investment of $15,166 per participant—$17.07 per dollar invested. Of that return, $195,621 went to the general public—$12.90 per dollar invested (as compared to $7.16 in the age-27 benefit-cost analysis), and $63,267 went to each participant—$4.17 per dollar invested. Of the public return (see Figure 2), 88% ($171,473) came from crime savings, 4% ($7,303) came from education savings, 7% ($14,078) came from increased taxes due to higher earnings, and 1% ($2,768) came from welfare savings. Preschool program participants earned 14%

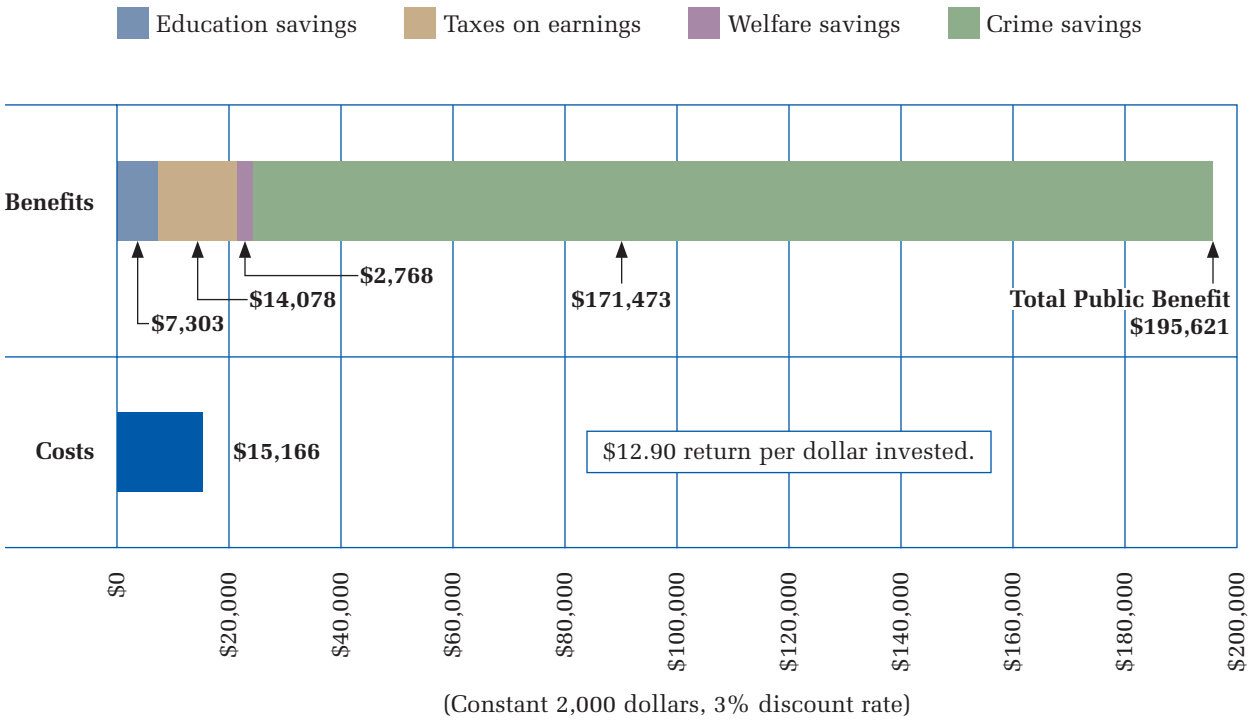
more per person than they would have otherwise—$156,490 more over their lifetimes in undiscounted 2000 dollars. Male program participants cost the public 41% less in crime costs per person—$732,894 less in undiscounted 2000 dollars over their lifetimes.

Interestingly, 93% of the public return was due to the performance of males and only 7% to females. This difference is due to the fact that compared to females, males committed substantially more crimes, but program males committed substantially fewer crimes than no-program males. This finding stands in stark contrast to the earlier finding that 84% of the program females, but only 32% of the no-program females, graduated from regular high school. Because education is itself an investment, it is not surprising that education cost more for program females, but it is disconcerting that the greater educational attainment of program than no-program females did not have a larger impact on their earnings, as compared to males for whom program and no-program high school graduation rates were not significantly different. The return to society on program investment due to earnings was $86,233 for females as compared to $70,093 for males, only 21% more. We can surmise that program females did not earn more because wage growth for low-skilled jobs has been very low in recent decades; not all females participate in the labor market; and we omitted the benefits of education on household production and family behaviors.

The cost-benefit analysis is reasonably conservative in two respects. One is the omission of benefits that are hard to monetize, such as family, health, and wealth benefits. The other is the conservative assumptions about the earnings profiles and the unit costs of crimes; where multiple data sources were available, we typically chose the source that yielded smaller differences between program and no-program groups.

Figure 2

High/Scope Perry Preschool Program Public Costs and Benefits



(Constant 2,000 dollars, 3% discount rate)

Path Model

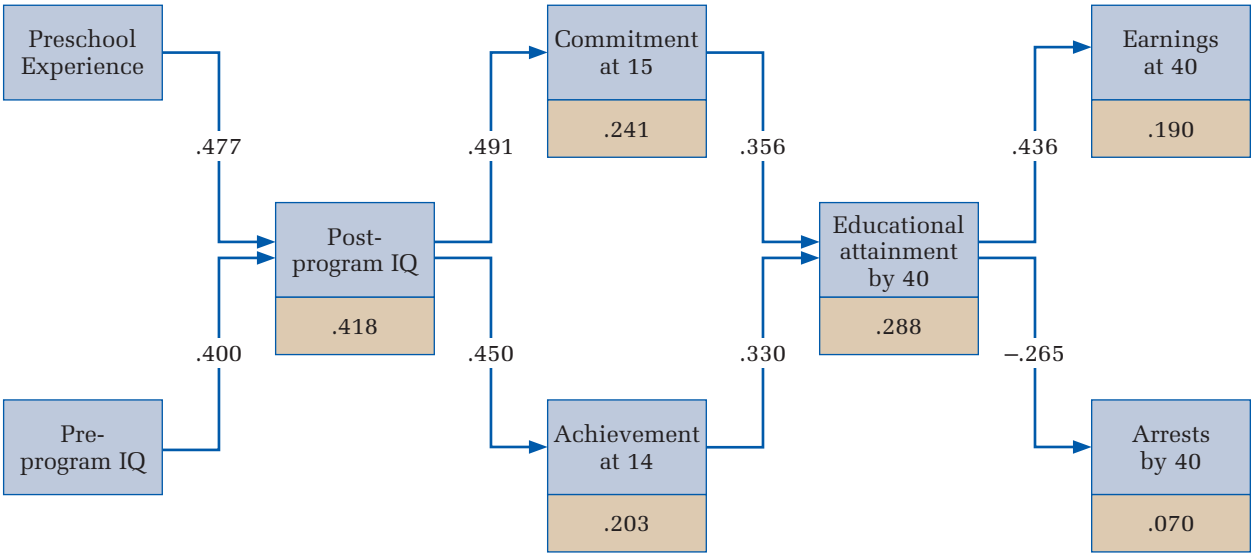
A path model of the study (see Figure 3) suggests how preschool experience affects participants' success at age 40. Beginning with preschool experience and children's preprogram intellectual performance, the model traces cause-effect paths to children's postprogram intellectual performance, then to their school achievement and commitment to schooling, then to their educational attainment, then to their adult earnings and lifetime arrests.

Conclusions

The major conclusion of this midlife phase of the Perry Preschool research study is that **high-quality preschool programs for young children living in poverty contribute to their intellectual and social development in childhood and their school success, economic performance, and reduced commission of crime in adulthood.** This study confirms that these findings extend not only to young adults, but also to adults in midlife. It confirms that the long-term effects are lifetime effects. The Perry Preschool study indicates that the return to the public on its initial investment in such programs is not only substantial but larger than previously estimated.

The study draws these conclusions about a 2-year preschool education program for 3- and 4-year-olds living in low-income families. Teachers had bachelor's degrees and certification in education, and each served 5–6 children. They used the High/Scope educational model in daily 2½-hour classes and visited families weekly. In this model, teachers arranged the classroom and daily schedule to support children's self-initiated learning activities, provided both small-group and large-group activities, and helped children

Figure 3
A Model of the Paths from Preschool Experience to Success at 40



Note. Path coefficients are standardized regression weights, all statistically significant at $p < .01$; coefficients in each box are squared multiple correlations.

engage in key experiences in child development. Teachers studied and received regular training and support in their use of this educational model.

The most basic implication of this study is that all young children living in low-income families should have access to preschool programs that have features that are reasonably similar to those of the High/Scope Perry Preschool program. Findings from this long-term study and others reviewed in this report have motivated policymakers to invest more in preschool programs. But because policymakers practice the art of political compromise, these programs have seldom met the standard of reasonable similarity identified here. Recognizing this problem, more recent efforts, such as the Abbott court decision in New Jersey and the recent ballot initiative in Florida, have sought to require key program standards from the beginning of a program. These are hopeful signs and models for the future.

The High/Scope Perry Preschool study serves as a symbol of what government programs can achieve. The High/Scope Perry Preschool study also offers a challenge, a kind of policy gauntlet, for decision makers at local, state, and national levels. It demonstrates what can be done, and the challenge is to do it. The High/Scope Perry Preschool, the Abecedarian, and the Chicago programs described in the latest Perry Preschool report all have significant benefits. Though they illuminate different aspects of the question of lasting effects of preschool education, they all reflect the same challenge of providing high-quality preschool programs that include low-income children so that these children get a fair chance to achieve their potential and contribute meaningfully to their families and to society.

Q & A

Because the long-term High/Scope Perry Preschool study is well known and respected and stands at the fulcrum of decisions about public investment in early childhood programs, it has attracted many questions over the years that deserve thoughtful answers. Many of the questions and answers that follow involve the study's internal and external validity. Its internal validity is the extent to which its two groups are the result of simple random assignment and thus accurately reflect the impact of a good preschool education experience against the impact of no preschool education experience. Its external validity is the extent to which its study participants and treatment resemble the children and programs to which it is generalized.

Don't the departures from random assignment challenge the internal validity of the findings?

The internal validity of the High/Scope Perry Preschool study is very strong because its design is based on random assignment of children to program and no-program groups. For this very reason, its departures from strict random assignment have received intense scrutiny. These departures and their effects on major outcomes are examined at length in the age 40 report, *Lifetime Effects* (Schweinhart et al., in press). First, the outcome analyses in this monograph are adjusted for seven background covariates: five that had statistically significant relationships with preschool experience and one or more of the key outcome variables; one (mother's employment) that had a statistically significant relationship with preschool experience due to the random-assignment departure of assigning some children of employed mothers to the no-program group; and another variable (father at home) that had a nearly statistically significant relationship with monthly earnings at age 40 as well as general policy relevance. Second, because younger siblings were assigned to the same group as their older sibling, we analyzed major outcomes with subsamples that included only one sibling per family. Third, because the sample consisted of five classes of children, we analyzed major outcomes using classes as covariates. The findings for the major outcomes were the same regardless of which of these analyses were used.

Isn't the sample size too small to generate scientific confidence in the findings?

Statistical significance testing takes sample size into account. To achieve statistical significance, group differences must become larger in magnitude as sample sizes become smaller. Indeed, a problem with very large samples is that educationally trivial group differences can achieve statistical significance. If the High/Scope Perry Preschool study sample were truly too small, none of its findings would have achieved statistical significance, and it would never have become influential.

How can the study be generalized to other programs?

Because few programs are evaluated by longitudinal studies involving random assignment of study participants, it is desirable to be able to generalize the results of such studies as broadly as possible. The external validity or generalizability of the study findings extends to those programs that are reasonably

similar to the High/Scope Perry Preschool program. *A reasonably similar program is a preschool education program run by teachers with bachelor's degrees and certification in education, each serving up to 8 children living in low-income families. The program runs 2 school years for children who are 3 and 4 years of age with daily classes of 2½ hours or more, uses the High/Scope model or a similar participatory education approach, and has teachers visiting families at least every two weeks or scheduling regular parent events.* Each term in this treatment definition is examined further below.

- *A preschool education program*—a care and education program that contributes to young children's development.
- *Run by teachers with bachelor's degrees and certification in education*—The teachers in the Perry Preschool study were certified to teach in elementary, early childhood, and special education; of all their education, the early childhood training was most relevant to their classroom practices.
- *Each serving up to 8 children*—The Perry Preschool program had 4 teachers for 20 to 25 children, typical for special education classes (Kakalik, Furry, Thomas, & Carney, 1981). The equally successful classrooms in the subsequent High/Scope Preschool Curriculum Comparison study (Schweinhart & Weikart, 1997a, 1997b) had 2 teachers for 16 children, a ratio of 1 to 8. In general practice, High/Scope preschool classrooms appear to run successfully with 2 adults and up to 20 children (Epstein, 1993).
- *Children living in low-income families*—Children were selected for the study because their parents had low educational attainment (high school graduation or less), low occupational status (unemployed or unskilled), and their homes had fewer than 3 rooms per person. These families were of lower socioeconomic status than most U.S. residents at that time. The study does not suggest a sharp cutoff point for program eligibility.
- *Offering 2 school years at 3 and 4 years of age*—The study presents no evidence that the program would have had similar effects if it had served children at earlier (infancy–3 years) or later ages (elementary school years). Evidence shows children should attend a similar program for 2 school years (October through May for the Perry Preschool group); one year is enough only if one accepts a generalization from the 13 program-group members in the initial class, who attended the program for 1 school year and experienced the same effects as did the 45 program-group members in the other classes, who attended the program for 2 school years. This study, by itself, offers only weak evidence to support the limitation of many state preschool programs to only serving 4-year-old children. The better argument for this policy is the inequity inherent in serving some children for 2 school years when, as a result, other eligible children are not served at all, because the 3-year-olds served have taken the places of additional 4-year-olds.
- *With daily classes of 2½ hours or more*—The program runs at least 2½ hours a day 5 days a week. A few minutes less should not matter, nor should hours more: Even a full, 9-hour-a-day program, if it meets all the other standards of quality, should produce similar if not greater effects.
- *Using the High/Scope educational model or a similar participatory education approach*—The High/Scope educational model was developed and used in the program (Weikart, Deloria, Lawser, & Wiegerink, 1970; Hohmann, Banet, & Weikart, 1979; Hohmann & Weikart,

1995, 2002). In this model, the classroom is arranged and the day is scheduled to support children's self-initiated learning activities along with small-group and large-group activities. Teachers help children as they plan, carry out, and review their own activities. Teachers plan ways to engage children in numerous key experiences in child development covering the areas of personal initiative, social relations, creative representation, movement and music, logic and mathematics, and language and literacy. Teachers study and receive regular training in the educational model and receive support in its use from a supervisor who knows the model and assists in its implementation.

- *With teachers visiting families at least every 2 weeks*—The program included weekly home visits, which might be reduced to every 2 weeks, or changed to an equivalent form of substantial outreach to parents, such as parent group meetings in which staff acknowledge and support parents as partners in the education of their children and model active-learning principles for them. The key is not to require meetings, but rather to ensure that the basic message and lessons of a strong partnership with parents are clearly and repeatedly communicated. Sometimes, issues including the safety of home visitors in the community call for creative solutions to this challenge.

The study provides scientific evidence that its findings apply to reasonably similar programs. Program similarities, however, are defined somewhat more liberally than the actual program characteristics to allow for necessary and reasonable variations—serving up to 8 children rather than 5 or 6, serving children living in low-income families rather than only families living in poverty, home visits every 2 weeks rather than every week (or regular parent meetings and events). These characteristics are structural, that is to say, they are relatively easy to name, count, legislate, regulate, and monitor. One of them, use of the High/Scope educational model, is structural in its simplest meaning, but encompasses process characteristics as well, that is, what actually happens in the classroom, such as the nature of teacher-child interaction. Programs with similar features, regardless of model used, can expect similar results. In curriculum provision, it's not what you say you do but what you actually do that counts.

Were the findings due to curriculum or other aspects of the program?

The High/Scope Preschool Curriculum Comparison study (Schweinhart & Weikart, 1997a, 1997b), which immediately followed the High/Scope Perry Preschool study, suggests that the curriculum had a lot to do with the findings. The comparison study found that young people born in poverty experienced fewer emotional problems and felony arrests if they attended a preschool program that used the High/Scope model or a traditional Nursery School model rather than a Direct Instruction model.

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.[2]
- In the **High/Scope model,** teachers set up the classroom and the daily routine so children could plan, do, and review

[2] **This 1960s model has undergone subsequent development and current versions differ from the one in this study.**

their own activities and engage in active learning key experiences in child development individually, in small groups, and in whole-class groups.

- 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 conducted 1½-hour home visits every 2 weeks, when children were 3 and 4 years old. Except for the curriculum model, all aspects of the programs 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 10 significant advantages over the Direct Instruction group, and the High/Scope and Nursery School groups did not differ significantly from each other on any outcome variable (Schweinhart & Weikart, 1997b). The High/Scope and Nursery School groups both had two significant advantages over the Direct Instruction group at age 23:

- Only 6% of either group needed treatment for emotional impairment or disturbance during their schooling, as compared to 47% of the Direct Instruction group.
- More of the High/Scope group (43%) and the Nursery School group (44%) had done volunteer work, as compared to only 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 of the High/Scope group had ever been arrested for a property crime, as compared to 38% of the Direct Instruction group.
- At age 15, 23% of the High/Scope group reported that they had engaged in 10 or more acts of misconduct, as compared to 56% of the Direct Instruction group.
- Fewer of the High/Scope group (36%) said that various kinds of people gave them a hard time, as compared to 69% of the Direct Instruction group.
- With regard to marriage, 31% of the High/Scope group had married and were living with their spouses, as compared to none of the Direct Instruction group.
- Of the High/Scope 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% of the Nursery School group had been arrested for a felony at ages 22–23, as compared to 34% of the Direct Instruction group.
- None of the Nursery School group had ever been suspended from work, as compared to 27% of the Direct Instruction group.

Through age 10, the main finding of the Preschool Curriculum Comparison study was 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 1 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. However, time has proved otherwise. Tightly 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 in social behavior.

Does the High/Scope Perry Preschool study apply to Head Start and state preschool programs?

Because of the demand for knowledge of the lasting benefits of preschool education programs, there has been a tendency to generalize the High/Scope Perry Preschool study's findings beyond reasonably similar programs. Several of these generalizations deserve discussion here.

The most common generalizations of the High/Scope Perry Preschool study findings relate to the national Head Start program. Indeed, news reports have often imprecisely referred to the Perry Preschool Program study as a Head Start program (see discussion by Woodhead, 1988). News reporters would argue that this conflation of terms is a useful convenience to simplify the story in that both the Perry Preschool program and Head Start serve young children living in poverty and began in the U.S. in the 1960s. Nonetheless, Head Start, as nationally defined by its Program Performance Standards (U. S. Administration for Children and Families, 2001), clearly does not meet the standard of reasonable similarity with the Perry Preschool program for generalization purposes:

- Most Head Start teachers do not have a bachelor's degree. In 2000, only 28% of Head Start teachers had a bachelor's degree, while 19% had an associate's degree, 32% had some college experience but no degree, and 74% had a Child Development Associate credential or state-awarded preschool certificate (Zill et al., 2003). Teacher salaries in Head Start average $21,000—about half of the average of $43,000 for public school teacher salaries (National Institute for Early Education Research, 2003)—while teacher salaries in the High/Scope Perry Preschool program were at public school teacher salary levels at the time of the study, with a 10% bonus for participation in a special program.
- Head Start serves most but not all participating children for 2 or more program years. In FY 2003, for example, 34% of Head Start children were 3 years old, 53% were 4 years old, 5% were 5 or older, and 8% were under 3 (U. S. Administration for Children and Families, 2004b). In FY 2002, 36% of Head Start children were 3 years old, and it is reasonable to assume that these children continued in Head Start as 4-year-olds in FY 2003, so that most of the 4-year-olds in Head Start in FY 2003 (36% among the 53%) had been in the program the previous year. We can therefore surmise that in FY 2003 only 17% of Head Start 4-year-olds attended the program for only one year.
- Only 20% of Head Start programs report using the High/Scope educational model, while 39% report using the Creative Curriculum model, and 41% report using some other curriculum approach (Zill et al., 2003). The Creative Curriculum model has goals similar to the High/Scope model, but emphasizes different practices to attain these goals (Dodge, Colker, & Heroman, 2002).

- Head Start Program Performance Standards require only 2 home visits a year.

The Head Start Family and Child Experiences Survey (FACES) found that children gained 4 points in standard scores on the Peabody Picture Vocabulary Test during their Head Start year (Zill et al., 2003). Children in the High/Scope Perry Preschool study gained 8 points in their first year and a total of 14 points in 2 years. In other words, on average Head Start programs are achieving some success, but could be doing more to help children reach their potential.

Forty states have now invested in state preschool programs for young children living in poverty or otherwise at special risk of school failure (Barnett, Robin, Hustedt, & Schulman, 2003; National Prekindergarten Center, 2003). As these programs have developed, especially in the past 2 decades, policymakers have paid attention to program quality, thereby acknowledging the argument from the High/Scope Perry Preschool study and similar studies that only high-quality preschool programs for poor children are known to have long-term benefits for participants and a strong return on public investment. However, politics is the art of compromise, and the high quality of the High/Scope Perry Preschool program (as defined earlier) is seldom if ever achieved in state preschool programs (Gilliam & Zigler, 2004).

The simple scientific conclusion is that the findings of the High/Scope Perry Preschool study do not apply to typical Head Start or state preschool programs, but may apply to exemplary ones and could apply to typical ones if policymakers and administrators chose to implement the standards of high quality described here. It is important to get this point just right, neither overstating nor understating the Perry Preschool program study's generalizability. While the findings do not apply to typical Head Start programs as they exist today, it is not because the program studied was an unattainable ideal run by super-educators, the likes of which will never be seen again. To borrow a phrase from Lisbeth Schorr, the programs and findings presented in the Perry Preschool study monographs are completely and realistically "within our reach" (Schorr, 1989, p. i.).

Does the study apply to child care programs?

Several studies of U.S. child care centers have concluded that their quality is unacceptably low (Cost, Quality, & Child Outcomes Study Team, 1995; Whitebook, Phillips, & Howes, 1993). In terms of the quality criteria listed here, child care programs have certain seemingly insurmountable financial problems. Unlike Head Start and state preschool programs, which are fully paid for by the government, an estimated 60% of child care costs are borne by the participating families (Stoney & Greenberg, 1996). While child care programs can certainly aspire to be genuine preschool education programs and maintain a ratio of no more than 8 children per teacher, the need for child care includes, but also extends well beyond, 3- and 4-year-old children. By definition, these programs could serve all children whose parents are employed or in school outside the home, a definition that includes but is not limited to low-income children.

For the most part, the average pay for child care teachers is less than half that of public school teachers ($43,000). The average annual wage for child care workers in 2002 was $23,820 in local-government programs, $18,279 in state and federal programs, $15,155 in private programs, and $11,507 for self-employed child care workers (National Child Care Information Center, 2004a). It should come as no surprise that only one state, Rhode Island, requires child care teachers to have bachelor's degrees, and only 15 states have any educational requirements at all for child care teachers (National Child Care Information Center, 2004b).

The High/Scope educational model widely influences teaching practices in child care programs; but the meager funds available for training in child care programs mean that few providers actually receive much training in the High/Scope model. Daily classes certainly do run more than 2½ hours, and there is no reason to think that their additional duration per se prevents program staff from delivering as much or more quality education as briefer programs. Teachers do not provide regular home visits to families, but that would not be the correct standard to use in these cases. Rather, the child care programs' challenge is to develop teacher-parent relationships of mutual respect and understanding that are of the same quality as those that result from biweekly home visits or regularly scheduled parent meetings.

Does the study apply to open-enrollment preschool programs?

The relatively new open enrollment preschool programs have also been linked to the High/Scope Perry Preschool study findings. These programs are sometimes called universal and other than age and residence requirements, have no demographic restrictions (such as poverty) on program enrollment. The findings of the High/Scope Perry Preschool study and similar studies would apply only to children served by these programs who are reasonably similar to children living in poverty or otherwise at risk of school failure.

It is important to keep in mind, however, that poverty is not an inherent trait of children but is rather a socioeconomic extreme of settings in which they live. A good preschool program offers a productive early childhood educational environment, while early childhood poverty by and large offers an unproductive early childhood educational environment. So the longitudinal preschool studies provide evidence that the degree of educational productivity in early childhood settings has a large influence on young children's subsequent lives. All young children spend their time in settings that vary in their educational productivity, so the findings apply in this way to all children. But if it is a setting's educational productivity that matters, early childhood programs are not inherently more educationally productive than children's homes, nor are children's homes inherently more productive than early childhood programs. Young children from educationally productive homes who attend less educationally productive early childhood programs would suffer negative effects on their development. The survey of existing preschool settings in the previous paragraphs gives reason to be seriously concerned about this reverse application of the findings of the longitudinal preschool program studies.

Does the study apply to early childhood programs in other countries?

As the characteristics of a country's children and programs diverge from the characteristics of the Perry Preschool study's children and programs, applications become less certain. Generalization of the study to other industrialized countries, such as Great Britain, seems probable, but generalization of the study to less industrialized countries requires greater caution. The challenge of such applications becomes clear as one considers the practical ranges of outcome variables in various countries. Improving the high school graduation rate, for example, is a reasonable goal in industrialized countries, but not in some less industrialized countries. One might reasonably argue, however, that a high-quality preschool program would improve children's educational performance in less industrialized countries, but that this effect would be expressed in ways other than an improved high school graduation rate. For example, the

Turkish Early Enrichment Project (Kagitcibasi, Sunar, & Bekman, 2001) found evidence of long-term program effects on children's educational success and social adjustment in a very different culture. Cost-benefit analysis is particularly sensitive to such differences between countries.

Did the Perry Preschool program occur too long ago to apply to current programs?

The Perry Preschool Project operated from 1962 through 1967. The rapid pace of technological change in modern society—including the advent of widespread use of computers, worldwide electronic communication, and increased transportation, among other advances—is unprecedented in history. But there is no compelling reason to assume that this rapid pace of technological change would alter basic principles of human behavior and education. Throughout most of the history of the world, few would have regarded half a century or even a century as a sufficient amount of time to permit profound changes in traditions, let alone profound changes in human nature that would affect how children respond to an educational program. Indeed, the education and social sciences in general are quests for timeless principles, not for principles that must be rediscovered once or twice a decade. The argument that the finding of such studies have limited applicability to the present because of rapid change is quite similar to a belief that because each human experience is unique, scientific generalization is impossible. A current manifestation of this belief is the postmodernism movement (Dahlberg, Moss, & Pence, 1999). Postmodernism is essentially a nonscientific movement, even antiscientific. In contrast, the scientific approach adopted in the High/Scope Perry Preschool study is the logical application of the principle that similar experiences have similar effects on human development—what might be called the principle of external validity or generalizability.

Does the evidence of the effectiveness of the High/Scope educational model come only from programs run decades ago?

No. The Head Start FACES study (Zill et al., 2003) is a nationally representative study of 2,800 children who entered Head Start in fall 2000. It found that 4-year-olds in Head Start classes that used High/Scope improved from fall to spring in letter and word identification skills and cooperative classroom behavior and decreased their behavior problems:

- On a scale of letter and word recognition, children in High/Scope classes registered a highly significant gain ($p < .01$) of 12.6 scale points, significantly more ($p < .05$) than children in classes using Creative Curriculum or other curricula.
- On teacher ratings of cooperative classroom behavior, children in High/Scope classes experienced a highly significant gain ($p < .01$) of half a standard deviation, significantly more ($p < .05$) than children in classes using Creative Curriculum or other curricula.
- On teacher ratings of total behavior problems, particularly problems involving hyperactive behavior, children in High/Scope classes dropped significantly ($p < .05$) during the year, significantly more ($p < .05$) than did children in classes using Creative Curriculum or other curricula.

Of the 91% of Head Start teachers who used one or more curriculum models, 39% used Creative Curriculum, 20% used High/Scope, and 41% used some other curriculum,

such as High Reach, Scholastic, or Los Cantos Los Ni§os. The quality of Creative Curriculum and High/Scope classes was significantly higher than the quality of classes that used other curricula, particularly with respect to language. On the 7-point Early Childhood Environment Rating Scale (Harms, Clifford, & Cryer, 1998), with 5 identified as good, High/Scope classes averaged 5.04, Creative Curriculum classes averaged 5.02, and classes using other curricula averaged 4.55. On its language items, average scores were slightly higher, but the differences were about the same. On a quality composite, the average scores for High/Scope and Creative Curriculum were nearly half a standard deviation higher than the average scores for other curricula—clearly an educationally meaningful difference.

The High/Scope Training for Quality study (Epstein, 1993) also offers evidence for the effectiveness of the High/Scope preschool model as practiced throughout the U.S. Half of High/Scope-certified trainers in the study were in Head Start, 27% were in public schools, and 20% were in private child care agencies. They had a median 15 years of early childhood experience, 88% had completed college, and 85% had teacher-training responsibility—spending an average of 8 hours a week training teachers. At the time of the study, the High/Scope Registry listed 1,075 early childhood leaders in 34 states and 10 other countries who had successfully completed High/Scope's 7-week trainer certification program in the past decade. The average trainer had trained 15 teaching teams, so an estimated 16,125 teaching teams, including 29% of all Head Start staff, had 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. High/Scope classrooms were rated significantly better than comparison classrooms in terms of classroom environment, daily routine, adult-child interaction, and overall implementation. The children in High/Scope programs significantly outperformed the children in comparison programs in initiative, social relations, music and movement, and overall child development.

Didn't the High/Scope Perry Preschool program achieve a level of quality that cannot be duplicated in ordinary preschool programs?

This criticism is rooted in the fact that the High/Scope Perry Preschool program paid teachers public school salaries and added a 10% bonus because the program was a special one. There is no reason to think that such pay would have attracted teachers who were substantially better than other public school teachers, and in fact the teachers who worked in the program were hired locally by ordinary search and hiring procedures. Nevertheless, current child care (and Head Start) teacher salaries average only about half as much as average public school teacher salaries (National Institute for Early Education Research, 2003). More and more preschool programs, however, are hiring teachers at public school salaries. It has also been suggested that the quality of the Perry Preschool program was due, in part, to the charismatic leadership of the program's director, David Weikart (Schorr, 1989). While Weikart's leadership was certainly essential to the program's success, there is every reason to believe that any dedicated preschool program director could exercise similar leadership with respect to assuring the quality of the programs under his or her supervision. Such leaders insist on program quality and fidelity to a validated educational model and strive to provide program staff with all the resources and encouragement they need to achieve them, including adequate salaries.

Although the program had a strong effect on children's intellectual performance, didn't it fade out over time?

It is true that the High/Scope Perry Preschool program had a statistically significant effect on children's IQs during and up to a year after the program, but not after that. This pattern has been found in numerous other studies, such as those in the Consortium for Longitudinal Studies (1983). The pattern raises two questions: How far does it generalize, and what does it mean?

For some time, the pattern of children's intellectual performance found in this study was taken to represent all outcomes of this and similar programs. It was concluded that the program had strong effects that faded out over time. However, all of the subsequent findings of program effects in this study (effects on school achievement, high school graduation, adult earnings, and crime prevention) disprove this conclusion. Indeed, so many studies have now found evidence of long-term effects of high-quality preschool programs that the opposite conclusion is practically indisputable: *High-quality preschool programs for young children living in poverty do have long-term effects.*

So what is the meaning of the fadeout of program effect on children's intellectual performance? More than anything else, it teaches us about the nature of multiage intelligence tests. Unlike most achievement tests that are age-specific, most intelligence tests, like the Stanford-Binet (Terman & Merrill, 1960), are designed to be used with individuals of a wide range of ages, from early childhood to adulthood. Also unlike achievement tests, intelligence tests were not designed to assess program effects, and so the way they function in this role was not, and is not, well understood. Multiage intelligence tests actually consist of a series of age-specific test batteries (the Stanford-Binet has 6 items per battery) designed to function with a specific age level, such as children 4 years old or children 4 years and 6 months of age. The preschool studies found effects at the ages during and a year or two after the program, but not subsequently. Children with preschool program experience got more items right on those age-specific batteries, but did not get more right on age-specific batteries designed for older children. It seems reasonable to conclude that, when used to assess preschool program outcomes, intelligence tests functioned more like achievement tests than intelligence tests, and indeed that is precisely the use to which they were put. Imagine if achievement tests for grades 4–8 were all combined into one grand multiage test of achievement. It would not be at all surprising if a really good grade 4 classroom improved children's achievement test scores on this test at grades 4 and 5, but not at grades 6, 7, and 8. That is precisely what happened in the temporary effects of high-quality preschool programs on children's intellectual performance.

To take this thinking to a theoretical level regarding children's intellectual performance, we might simply say that the preschool studies showed intellectual performance to be environmentally sensitive—it went up in intellectually stimulating preschool settings and down in less intellectually stimulating elementary school settings. Or, to put it in terms of program and no-program groups, it went up when the program group's experience was more intellectually stimulating than that of the no-program group and returned to the same level as that of the no-program group when both found themselves in the same elementary school settings.

Was the preschool program's effect on intellectual performance critical to its success and can this goal be replaced by another goal, such as early literacy skills and other content?

The causal model presented in the *Lifetime Effects* monograph (Schweinhart et al., in press) identifies intellectual performance as the gateway from the preschool program to all subsequent program effects. However, the original hypothesis was that a good preschool program would increase children's intellectual performance permanently, not temporarily; and typically, after early childhood, intellectual performance does not change much (Terman & Merrill, 1960). Perhaps rather than identifying the gateway variable as early childhood intellectual performance, we should call it the preschool intellectual boost.

The High/Scope educational model was originally called the Cognitively Oriented Curriculum (Weikart et al., 1970) because it focused on cognitive, logical processes identified in Piaget's theory of education (Piaget & Inhelder, 1969)—such as representation, classification, and seriation. Tests of early childhood intellectual performance demonstrably tap these processes. So the High/Scope preschool classroom provides a preschool intellectual boost as measured by these tests. It also provides other experiences that facilitate these intellectual processes, such as planning and reviewing one's activities, exploring what one is curious about, and developing a sense of personal control over the events of one's life—what might be called intellectual performance, broadly defined.

It makes sense to combine or supplement this emphasis on intellectual processes with a focus on early literacy or mathematics skills found to predict later achievement, but it does not make sense to replace the first with the second. To do so runs the risk of sacrificing the known long-term effects on school achievement, high school graduation rates, lifetime earnings, and crime prevention.

Why did the High/Scope Perry Preschool Program affect males and females differently?

Males and females in this study differed substantially from each other on educational attainment and lifetime arrests.

Evidence of stronger program effects on females appears for regular high school graduation rate, repeating a grade, and treatment for mental impairment. Over 2½ times as many program females as no-program females graduated from regular high school (84% vs. 32%), whereas about the same percentages of program and no-program males graduated from regular high school (50% vs. 54%). Half as many program females as no-program females repeated a grade (21% vs. 41%), while slightly more program males than no-program males repeated a grade (47% vs. 39%). Less than one-fourth as many program females as no-program females (8% vs. 36%) were treated for mental impairment, while only two-thirds as many program males as no-program males were treated for mental impairment (20% vs. 33%).

Evidence indicates that the program effect on criminal arrests was stronger for males than for females, partly because males had more arrests: 69% of no-program males, but only 34% of no-program females, were arrested five or more times. The apparent program effect in persons with five or more arrests was a reduction of about one third for males (45% vs. 69%) and for females (24% vs. 34%), but because the percentages were higher for males, the reduction in number of arrests was greater. The starkest gender difference was in arrests for drug crimes, for which less than half as many program males as no-program males were arrested (18% vs. 49%), while the percentages were about the same for program and no-program females (8% vs. 11%).

A possible explanation for this pattern is that teachers and school staff responded differently to girls and boys whose academic

performance improved as a result of receiving the preschool program. As would be expected, educators responded to the preschool program's effect on girls' early academic performance by keeping them in regular classes rather than by having them repeat a grade or by assigning them to special classes for mental impairment. Girls who were not tracked into repeated grades or special classes were more likely to graduate from regular high school. On the other hand, boys in the program and no-program groups were retained in grade and assigned to special classes for mental impairment at about the same rate, despite better performance on intellectual tests by the group who had preschool. This may be because teachers and school staff focused primarily on classroom misconduct (more common in both groups of boys than in the girls) rather than on objective measures of academic performance such as intellectual tests. For this reason, the intellectual gains made in preschool by the male program group may not have translated as expected to gains in high school graduation rate and in other long-term indicators of educational success.

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