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Preschool Education and School Completion

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Introduction

From the “nursery school” movement of the 1920s to the intensive interventions of the early 1960s, preschool education in the United States has existed for a century. The contemporary goal of preschool education is to enhance children’s school readiness skills and healthy development more broadly. This is particularly important for children growing up in poverty or having special needs so they can begin kindergarten with their peers fully ready to succeed.[1] This was the key rationale of the federally sponsored Head Start program in 1965, and for many other preschool programs opened by states and school districts in the years and decades that followed.

The percentage of the nation’s three- and four-year-olds enrolled in public or private school-based preschool has increased from 9.5% in 1964 to 53.8% in 2017, a nearly 6-fold increase.[2] Considering all forms of non-parental education and care, 75% of young children not yet in kindergarten currently participate in preschool.[3] In parallel fashion to these societal shifts, the importance of documenting and understanding the effects of preschool has also increased substantially.

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Findings over the past five decades have indicated that preschool programs can enhance children's cognitive skills, literacy, numeracy, and social skills necessary for school success, as well as promote school achievement in the elementary grades, reduce the need for special education and grade retention, reduce the risk of delinquency, and increase levels of educational attainment.[4-11] Among these outcomes, educational attainment is particularly important, given its link to economic self-sufficiency and positive health behaviours.[12,13] This review will focus on the connection between preschool participation and measures of school completion in the published literature.

Subject

For this review, preschool programs are defined broadly as the provision of center-based educational and family services to children at ages three or four. Programs are increasingly universally available with a full-day schedule, though federal as well as state and local communities prioritize children residing in low-income families or who have special needs.[1,3] Given the timing and breadth of services, preschool programs are designed to promote healthy development but also may be regarded as preventive in reducing the risk of underachievement.[1] Programs that begin at birth are included if services are also provided for three- and four-year-olds. Programs in kindergarten and from birth to age three are excluded (see Gomby, Culross, and Behrman[14] and Sweet and Appelbaum,[15] for reviews of the latter).

Preschool programs have been found to be associated with higher IQ scores, better school achievement, lower rates of grade retention and special education placement, and lower rates of delinquency and adult criminal activities.[6,8,11,16-19] These outcomes are known predictors of school completion.[20-23] Preschool programs of high quality are likely to have effects on school completion through the effects on these and other predictors.

Review Findings

Results from several model programs have shown the positive effects of preschool participation on school completion and years of education.[7,24-27] Although diverse in approaches, these programs are high in quality, are intensive in focus, and provide family services. Participants in the HighScope Perry Preschool Program were found to have higher rates of high-school graduation (71% vs. 54% at age 27; 77% vs. 60% at age 40).[19,28] Participation in the Abecedarian Project was found to be associated with a higher rate of attending four-year college (36% vs.

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14%), more years of education at age 21 and age 30.[29,30] Similar results were found in a large-scale program, the Chicago Child-Parent Centers (CPC).[18,31-33] Participants in the CPC preschool program have higher rates of school completion (65.8% vs. 54.2% at age 22; 86.9% vs. 80.7% at age 35) and more years of education. However, Head Start, the largest preschool program in the U.S., has had mixed results.[34] Some studies found effects on high school completion[34-37] and college attendance.[36] However, other studies found no long-term effects.[38-40] Only a few studies of contemporary state prekindergarten programs have reported enduring effects into middle school [41-43] and beyond.[44] For example, Michigan's Great Start Readiness Program (GSRP) found effects on high school graduation on time (57% vs. 43% at age 19).[44] Table 1 displays a summary of these findings.

To sum up, the effects of preschool programs on school completion were examined in some published studies. Examples of those programs include the HighScope Perry Preschool Program, the Abecedarian Project, Curriculum Comparison Study, Consortium for Longitudinal Studies (including Perry Preschool, Early Training Project, the Philadelphia project, and Karnes, Shwedel and Williams's project), Chicago Child-Parent Center Program, Head Start studies in several locations, and Michigan's Great Start Readiness Program. The latter is a state-funded Pre-K program.

Problems and Research Context

Although many studies showed the link between preschool programs and school achievement, few studies examined school completion as outcomes due to the availability of longitudinal data. Moreover, most of the studies examined model programs, thus the sample sizes were small, usually less than 150. In addition to the need for more evidence to support the association between preschool programs and school completion, researchers have also recognized the importance of understanding the mechanisms of long-term effects of preschool programs.[16,45,46] That is, how do preschool programs lead to positive outcomes over time? Recently, studies have been conducted to examine the mechanisms of the link between preschool participation and school completion.[16,30,47-49] Two major issues warrant further attention. First, more studies of large-scale programs are needed, especially for universal programs enrolling children across all socioeconomic strata. Current evidence is encouraging, however.[43,50] Moreover, greater understanding of how preschool participation can lead to higher levels of school completion is crucial to identify the most important program elements and the school and family experiences that are necessary for lasting effects.

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Key Research Questions

Beyond the findings on the effects of preschool programs on school achievement, the linkage between preschool programs and school completion has gained more attention, because school completion is ultimately linked to people's economic and social well-being and can reduce the need for remedial education and social welfare services.[51-55] How preschool programs are associated with school completion is addressed in the next section.

Recent Research Results

The theory behind preschool programs has been discussed and tested in some studies.[16,19,27,30,47,48,56-59] Many hypotheses explaining the long-term effects of preschool have been proposed. These are summarized and explicated in the Five-Hypothesis Model of Intervention Effects (5HM[48,57]; see Figure 1). The two major hypotheses investigated most in the studies are the cognitive advantage hypothesis and the family support hypothesis.[49]

According to the cognitive advantage hypothesis, the positive effects of preschool on cognitive development at school entry launch children into positive scholastic development and commitment that facilitate improved developmental outcomes in adolescence and beyond. As a central rationale behind preschool programs, the cognitive advantage hypothesis has consistent research support. Among the developed abilities to be nurtured from this perspective are language and literacy skills, knowledge of quantitative concepts, oral communication, school readiness and general cognitive skills. Of course, achievement motivation, attitudes and interests also contribute to cognitive and scholastic development.[60,61]

The family support hypothesis indicates that long-term effects of interventions will occur to the extent that program participation enhances family functioning and parenting practices. Increased parent involvement, for example, may strengthen home support for children's learning by motivating higher aspirations for children's educational performance and increasing the quality of interactions and activities that occur (e.g., reading to and with children, going to the library). Participation in preschool programs may also promote the family and school stability through increasing interaction between parents and teachers. According to Bronfenbrenner,[62] long-term effects of preschool are more likely if the home environment, children's major early learning context, is strengthened. Preschool programs are time-limited, but family experiences persist.

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The cognitive advantage and family support hypotheses suggest that strengthening literacy, language and cognitive skills, as well as parent involvement in children's lives, are important goals of preschool programs. Activities and curricula to support these goals can contribute to positive long-term effects on school completion and other outcomes.

Three other hypotheses have also been investigated to explain the long-term effects of preschool education. The contribution of the school and community support hypothesis has been demonstrated in several studies.[38,47,57,63] This hypothesis predicts that the program will increase the probability of children's attendance in effective schools and reduce the probability of school mobility, both of which are positively associated with educational attainment.[64] The two remaining hypotheses, motivational advantage and socio-emotional adjustment, also have been found to contribute to educational success and attainment across studies,[57,65,66] but further assessment of their contributions and generalizability are needed. They, along with the other three hypotheses, influence occupational, social behavior, and health outcomes in adulthood through educational attainment.[48,66]

The five hypotheses together have demonstrated across studies to have the best comparative fit in accounting for long-term effects on educational attainment and related indicators of well-being.[65,66] Nevertheless, additional studies of 5HM are needed. The complete set of processes expected to be impacted from early childhood to adulthood well-being is shown in Figure 1.

Conclusions and Implications

In summary, preschool programs are embedded in a broader context of family, community and school processes.[59] The effects of preschools will be more likely to persist if learning gains are reinforced and supported by family and school experiences after the end of program participation.[17,58,67]

The findings of this review suggest various implications for social policy. Preschool programs for children at risk can lead to higher levels of school completion. The long-term effects have been explained, in part, by the cognitive advantage, family support and school support hypotheses of intervention effects. High-quality preschool programs should be promoted. Research indicates that the lasting effects of preschool programs on educational attainment can benefit the participants and society, with outcomes that include higher projected lifetime earnings, savings from less special education placement, and savings from reduced involvement in the criminal

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justice system.[12,51,54,68-72]

Findings from the present study, in conjunction with other studies, suggest some future directions. More studies are needed to examine long-term effects of preschool programs on school completion and higher educational attainment, such as college attendance. In particular, studies of large-scale programs, such as Head Start and state-funded preschools, are needed. Finally, greater understanding of the mechanisms of long-term effects is needed across and wide range of programs.

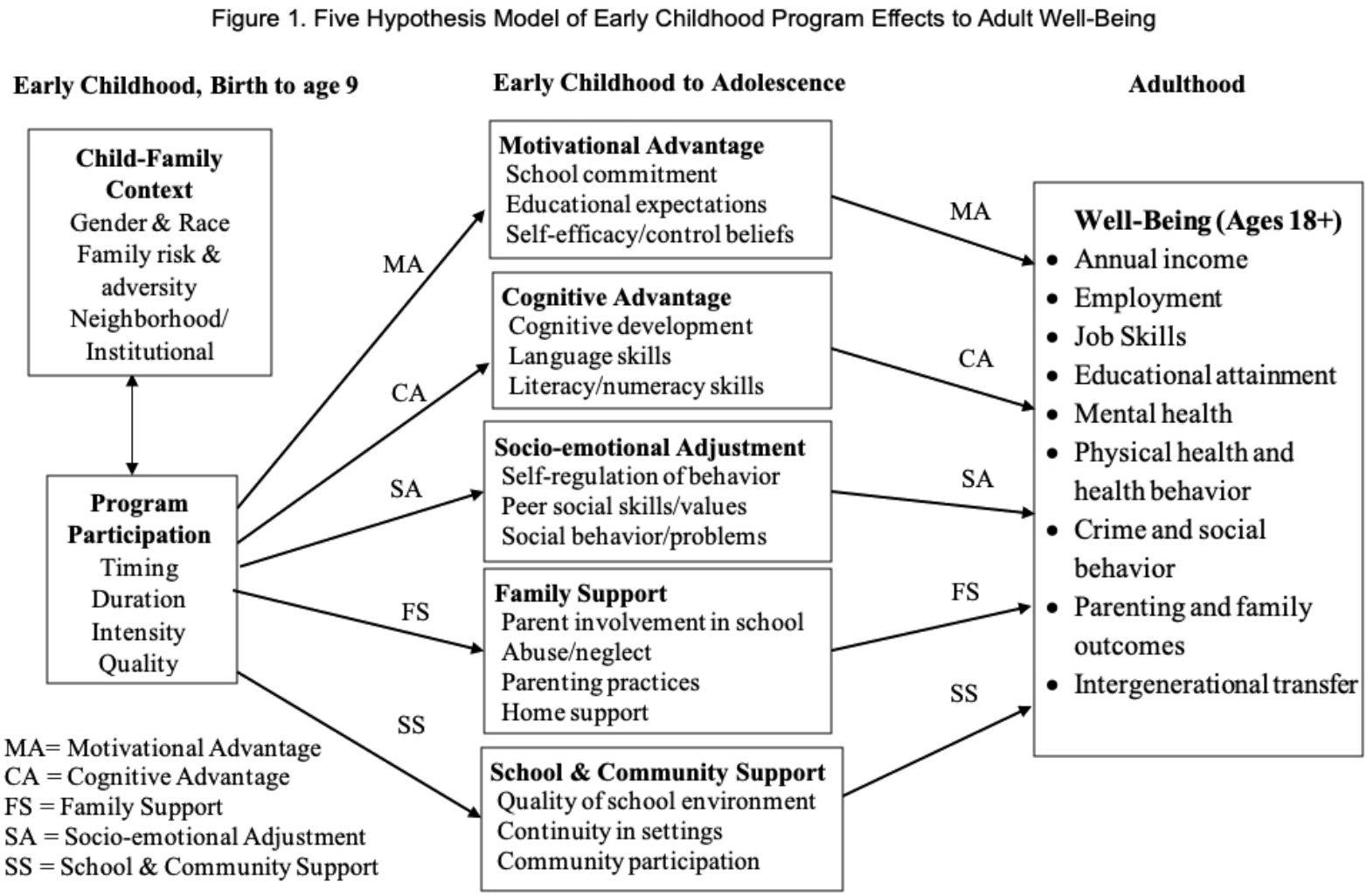
Table 1. Summary Information on Selected Studies

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Early Intervention Programs	Age of entry and length	Program description	Original Sample sizes	High school completion rates	College attendance
Model programs					
Carolina Abecedarian Project[25,26,29]	6 weeks-5 or 8 / 5 to 8 years	Full-day child care for preschoolers; Parent program for school-age	N=111 E=57 C=54	*Age 21* E (70%) > C(67%) *Age 30 (N.S.)* E (88.5%) > C(81.6%)	*Age 21* E (36%) >C (14%) (4-year college) *Age 30* E (23.1%) >C (6.1% (bachelor degree)
Curriculum Comparison Study[73]	4 years/ 1 to 2 years	Part-day preschool program, kindergarten program	N=312 E=244 C=68	*Post-high school* E(67%) > C (53%) (Graduation, N.S.)	
Consortium for Longitudinal Studies[74]	Birth to 4 years/1 to 6 years	Diverse set from parenting to center-based preschool	N=364	*Average age 20* E (64.8%) > C (52.5%)	
HighScope Perry Preschool Program[16,19,28]	3 to 4 years/ 1 to 2 years	Preschool program 12 1/2 hours/week home visits 1 1/2 hours/week 30 weeks a year	N=123 E=58 C=65	*Age 27* E (71%) > C(54%) (Graduation) *Age 40* E (77%) > C(60%) (Graduation)	*Age 27 (N.S.)* E (33%) > C (28%)
Large-scale programs					
Chicago Child-Parent Center Program[18,32,33]	3 or 4 years / 1 to 6 years	Half-day preschool program; Half-day or full-day kindergarten program	N=1,539 E=989 C=550	*Age 23* E (71.4%) >C (63.7%) *Age 35* E (86.9%) >C (80.7%)	*Age 23* (4-year colle E (14.7%) > C (10% *Age 35* (4-year colle E (29.3%) > C (21.4
Head Start[34-36]	3 or 4 years / 1 year	Preschool program	N=3,255 N=3,698[35]	*Age 23* E (64.6%) > C (58.6%) *Age 19+* E > C (diff 8.7%)	*Age 23* E (25.1%) > C (17.6 *Age 19+* E>C (diff 5.7%, N.S
Michigan's Great State Readiness Program[44]	4 years/1 year	State Pre-K	N=595 P=338 C=257	*Age 19 (Graduation on time)* E (57%)> C (43%) Non-White: E (59%) > C (37%) White: E (56%) = C (47%)	

Note. Four projects were included in the Consortium: Perry Preschool, Early Training Project, the Philadelphia project, and Karnes, Shwedel, and Williams's project. N.S. = Not significant.

Figure 1. Five Hypothesis Model of Early Childhood Program Effects to Adult Well-Being



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