

CHILD DEVELOPMENT MODEL

Development Toward School Readiness: A Holistic Model

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Abstract

This paper describes a systemic analysis of the early childhood development factors that explain the variance in readiness for school among representative five-year-olds in the United States.¹ The model expresses a theory that incorporates a broad set of causally interactive endogenous variables that are hypothesized to be driven by three exogenous variables: parental educational attainment; racial/ethnic status; and single parent/divorced/remarried vs. stable marriage family status.

The model was run in computer simulation mode. The results seem compatible with what is known about school readiness patterns. While this finding doesn't prove the validity of the model, it at least makes it seem reasonable as a multi-variate, systemic description of the state of affairs that determines readiness for school at the age of five and that provides a reasonable explanation for the variance in school readiness among five-year-olds.

Finally, the model was run in experimental computer simulation mode to evaluate the likely effects of five interventions: a set of cognitive and academic interventions; interventions related to health care and nutrition; income-related interventions; interventions related to reducing the effect of low income on family stress; and a combination of all these types of interventions. These interventions were simulated by modifying the structure of the model to moderate the effects of low parental education and low income on other key variables in the early childhood development system..

As expected, combining cognitive and academic interventions, health and nutrition interventions, and family stress interventions with straightforward increases in low family income had a very substantial effect on the relative age of school readiness of

¹ School readiness is a complex concept that, overall, relates to a child's readiness at age five to learn in a school environment. Julia Isaacs ("Starting School at a Disadvantage: The School Readiness of Poor Children," Brookings Institute, Center on Children and Families, March 2012) defines school readiness, and the relative disadvantage of poor children in this regard, in the following terms:

Poor children start school at a disadvantage. Their health, behaviors, and skills make them less prepared for kindergarten than children growing up under better economic conditions. Fewer than half (48 percent) of poor children are school ready at age five, under a summary measure that encompasses early math and reading skills, learning-related and problem behaviors, and overall physical health. Children born to parents with moderate or higher incomes are much more likely to enter school ready to learn; three-fourths (75 percent) of these children are ready for school at age five. In other words, there is a 27 percentage point gap in school readiness between poor children and those from moderate or higher income families.

children of parents with very low educational attainment (from a relative age of 2.9 years to a relative age of 4.3 years)—with very modest improvements in school readiness for children with parents who did not graduate from college. Of course, such a set of comprehensive interventions would be very costly and, probably, politically infeasible.

At least theoretically in the model, the more limited, and less costly, interventions vary in their likely effectiveness. Those dealing with income and family stress seem theoretically to be potentially the most effectiveness, with cognitive and academic interventions following. The least effective interventions, at least according to the model, are those that affect health and nutrition.

While the exercise was theoretical in nature—a kind of thought experiment—it is generally consistent with the literature on school readiness and early childhood development and yet, at the same time emphasizes the weaknesses in the current knowledge base. Most of the research available on the development of readiness for school is correlational in nature. What is needed—although it is difficult to do—is bivariate experimental research that would provide the effect sizes that are needed for more precise systemic analysis.