

Does Preschool Special Education Make a Difference?:

Propensity Score Weighting Analysis of the Effects on Kindergarten Pre-Academic Skills

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Abstract

Problem

The general effectiveness of preschool special education has not been established, but experimental studies of preschool special education effects are not possible on ethical or legal grounds.

Purpose

The purpose of this study was to examine the average treatment effect of preschool special education services on children's kindergarten pre-academic skills.

Research Question

Would the children who received preschool special education services have been better off academically, on average, had they not received such services?

Design

Using data from a nationally representative sample of children who participated in the Early Childhood Longitudinal Study–Birth Cohort (ECLS-B), this study examined effectiveness by comparing pre-reading and math outcomes for children who received special education services at preschool to a propensity score weighted sample of children who did not receive these services. The nationally representative dataset enabled us to examine the effectiveness of preschool services as they are actually implemented across the United States—that is, the effectiveness of services for a typical, or average, child who receives preschool special education.

Results

Results indicate that the receipt of preschool special education services had a statistically significant moderate negative effect on children's kindergarten pre-academic skills in both reading ($D = -.21$) and mathematics ($D = -.29$).

Background

- A substantial number of children experience mild to moderate developmental delays that may have long-term implications for their academic and functional outcomes.
- In 1975, federal legislation was passed requiring that state education agencies provide free, public education to all students with disabilities. As of the fall of 2010, more than 735,000 children received preschool special education services (Data Accountability Center, 2010).
- These services are distinct from general early childhood education in that it is more individualized and family-centered and is unique from special education because of its emphasis on fostering developmental skills (Odom & Wolery, 2003).
- Effectiveness is often assumed given strong empirical support for the positive short and long-term effects of early childhood education and intervention for young children, particularly those from disadvantaged homes or communities (e.g. Campbell et al., 2008). Studies of the effects of preschool special education are limited.

Design

- In the current study, these gaps were addressed using a propensity weighting approach in an analysis of data from the ECLS-B.
- We sought to estimate the magnitude and direction of the effect of preschool special education services on a select set of educational outcomes for those children who received special education services during the 3-5 year age window (i.e., the average treatment effect on the treated [ATT]).
- The nationally representative dataset enabled us to examine the effectiveness of preschool services as they are actually implemented across the United States—that is, the effectiveness of typical, or average, services for a typical, or average, child.

Kindergarten Outcomes of Treated & Untreated Groups

	Reading	Mathematics
Treatment Group		
Mean	31.34	32.72
SD	17.14	15.40
Control Group		
Mean	35.34	37.30
SD	15.66	11.82
ATT		
Standard Error	0.79	0.64
Effect Size	-0.21	-0.29

Method

Participants

- This study utilized the Early Childhood Longitudinal Study–Birth Cohort (ECLS-B), a nationally representative longitudinal cohort study of approximately 10,700 U.S. children born in 2001.
- The analytic sample in the present study was based on a subsample of children for whom information was obtained during preschool and kindergarten ($n = 8,000$), of whom 600 (7.75%) were reported to have received some form of special education services at preschool.

Measures

- Treatment Status: Special education status was operationalized as whether the child was reported by the parent or care provider to receive special education services or have an Individualized Education Plan (IEP) in place during preschool.
- Covariates: We considered 32 covariates in our model of children's propensity to receive preschool special education services. Covariates were categorized into seven domains: demographic, pre- and perinatal factors, health, home environment, early developmental outcomes, childcare/early education, and geographic factors encapsulating within-child and environmental factors related to special education receipt.
- Outcome: We used measures of reading and math scores at kindergarten entry to measure kindergarten pre-academic skills.

Analysis

- The analysis proceeded in two stages, and involved the estimation of two different regression models.
- The model estimated in the first stage summarizes, as accurately as possible, how the probability of treatment (i.e., receiving special education services) in the population varies as a function of observed covariates.
- In the second stage, each academic outcome measures was regressed on the treatment dummy with the propensity weights obtained in the first phase used as multipliers.

Conclusions

- These results suggest that the children with delays would indeed demonstrate higher kindergarten academic skills on average if they had not received preschool special education services.
- This study is not intended as an indictment of preschool special education, as it is not to say that these services are not needed by or of benefit to some in this domain or others (e.g., transitioning, social skills, or communication).
- The question then becomes, *What is it about these services that is ineffective?* Answers to this question have implications for educators and policy makers as they consider what types of practices and programs to support and implement.



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