



EDUCATION

# **School Readiness and Full-Day Kindergarten Attendance: An Empirical Investigation**

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# Why the Focus on Kindergarten and School Readiness Skills?

- ▣ **Studies find racial/ethnic gaps in cognitive and nonacademic readiness skills upon entry to kindergarten**
  - **Five dimensions of school readiness:**
    - **Language development**
    - **Cognition and general knowledge**
    - **Physical well-being and motor development**
    - **Social and emotional development**
    - **Approaches to learning**
  
- ▣ **Skills and knowledge that children have upon entering school is predictive of later achievement**
  
- ▣ **Full-day kindergarten seen as an avenue for addressing the differences in school readiness skills**

# Project had Three Main Research Questions

- ▣ **What is the relationship between children's readiness skills at kindergarten entry and mathematics and reading achievement through the fifth grade?**
- ▣ **Is full-day kindergarten attendance associated with long-term mathematics and reading achievement?**
- ▣ **Is attendance at full-day kindergarten program related to nonacademic school readiness?**

# Previous studies show positive effects, but have methodological limitations

- ▣ Literature reports weak but positive outcomes between full-day kindergarten attendance, school readiness, and achievement at the end of kindergarten or first grade
- ▣ Little is known about their relationships in the long-term, particularly beyond third grade
- ▣ Definitive conclusions have been stymied by studies with small sample size, lack of statistical controls, and potential self-selection bias

# Analyzed Nationally Representative Longitudinal Dataset

- ▣ Examined the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999 (ECLS-K)
- ▣ Multistage sampling design with geographic region, school selection, and student selection as primary sampling units
- ▣ Followed children over 5 time points
  - Fall and Spring Kindergarten, 1<sup>st</sup> grade, 3<sup>rd</sup> grade, 5<sup>th</sup> grade
- ▣ Large sample size
  - 7897 children
  - 2450-3500 teachers
  - 900-1550 schools

# **ECLS-K Used Multiple Methods to Collect Data**

- ▣ Math and reading achievement: test performance**
- ▣ Physical readiness: direct assessment**
  - Fine motor skills – e.g., copy shapes onto paper**
  - Gross motor skills – e.g., hopping on one foot**
- ▣ Nonacademic readiness skills: teacher reports**
  - Approaches to Learning – e.g., attentiveness, task persistence,**
  - Self-Control – e.g., controlling temper**
  - Interpersonal Skills – e.g., getting along with people who are different**
  - Externalizing Problem Behaviors – e.g., acts impulsively**
  - Internalizing Problem Behaviors – e.g., anxiety, loneliness**

# **ECLS-K Used Multiple Methods to Collect Data (continued)**

- ▣ **Academic Readiness Skills: teacher reports**
  - Numerical Literacy
  - Literacy Skills
- ▣ **School program characteristics: teacher reports**
  - E.g., class size
- ▣ **School context: school administrator reports**
  - E.g., percent minority
- ▣ **Classroom context: teacher reports**
  - E.g., class behavior
- ▣ **Child-level covariates: mostly parent reports**
  - E.g., parent involvement

# Conducted a Longitudinal, Cross-Classified Analysis with Imputed Data

- ▣ Approximately 63 percent of sample had complete data
  - Non-random pattern of missing: students with 2 or more missing test scores scored significantly worse
  - Used multiple imputation to remove potential bias
- ▣ Achievement modeled over 5 time points in relation to school program factors, school/classroom context, and child covariates
  - Explored models with and without nonacademic readiness skills
- ▣ Model included both random- and fixed effects, as well as time-varying and time-invariant factors

# Effects of Full-Day Kindergarten Attendance Depended on Subject and Model Specifications

- ▣ Showed no relationship to fifth-grade reading achievement, regardless of model
- ▣ More complicated findings for math
  - If model excluded nonacademic readiness skills, full-day kindergarten was unrelated to math skills
  - If model included nonacademic skills, full-day kindergarten was negatively related to math achievement
- ▣ No evidence that full-day kindergarten participation enhanced achievement for low-income students

# **Nonacademic Readiness Skills at Kindergarten Related to Future Academic Achievement**

- ▣ Nonacademic school readiness skills associated with math and reading achievement, but not always in the expected direction**
  - Interpersonal skills and externalizing behaviors at kindergarten negatively related to test performance**
  - Fine motor skills positively related to math and reading test scores**
- ▣ Black-white differences in reading were significant only in models that excluded nonacademic skills**
  - Suggests that part of the differences was attributable to differences in their nonacademic readiness skills upon kindergarten entry**

# **Nonacademic Readiness Skills Not Promoted by Many Kindergarten Program Factors**

- ▣ Full-day kindergarten showed counterintuitive results**
  - Negatively predictive of interpersonal, self-control, and approaches to learning**
  - Positively predictive of problem behaviors**
- ▣ Parent involvement and income significantly associated with nonacademic readiness skills, and in the expected direction**
  - Positively related to interpersonal, self-control, and approaches to learning**
  - Negatively related to problem behaviors**

# Results Should be Interpreted Cautiously Because Of Model Limitations

- ▣ **Could not control for self-selection effects**
  - **Theoretically, direction can be positive or negative selection**
  - **Some evidence that lower-income parents more likely to use full-day kindergarten programs**
- ▣ **Potential aggregation bias stemming from school-level measures of program quality**
- ▣ **Limited measures of program quality**

# What are Avenues for Future Research?

- ▣ **Cost-benefit analysis that compares investments in full-day kindergarten programs to investments in other potential interventions**
- ▣ **In-depth comparisons of the nature, features, and structure of full-day and part-day programs**
- ▣ **Better understanding of the mechanisms by which nonacademic readiness affects achievement**
- ▣ **More investigation of the effects of full-day kindergarten participation on particular subpopulations**

## More Information about the Report Can be Found on the RAND website

▣ The full report can be accessed at:

[http://www.rand.org/pubs/monographs/2006/RAND\\_MG558.pdf](http://www.rand.org/pubs/monographs/2006/RAND_MG558.pdf)

▣ A corresponding research brief can be found at:

[http://www.rand.org/pubs/research\\_briefs/RB9232](http://www.rand.org/pubs/research_briefs/RB9232)