

## Early Physical Health Problems as Developmental Liabilities for School Readiness: Associations with Early Childhood Education and Family Resources

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### Project Description

Disparities in physical health emerge early in life and have notable effects on long-term economic and social well-being. Yet, there has been limited empirical attention to the possibility that early health disparities, beyond the effects of neonatal risks, may be associated with children's nascent developmental competencies as early as school entry. Drawing on the transactional-ecological theory of development, this study hypothesizes that children's physical health in early childhood impairs the development of cognitive, learning, and behavioral skills necessary for future success. Further, we argue that children's access to enriching early childhood education (ECE) experiences may play a central role in this relationship, such that associations between physical health and school readiness may be explained by either mediating pathways through inhibited access to learning opportunities in ECE or by moderating pathways through interactions between physical health and ECE participation. A final goal of this study is to explore differences in these associations across the family income spectrum.

### Research Questions

1. Do physical health problems predict school readiness competencies?
2. Does restricted access to development-promoting opportunities in ECE among children in poor health explain associations between health conditions and school readiness?
3. Does participation in ECE attenuate or exacerbate the associations between children's physical health problems and school readiness?
4. Does family income have protective or aggravating effects for associations explored in Research Questions 1 through 3?

### Sample

Data were drawn from the Early Childhood Longitudinal Study-Birth Cohort, which followed a nationally representative sample of approximately

10,700 children born in the United States in 2001. Survey and assessment data were first collected in 2001 when children were on average 10 months old and subsequently when children were 2 years old, in preschool, and first entering kindergarten. Data were collected from primary caregivers (98% biological mothers), child care providers, preschool and kindergarten teachers, and through direct child assessments. Children were excluded from the sample if they were reported to have severe or disabling conditions like cerebral palsy (N = 5,900).

### Method

Children's physical health was assessed in three domains:

- *Neonatal risk.* Mothers indicated at the first wave of data collection whether the child had been born prematurely (prior to 37 weeks' gestation) or with low birth weight (< 2,500 grams), which were combined into a dichotomous variable.
- *Asthma.* Mothers reported at each wave whether the child received a medical diagnosis of asthma, indicated dichotomously.
- *Acute health conditions.* Mothers reported at each wave whether the child received a medical diagnosis of respiratory illness and the number of ear infections experienced. Variables indicating diagnoses of each health condition were summed to reflect the breadth of acute conditions.
- *Hospitalization.* Mothers also reported if the child was hospitalized for either an asthma attack or respiratory infection, which were combined into a dichotomous variable.
- *Suboptimal general health.* At each wave, mothers ranked the child's global health on an ordinal scale ranging from 1 "excellent" to 5 "poor," dichotomized such that ratings of good, fair or poor health reflect suboptimal health.

Acute conditions were summed across the first three waves of data collection, from 10 months to 4-years. Asthma, hospitalization, and suboptimal health were

captured dichotomously if mothers reported that the child ever experienced these health problems.

Children's school readiness skills were assessed in two domains at waves 4|5 when children first entered kindergarten:

- *Cognitive skills.* Children completed direct assessments of their math skills (71 items,  $\alpha = 0.89-0.92$ ) and reading skills (85 items,  $\alpha = 0.84-0.92$ ).
- *Learning skills.* Teachers reported on children's learning and attention skills (6 items,  $\alpha = 0.89$ ).
- *Behavioral functioning.* Teachers also reported on children's prosocial skills (6 items;  $\alpha = 0.87$ ), externalizing problems (6 items;  $\alpha = 0.92$ ).

Caregivers also reported at each wave how many hours the child participated in center-based early education and care, indicated dichotomously for 10 or more hours per week, as well as on a range of child, family, and household covariates.

### **Progress Update**

Results indicate that, in addition to neonatal risk, both suboptimal health and hospitalization predicted lower math, reading, and learning skills. Family income did not buffer children from the negative effects of poor health. Mediation analyses indicated that health functioned contrary to expectation, with positive indirect effects of diagnosed early acute conditions predicting heightened math, reading, and externalizing problems functioning through increased likelihood of participating in ECE. Analyses testing for conditional indirect effects by family income are currently underway, and additional proposed models will explore whether ECE attenuates or exacerbates the links between health and impaired functioning in cognitive and learning domains.

### **Implications for Policy/Practice**

Results from this research help to delineate the repercussions of physical health disparities in early childhood and draw attention to the need for greater public health and early intervention programs to address these issues prior to kindergarten entry. Programs such as Early Head Start and nurse home-

visiting programs have demonstrated success in promoting the development of young children with developmental disabilities, which suggests that these programs may serve as helpful service delivery pathways for ameliorating physical health concerns that may impair children's development. Results also have important implications for holistic early childhood education programs that provide children with health screenings and related services, with results potentially supporting the need for greater access to and quality of such services.

### **Implications for Research**

The topic of school readiness has garnered much empirical attention over the past decade, with the majority of studies focusing on children's early home and education settings as explanations for variability in developmental competencies at school entry. This study focuses on an arena of children's own characteristics, their physical health, in order to explore alternative sources of variability in school readiness skills. Preliminary results indicate that physical health, namely suboptimal general health and hospitalization, contributes to variability in readiness skills. Understanding these constructs requires further empirical attention, and forthcoming analyses may illuminate some of the potential pathways through which these physical health conditions impair development. In short, these results suggest that researchers should continue to investigate a range of explanations for variability in school readiness skills as well as the pathways through which such competencies emerge in order to identify multi-faceted solutions for closing the school readiness gap.

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