

First two years in school: a preliminary analysis of the impact of preschool and early childhood provision on children's development in Rio de Janeiro

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Financiamento

IAB

BID

FAPERJ

CNPQ

Abstract

The study analyzes children's development in their first two years at compulsory schooling (preschool) in Rio de Janeiro using iPIPS (International Study of Children Starting School) and assess the impact of an early childhood education policy in the city of Rio de Janeiro. The data used in the analysis was based on three waves of data collection. Key research questions are: 1- What is the impact of attending preschool (as opposed to maturation effect) on children cognitive development? 2- What is the impact of attending different early childhood education programs/*provisions* in Rio de Janeiro on children cognitive development?

A representative stratified random sample of 46 Municipal Public Schools in Rio de Janeiro (2740 children) were selected to participate in the study. Regression discontinuity was used to investigate the impact of pre-school, as opposed to maturation effect, on children cognitive development and growth curve models were used to estimate the impact of attending different early childhood education programs on children cognitive development. Preliminary analyses indicate: a) that starting points (baseline) and gains in the first two year of schooling are much different comparing children with different socioeconomic background and home learning environment; b) a small positive impact of Child Development Centers Preschools (.11 effect size for

language development); c) small effect of frequenting preschool on children cognitive development.

Extended Summary:

Introduction

Studies conducted in diverse contexts indicate that attending pre-school is an effective measure in guaranteeing greater equality of educational opportunities, that is, contribute to (future) learning and a more fluid, more long-lasting school trajectory, especially among deprived children (from families with a low socio-economic background). International longitudinal studies confirm that, in general, children that have had the opportunity to frequent early childhood education environments of good quality present better cognitive and social skills during their elementary school (PEISNER-FEINBERG et al., 2000, SYLVA et al., 2003). Moreover, it is widely recognized that children's early development and their progress during the first years of school are crucial for their later success (HECKMAN 2000, 2008; TYMMS, MERRELL & WILDY, 2015). Thus, measuring and monitoring children's development in this key stage of their life is useful for policymaker as they can produce relevant information on children's baseline and their continuous learning as well as on policies and practices associated with children's development.

The paper to analyze the impact of frequenting preschool and to assess the impact of the main early childhood education policy in the city of Rio de Janeiro (the Child Development Centers) on children cognitive development. The data used in the analysis was based on the first, second and third waves of data collection of a longitudinal study, Baseline Brazil (2017-2018). Key research questions are: 1- What is the impact of attending preschool (as opposed to maturation effect) on children cognitive development? 2 - What is the impact of attending different types of early childhood provision - specially attending Child Development Center Preschool as opposed to regular preschools - on children cognitive development?

Methodology

A representative stratified random sample of 46 Municipal Public Schools in Rio de Janeiro (2740 children) were selected to participate in the study. Schools were

stratified by Local Authority and type of preschool provision (regular schools X Child Development Centers). It is important to highlight that our sample do not cover private schools and it is only representative for the public sector. About 40% of children attend private preschools in Rio de Janeiro. This limitation should be considered when comparing data collected in Rio with other countries, such as England and Scotland.

Three waves of data collection of children cognitive development using the iPIPS (International Study of Children Starting School) instrument were conducted: (i) First wave – start of 1st year of preschool (March 2017); (ii) Second Wave – end of 1st year of preschool (November/December 2017); (iii) Third Wave – end of 2nd year of preschool (November/December 2018). The instrument measures children development in math and language/literacy. Attrition at third wave was around 20% as some children were not found mainly because they have changed schools (specially to schools that do not belong to Rio de Janeiro's public system) or were absent during the data collection period. Contextual data of children background and demographics (age, color/race, special needs, poverty, parents education, home learning environment) and school characteristics (structure and school policies and practices) were also collected during this period.

The very restricted rules concerning age for enrollment in preschools in Rio de Janeiro's public school system enabled us to conduct regression discontinuity analysis to estimate the effect of frequenting pre-school, as opposed to maturation effect, during the two years of preschool (by comparing the older children in the first wave with the younger children in the second wave and comparing the older children in the second wave with the younger children in the third wave).

Differential item functioning analysis for rasch measurements were used to compare items functioning in the first, second and third waves of data collection. These analyses can help us to observe the behavior of items from specific dimensions of the test that can be attributed to school effect.

Growth curve models, with a multilevel modelling approach, were used to estimate the impact of attending *Child Development Center Preschools* – main policy for early childhood education in the city, which encompasses extended school journey and new adapted building, wider provision of pedagogical resources and specific routine guidelines for children 0 to 5 – oppose to regular preschools, controlling for children characteristics (skin color, sex, age, special needs) and family background (SES, home learning environment) and school SES.

Results

Preliminary analyses suggest that starting points and progress children made during their first two year in school is correlated to home background, specially parents education and home learning environment. Moreover, most of the development observed in the first two years at school can be explained by the maturation effect and not a school effect. The differential item functioning analysis indicate that development of children receptive vocabulary might be attributed to school effect.

Finally, the analysis conducted do not indicate an impact of Child Development Centres in mathematics and indicate a small impact on language (effect size of 0.11) after controlling for first measure and other children background and school SES variables. However, there is a small mediating effect for disadvantaged children (measured for parents with low educational level).

Discussion

The results show small impact of attending preschool on children cognitive development that might be concentrated in language development, more specifically on receptive vocabulary. This result was, in part, expected taking into account the national and local (Rio de Janeiro's public system) curricular guidelines for early childhood education.

The small impact of the Child Development Centers observed indicate that early childhood educational policies concentrated only on school structure quality might not be enough to enhance children cognitive development. This results were observed in studies conducted in other contexts, that found that process quality indicators measured by observational instruments were more closely associated to children cognitive development (PEISNER-FEINBERG et al., 2000; SYLVA et al., 2003; PIANTA, 2008).

Conclusions

This is the first longitudinal study in Brazil to assess children's progress in preschools – mandatory in Brazil for 4 and 5 year-old children. The iPIPS cognitive instrument seems to be a relevant tool for assessing children development and evaluating yearly childhood educational policies. Next step of our research is conducting classroom observations in order to capture school and teachers' practices associated with children cognitive development along preschool and the first year of elementary education.

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