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Title: Earlier Preschool Education for Better Skills? Evidence from Double Machine Learning Approach



The persistent effects of adverse early childhood environments on shaping the human skills and well-being magnify the issue of intergenerational transmission of poverty and raise serious concerns about the life prospects of disadvantaged children. We examine whether early preschool education can alleviate these effects by studying the short and medium-term effects of early preschool attendance on Vietnamese disadvantaged child's skill formation, educational attainment and health. An accumulating body of evidence shows that early childhood education programs have positive effects on development of disadvantaged children by enriching the learning and nurturing environments of disadvantaged children. These beneficial effects of early childhood education motivate expansion of preschool enrollment to one of the most important educational target for sustainable development. The evidence also inspires some governments to promote, or even to require early preschool attendance for disadvantaged children. However, the current evidence has not provided direct response to the role of early preschool starting age. We use double machine learning approach to estimate the effect of attending preschool at aged 3 compared to attending at aged 4 or older on child's cognitive and non-cognitive skills, educational attainment and long-term health problem until aged 15. Identification is based on the conditional independence assumption that is supported by high-dimensional longitudinal data from Young Lives survey. We show positive effects of early preschool attendance on cognitive skills of disadvantaged children but negative impacts on parent-child relation at aged 12 and eventually parent-child relation and self-efficacy at aged 15. Preschool attendance has clear effect on increasing highest grade achieved at aged 15 but no effect on reducing long-term health problem. While most current evidence shows only short-term effect of preschool attendance on cognitive skills, our estimate suggests that preschool starting age matter for skill formation as it improves child's cognitive skills and educational attainment even 10 years after. However, early preschooling might complement parental investment as early preschooling damages the long-term relationship between parent and child, eventually degenerating self-efficacy. Moreover, our results cast doubt on the quality of Vietnamese preschool education that might overemphasize cognitive skills but have insignificant role in developing non-cognitive skills of disadvantaged children.