



Early poverty exposure predicts young adult educational outcomes in China

Xiaoying Liu ^{a,*}, Emily Hannum ^{a,b}

^a Population Studies Center, University of Pennsylvania, 239 McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6298, USA

^b Department of Sociology, University of Pennsylvania, 247 McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6298, USA

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ABSTRACT

Comparative research suggests that poverty in childhood, and especially in the early years, impedes educational attainment. With longitudinal data from China, we estimate hazard models of dropping out of school in young adulthood with two dynamic measures of childhood poverty: poverty spell indicators that distinguish poverty in early childhood, middle childhood, and adolescence, and poverty indices that measure the depth of poverty and distinguish chronic from transient poverty.

Four main results emerge: 1) Children who experience spells in poverty leave school at a higher rate than others, even adjusting for poverty in later periods; 2) Transient poverty is more widespread, and shows a greater negative association with school-leaving, than chronic poverty; 3) Early childhood poverty shows greater negative associations with education outcomes than poverty in later periods; and 4) Girls may be more susceptible than boys to early poverty. We further test two possible mechanisms of impact: early nutrition poverty and school fees. While lower protein intake at an early stage of life is related to poorer educational outcomes in young adulthood, adjusting for nutritional deprivation does not attenuate the associations of early transient income poverty. Results do not suggest that cohorts that experienced school-fee abolishment policies experienced different poverty effects than other cohorts.

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1. Introduction

Household poverty has been linked to poorer educational access and attainment in many societies (e.g., Filmer & Pritchett, 1999; Huisman & Smits, 2009). While cross-sectional associations between economic deprivation and educational outcomes are well-established, few studies in low and middle-income countries have sought to trace the implications of early poverty exposure to educational outcomes in young adulthood. Moreover, few studies in such contexts have sought to distinguish the impact of chronic versus transient poverty, and few have considered whether the timing of poverty matters, despite evidence from longitudinal research in developed countries suggesting that the timing and duration of poverty condition its impact on children's outcomes (Duncan & Magnuson, 2013; Holmes & Kiernan, 2013).

In this paper, using longitudinal data from China, we investigate links between childhood poverty exposure dynamics and later educational outcomes. Using a national poverty line adjusted for provincial-urban/rural differences in prices, we adopt two

* Corresponding author.

E-mail addresses: xiaoyliu@sas.upenn.edu (X. Liu), hannumem@soc.upenn.edu (E. Hannum).

approaches: 1) models that capture poverty spells, and 2) an analysis that distinguishes chronic from transient poverty. We define poverty measures for early childhood, middle childhood, and adolescence. We test these measures in hazard models of school leaving in young adulthood, and analyze their associations with the likelihood of completing compulsory school and enrolling in high school. In all analyses, we test whether poverty operates differently for girls and boys. The paper is organized as follows: [Section 2](#) provides background about relevant research on poverty and child development; [Section 3](#) introduces the concept of poverty dynamics and its measurements; [Section 4](#) introduces data and sample selection; [Section 5](#) provides empirical analysis and main results; [Section 6](#) lists a few robustness checks and tests possible mechanisms; and [Section 7](#) discusses and concludes.

2. Background

Research in the United States and in low and middle income countries has indicated that household poverty, variously measured, is a risk-factor for many outcomes for children that could hinder capacity to function in school, including physical health and language and cognitive development (Engle & Black, 2008; Grantham-McGregor et al., 2007; Walker et al., 2011; Yoshikawa, Aber, & Beardslee, 2012, p. 273). Research suggests that the timing of impoverishment may be important for children (Boyden & Cooper, 2007; Duncan, Magnuson, Kalil, & Ziol-Guest, 2012): exposure to poverty during early childhood, middle childhood, or late childhood has different implications for children's development, and possibly for their later outcomes. Emerging research from a variety of disciplines indicates that poverty early in a child's life may be particularly harmful (for a review, see Duncan et al., 2012). A number of cross-national studies suggest that earlier poverty experiences can be more damaging than later ones for children's developmental outcomes (Alderman, 2011; Bird, 2007; Engle, 2012).¹ The duration of poverty is also important. In the United Kingdom, persistently poor children have more disadvantageous developmental contexts than children in poverty for shorter periods, and they exhibit worse developmental outcomes (Holmes & Kiernan, 2013).

Regarding educational outcomes, assessing literature for the United States available through the middle of the 1990s, Brooks-Gunn and Duncan (1997) concluded that children who experience poverty during their preschool and early school years have lower rates of school completion than children and adolescents who experience poverty only in later years. Duncan, Yeung, Brooks-Gunn, and Smith (1998) analyzed data from the Panel Study of Income Dynamics and showed that family economic conditions in early childhood had the greatest impact on completed schooling. Guo's (1998) analysis using National Longitudinal Survey of Youth data from the United States distinguished development tests from achievement and showed that long-term poverty had substantial influences on both, but with different time patterns. The younger ages were a more crucial period for the development of cognitive ability than early adolescence, but poverty experienced in adolescence appeared more influential on adolescent achievement than poverty experienced earlier in life. One possible mechanism might be through nutrition. A randomly assigned early-life nutritional supplementation program finds that poor nutrition during early life has a causal impact on adult cognitive skills (Maluccio et al., 2009).

Although a few studies have investigated transitions in and out of multi-dimensional poverty in childhood in low and middle income countries (Apablaza, 2013; Roelen, 2014), we have not found studies of the dynamic implications of childhood poverty exposure for outcomes in young adulthood in these settings. This gap in research also exists in China, despite the fact that China has experienced rapid economic growth during the last three decades such that many middle-aged adults experienced poverty during early childhood and poverty alleviation in later periods. This situation provides a valuable natural opportunity for researchers to study the relationship between early poverty exposure and later outcomes. In this paper, we use the case of China to address the question, how are poverty dynamics in childhood linked to subsequent educational outcomes in young adulthood? We distinguish long- and short-term poverty, and address the question of whether there are critical periods for poverty impact on education. We also consider whether there are gender differences in the impact of childhood poverty on educational outcomes. Finally, we test two possible mechanisms: undernutrition and schooling fees.

3. Measuring poverty and poverty dynamics

Commonly, poverty is measured by comparing resources to needs, and families or individuals are considered poor if they fall below some threshold (Foster, 1998, p. 335). Three steps are needed to quantify the scope of poverty (Foster, 1998, p. 335; World Bank, 2011): selecting welfare measures, constructing thresholds, and tallying the resulting data. The first step is to define the relevant welfare measure (World Bank, 2011), and many approaches have been used. Here, we focus on measures associated with the study of economic poverty, rather than multidimensional poverty.² Income is a common choice, the use of which may be justified on the grounds that income is essential in societies with market economies (Borgeraas & Dahl, 2010). However, some have

¹ For example, in the domain of health, some studies have suggested that poverty-induced growth faltering before 24 months is "irreversible" (Hoddinott, Maluccio, Behrman, Flores, & Martorell, 2008; Victora, de Onis, Hallal, Blössner, & Shrimpton, 2010; Victora et al., 2008). Although recent studies have found that some catch-up growth after two years, the first two years are very important (Crookston et al., 2013; Prentice et al., 2013; Schott et al., 2013). Hoddinott and Kinsey (2001) find that children aged 12–24 months lost growth in the aftermath of a drought in Zimbabwe, while older children were unaffected in growth.

² A different approach, popularized by Sen and others, focuses on capabilities or endowments (Bourguignon, 2006; Nussbaum, 2006; Sen, 1999, 2006). The capabilities approach suggests that poverty should be defined in terms of individuals' capabilities to choose their own lives. This approach is associated with efforts to define poverty as failure to reach minimally acceptable levels in multiple dimensions—different monetary and non-monetary attributes necessary for functioning (for example, see Bourguignon, 2006; Bourguignon & Chakravarty, 2003; Marlier & Atkinson, 2010; Nussbaum, 2006; Thorbecke, 2005, p. 2; for a critical discussion of child-focused multidimensional indicators of poverty, see Dercon, 2012).

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