



Bilingual education in Peru: Evidence on how Quechua-medium education affects indigenous children's academic achievement



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ABSTRACT

This study uses the Peruvian Young Lives International Study of Childhood Poverty's School Level data to investigate the effect of Quechua-medium instruction on academic achievement. We find that Indigenous children who attend Quechua-medium schools achieve 0.429 standard deviations higher scores in mathematics compared to Indigenous children who attend Spanish-medium schools. There is no evidence that these effects are caused by quantitative or language achievement acquired prior to entering school. Our findings suggest that Quechua-medium education for children of Quechua speaking parents may play a role in ameliorating the Indigenous test score gap.

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1. Introduction

In much of Latin America, Indigenous children¹ experience lower levels of educational attainment and achievement than their non-Indigenous peers. A large body of economic literature substantiates the importance of educational achievement for economic welfare over an individual's lifetime and for economic growth (e.g. [Cawley, Heckman, & Vytlačil, 2001](#); [Currie & Thomas, 1999](#); [Fertig, 2003](#); [Glewwe, 2002](#); [Hanushek & Woessmann, 2012](#)).

The persistent achievement gap between Indigenous and non-Indigenous children thus likely has long-run effects for the economic welfare of Indigenous peoples and communities and has the potential to reinforce social inequities. Indigenous children in Latin America have traditionally only had access to education mediated through the dominant language, usually Spanish ([López, 2014](#)). In recent decades, however, several Latin American governments have implemented bilingual or Indigenous language education programs, specifically targeting the Indigenous population ([Cortina, 2014](#)). We build on numerous studies that investigate the effects of such programs in Latin America and provide quantitative evidence about the effect of instructional language on schooling outcomes. We use the Young Lives International Study of Childhood Poverty's unusually detailed school level data to document the differences in mathematics and language achievement

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¹ For the purpose of this paper, we define a child as 'Indigenous' if he or she has a mother who speaks an Indigenous language, though we recognize that any one-dimensional definition of 'Indigenous' may be problematic in the Latin American context.

between those Indigenous children who attend Quechua-medium schools and those who attend Spanish-medium schools.

Researchers within economics use the education production function framework to measure the effects of specific variables on educational outcomes in the United States (e.g. Card & Krueger, 1992) and in developing countries (e.g. Case & Deaton, 1999; Glewwe, 2002). This framework attempts to model educational achievement as the result of a production process involving inputs on the school, family and individual levels. This research clearly shows that groups with limited access to resources, who also often speak Indigenous languages, achieve lower scores on academic and cognitive tests, as compared to more privileged groups.² This achievement gap has been shown to increase over the school years in the United States, Canada and Australia (Bradley, Draca, Green, & Leeves, 2007; Friesen & Krauth, 2010; Fryer & Levitt, 2004, 2006; Hanushek & Rivkin, 2009; Leigh & Gong, 2009).

Similar research from Peru suggests that Indigenous children learn less in school compared to non-Indigenous children, even when attending the same school (Glewwe, Krutikova, & Rolleston, 2014). Further in Paraguay, Patrinos, Velez, and Psacharopoulos (1994) find that Guaraní speaking and bilingual students complete fewer years of schooling and have lower Spanish test scores than their monolingual Spanish peers. It is thus possible that educational systems in both developed and developing countries do not adequately meet the needs of Indigenous and minority children. In the cases where those children are also of linguistic minorities, language of instruction may play a role in their learning.

A large body of research examines the effect of bilingual and immersion programs on educational outcomes for English language learners in the United States. However, there is little consensus about the learning outcomes of such programs. The difficulty of controlling for all factors affecting educational achievement, and implementing controlled experiments in this context, implies that researchers often struggle to establish a causal effect.³ (see e.g. Groff, 2005; Slavin & Cheung, 2005; Thomas & Collier, 1997). Slavin and Cheung (2005) provide a meta-analysis of 17 high quality studies of bilingual reading programs in the United States. They find that evidence generally favors bilingual instruction and that the median weighted effect was +0.33 standard deviations on reading test scores for bilingual education. Slavin and Cheung suggest that teaching students to read in their “native” (hereby referred to as “L1”) language can help children improve letter and

word recognition which can then be translated to improved reading skills in English.

There is a substantial body of work in the education and linguistics fields that investigates the effect of medium of instruction on educational outcomes in developing countries. Researchers find that Indigenous children in L1-medium classrooms engage more with their teachers (Benson, 2010) and have higher academic achievement compared to children not taught in their L1 (Benson, 2000; Enge & Chesterfield, 1996; Hovens, 2002; Lavoie, 2008; Cummins, 2000; Trudell, 2005; Truong, 2012; Walter & Dekker, 2011). It has also been documented that children taught in their L1 have more active classroom participation (Benson, 2000), experience higher levels of parental engagement in schools (Cummins, 2000; D’Emilio, 1995), and build a stronger foundation for future literacy and acquisition of other languages (Cummins, 2000; Thomas & Collier 1997).

Some of these papers discuss selection issues, but many are not able to account for selection or other possible confounding factors. Walter and Dekker (2011) provide the most rigorous examination of this question, employing an experimental methodology in the Philippines. However, the study only focuses on differences in mean scores between treatment and control groups. Walter and Dekker do not implement a regression analysis that controls for possible confounding factors and unfortunately their data lack individual level information to compare students in control and treatment groups before the experiment.

In the economics literature, Marshall (2009) finds suggestive evidence that Mayan-language instruction increases mathematics scores in Guatemala, but his study does not report the size of that effect nor investigates its robustness. Being instructed in a Mayan language, and having access to bilingual education, is associated with higher probability of school enrolment in Guatemala and Mexico, respectively (Marshall, 2011; Parker, Rubalcava, & Teruel, 2005), while no such effect was found in Peru (Rodríguez Lozano, 2012). McEwan (2008) argues that the gap in test scores between Indigenous and non-Indigenous children, hereafter referred to as ‘the Indigenous test score gap,’ decreased in Chile because more resources were shifted to Indigenous children within schools, although this research does not address the medium of instruction specifically. Cueto and Secada (2003) examined the effects of bilingual education in Peru in 2000 but found no effect of attending a bilingual school. This study used an analysis of student notebooks, household surveys, and a test administered during the study. While this study is an important input into our understanding of the Peruvian bilingual education landscape, the results are tenuous given the possibility for unaccounted selection and the possibility for bias in the evaluation instruments.

In this paper we estimate the effect of L1-based medium instruction on academic achievement in Peru. We build upon the existing literature in two ways: (1) the Young Lives dataset allows us to control for many more individual and school level characteristics that may explain achievement and be correlated with Quechua-medium school attendance, and (2) robustness checks allow us to shed more light on the direction and

² Researchers find achievement gaps between black and white children in the United States (Fryer & Levitt, 2004; 2006; Hanushek & Rivkin, 2009; Clotfelter, Ladd, & Vigdor, 2009) and the U.K (Patacchini and Zenou, 2009), Indian Americans and whites in the United States (Fischer & Stoddard 2013) Roma and non-Roma in Hungary (Kertesi & Kézdi, 2011), Indigenous and non-Indigenous in Australia (Bradley et al., 2007; Leigh & Gong, 2009), Chile (McEwan, 2004), Peru (Sakellariou, 2008), Guatemala (McEwan & Trowbridge, 2007), and lower and higher castes in India (Borooah, 2012).

³ These issues include the appropriate timing of assessing children who are students of transitional bilingual programs, and selection and attrition bias.

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