



# Paternal and maternal education, caregivers' support for learning, and early child development in 44 low- and middle-income countries



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## ABSTRACT

While the importance of mothers' education for children's development has been well-established, relatively little is known regarding the relative importance of maternal versus paternal education for supporting children's early developmental outcomes in low- and middle-income countries (LMICs). Using data from 98,464 three- and four-year-old children in 42 LMICs, this study found robust associations between both parents' education levels and children's development scores. Parents' provision of support for learning (i.e., books, stimulating interactions) was a key mechanism through which parental education relates to children's development – with each parent's education predicting both his or her own and his or her partner's efforts to support children's early learning. Support for learning served as a relatively stronger mechanism in middle-income countries than low-income countries.

## 1. Introduction

It is estimated that one-third of three- and four-year-old children in low- and middle-income countries (LMICs) are failing to meet basic milestones in their cognitive or socioemotional development (McCoy et al., 2016). Children growing up in resource-limited settings face continued exposure to a host of co-occurring and persistent developmental risks, which have negative consequences on the brain and early child health and development outcomes (Walker et al., 2007). A strong body of literature from LMICs has highlighted maternal education as a key protective factor for promoting the well-being and development of children in LMICs (Walker et al., 2011). Strong positive associations have been documented between maternal education and a range of early child development (ECD) outcomes, including cognitive development (Carneiro, Meghir, & Parey, 2013), language development (Dollaghan et al., 1999), reductions in behavioral problems (Hughes & Ensor, 2009), and indicators of health (Chopra, 2003). At the same time, little is known about the relative contributions of mothers' and fathers' education levels on children's development, the underlying mechanisms of these relations in LMIC contexts, or how these processes may differ across various contexts of the world (Broesch, Rochat, Olah, Broesch, & Henrich, 2016). The aim of this study is to address this gap in the literature through exploring mothers' and fathers' support for learning as a mechanism of the relation between each parents' educational level and children's ECD outcomes across 42 LMICs.

### 1.1. Maternal education, maternal stimulation, and early child development

A variety of mechanisms linking maternal education to ECD outcomes have been described in the literature, which has so far has been largely based on Western populations. Family investment model and family stress perspective are two theoretical frameworks for understanding how parents' socioeconomic status (SES; i.e., education) relates to children's development outcomes. Family investment model posits that parents with higher education may invest more money, resources, and time in their children than parents with lower education (Duncan, Magnuson, & Votruba-Drzal, 2014; Haveman & Wolfe, 1994). Family stress perspective focuses on nonmonetary capacities – such as parents' psychological well-being, parenting practices, and interactions with their children – to explain parental SES effects on children's outcomes (Conger & Elder, 1994; Conger, Rueter, & Conger, 2000).

A substantial body of empirical studies have demonstrated support for these theories: more highly educated mothers have been shown to demonstrate greater knowledge of child development (Ertem et al., 2007), use more complex language and vocabulary with their children (Chin & Phillips, 2004), invest more in their children's health (Prickett & Augustine, 2016), have more books in the home, and also to have higher educational expectations for their children (Davis-Kean, 2005). Research from the United States has also shown that more highly educated mothers provide more stimulating activities and engage in higher quality interactions with their children than mothers from low-

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income backgrounds (Magnuson, Sexton, Davis-Kean, & Huston, 2009; Raviv, Kessenich, & Morrison, 2004), with some studies theorizing maternal stimulation as the primary mechanism explaining the relation between maternal education and child development (Harding, 2015; Hoff, Laursen, & Tardif, 2002).

In terms of ECD programs and policies, efforts to improve maternal responsive stimulation – parenting that is prompt, contingent on the child's behavior, and developmentally appropriate to a child's needs and state (Bornstein & Tamis-LeMonda, 1989; Eshel, Daelmans, de Mello, & Martines, 2006) – have increasingly been recognized as a key strategy for promoting healthy ECD, especially in LMICs (Daelmans et al., 2015; Engle et al., 2011). Responsive caregiver-child interactions are not only critical for building secure attachment in infancy but also for providing early learning opportunities through which children develop cognitive, language, and socioemotional skills (Landry, Smith, & Swank, 2006). Over the past decades, various responsive stimulation intervention studies have been conducted in LMICs (Britto et al., 2017). A meta-analysis of 21 psychosocial stimulation intervention studies that were implemented in LMICs estimated medium-sized short-term effects on children's early cognitive ( $d = .42$  SDs) and language development ( $d = .47$ ; Aboud & Yousafzai, 2015). For example, in the Jamaica home-visiting program among 129 infants, stunted children who received the stimulation intervention showed substantial improvements in development scores after two years of the intervention ( $d = .88$  SDs on children's developmental quotients; Grantham-McGregor, Powell, Walker, & Himes, 1991). In Colombia, using the infrastructure of a national conditional cash transfer program, a large-scale stimulation intervention among 1263 children improved children's cognitive ( $d = .26$  SDs) and language development ( $d = .26$  SDs) after 18 months of the intervention (Attanasio et al., 2014).

Although the importance of maternal education and caregivers' support for learning have been widely theorized and substantiated in studies from high-income countries, few studies in LMICs have examined caregivers' support for learning in LMICs, and even less evidence is available on the extent to which support for learning mediates the associations between parental education and ECD outcomes in LMICs (Fernald, Kariger, Hidrobo, & Gertler, 2012; McCoy, Zuilkowski, & Fink, 2015). Despite recent advancements in the literature using data from LMICs, a significant imbalance of knowledge about ECD persists between children of educated parents living in high-income Western societies and children from other cultures and populations in poorer LMICs (Henrich, Heine, & Norenzayan, 2010; Tomlinson, Bornstein, Marlow, & Swartz, 2014), where over 90% of the world's infants are born today (Population Reference Bureau, 2016). An understanding of how representative and universal the underlying developmental mechanisms from high-income countries are in LMICs is critical to informing the viability of interventions to support ECD around the world.

### 1.2. Fathers' influence on early child development

The small body of literature from LMICs that has examined the mechanisms linking caregivers' education to ECD outcomes has either focused on mothers (Fernald et al., 2012) or primary caregivers, grouping together mothers, fathers, and other caregivers (McCoy et al., 2015). New evidence from LMICs has emphasized the unique and positive contributions that paternal education (Hamadani et al., 2014; Rubio-Codina, Attanasio, & Grantham-McGregor, 2016; Schady, 2011) and paternal stimulation (Jeong, McCoy, Yousafzai, Salhi, & Fink, 2016) can each have on ECD. In particular, recent studies have described evolving roles and expectations of fathers in their children's lives in LMICs that have corresponded with a recent rise in the female labor force and other sociodemographic transitions (Richter et al., 2011).

Robust evidence from high-income countries has emphasized infants' attachment to their fathers (Lamb & Lewis, 2010) and has

demonstrated positive effects of paternal involvement, stimulation, and responsiveness on a wide range of ECD outcomes (Cabrera, Shannon, & Tamis-LeMonda, 2007; Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008), with sustained benefits over time (Flouri & Buchanan, 2004; Grossmann et al., 2002). Research also has found that fathers' education, biological relationship to the child, human capital, and marital quality are strong and consistent predictors of paternal behaviors across different racial and ethnical populations of the United States (Cabrera, Hofferth, & Chae, 2011).

In addition to the positive, direct benefits that fathers can extend to their children, fathers also have important indirect influences through their relationships with their wives and provisions to the family, human, and financial resources that impact the larger family system and overall ecological context in which a child develops (Bronfenbrenner, 1979; Lamb, 2010). Family systems theory (Cox & Paley, 1997; Minuchin, 1985) underscores complex interacting systems within the family unit and suggests that development over the life course is inextricably shaped by each child's membership in intimate and organized family systems. Family systems theory emphasizes that family members are interdependent and parenting cannot be adequately understood by studying mothers and fathers separately, or a single dyad (e.g., mother-child dyads) in isolation (Minuchin, 1985). Moreover, family systems perspectives consider the multidirectional and reciprocal influences that different family subsystems (e.g., individual factors, dyadic and triadic relationships, family environment) can potentially have with one another to cross-cut child development trajectories.

Informed by this theoretical framework, the present study extends beyond maternal factors and parenting practices by also considering fathers in LMICs, the dynamic relationships between mothers and fathers, and how these relate to each caregiver's individual relationship with his or her child. More specifically, the present study not only explores how mothers' and fathers' education levels independently predict their own support for children's learning, but also how each parent's education level relates to the other parent's support for learning. In doing so, we aim to uncover the degree to which support for learning may explain the relation between mothers' and fathers' education and their children's ECD outcomes.

### 1.3. Macrosystem influences on child development

In addition to highlighting the critical roles that caregivers and the family environment play in shaping children's development, ecological systems theory also conceptualizes how parents and families are nested in larger cultural and broader societal contexts (Bronfenbrenner, 1979). Strong global evidence has demonstrated, for example, the negative impacts of family poverty on educational attainment, parenting practices, family processes, and early child development, while also showing that these effects are most deleterious for children and families living in LMICs compared to those from high-income countries (Grantham-McGregor et al., 2007). When looking at parenting practices, specifically, a recent body of fatherhood research from the United States has shown differential impacts of father-child and co-parenting relationships on children's development and family dynamics across racial, ethnic, and family socioeconomic status (Cabrera & Tamis-LeMonda, 2013; Shwalb, Shwalb, & Lamb, 2013). Globally, several studies have demonstrated that country human development index, and particularly country gross domestic product index, predicts maternal caregiving activities (Bornstein & Putnick, 2012) and caregivers' use of psychological aggression, physical punishment, and severe physical punishment with their children (Hendricks, Lansford, Deater-Deckard, & Bornstein, 2014) across LMICs. Building on this work, in the present study we explore whether country-level income status may potentially moderate the relations among paternal and maternal education, caregivers' support for learning, and children's ECD in this sample of LMICs.

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