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Adult Children's Education and Parents' Functional Limitations in Mexico

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Abstract

This article asks how adult children's education influences older parents' physical health in Mexico, a context where older adults often lack access to institutional resources and rely on kin, primarily children, as a main source of support. Using logistic and negative binomial regression models and data from the first wave of the Mexican Health and Aging Study ($N = 9,661$), we find that parents whose children all completed high school are less likely to report any functional limitations as well as fewer limitations compared to parents with no children who completed high school. This association remains significant even after accounting for parent and offspring-level characteristics, including parents' income that accounts for children's financial transfers to parents. Future research should aim to understand the mechanisms that explain the association between adult children's education and changes to parents' health over time.

Keywords

parent; child relationships; socioeconomic status; functional status; Mexico

Introduction

The degree to which adult children's education influences their elderly parents' health has been overlooked in Mexico, a rapidly aging and changing sociodemographic context. Offspring education may influence elderly health through transfers of time and money and important information about health behaviors and practices that may benefit parental health in variety of ways (Friedman & Mare, 2014; Torssander, 2013; Zimmer, Hermalin, & Lin, 2002; Zimmer, Martin, Ofstedal, & Chuang, 2007). In this article, we evaluate the role of adult Mexican children's resources—defined broadly as educational attainment—for their elderly parents' health, above and beyond parents' own socioeconomic resources. Understanding whether adult children's education is important for parental health could help

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identify those elderly most at risk for poor health and health declines, clarify the intergenerational benefits of education, and shed light on the health advantages and disadvantages across groups in a country with substantial challenges to population aging.

Mexico's population is aging at an unprecedented rate. In 2010, approximately 6.5% of the country's population consisted of those aged 60 and over (authors' own calculations from Mexican census data, Minnesota Population Center, 2014). This share of individuals is projected to increase to 15% by 2027 (Wong & Palloni, 2009). Compared to the United States and other more economically developed countries, population aging in Mexico presents several formidable challenges.

First, only 15% of older adults aged 50 and over had access to either private pensions or social security in 2001 (Aguila, Diaz, Fu, Kapteyn, & Pierson, 2011, p. 61). This is largely due to the share of individuals who work in the informal sector, where participation in public social security programs is not mandatory and access to pension programs is limited (Aguila et al., 2011; Sheehan & Riosmena, 2013). More recent estimates find that less than 40% of the workforce is covered by a statutory pension scheme (Organization for Economic Cooperation and Development [OECD], 2013b, p. 20). Safety net programs that provide noncontributory pensions have been introduced across several Mexican states, but overall amounts remain low and coverage is far from universal (Aguila et al., 2011).

Second, until recently, health-care coverage was not guaranteed to older adults. In 2001, 52.3% of adults aged 50 and over had access to some type of health care either through an affiliation with a public institution that provided medical services or through private insurance (Aguila et al., 2011, p. 73). However, recent government efforts to provide health insurance for the uninsured through the *Seguro Popular* program now provide basic health care to the elderly. Approximately 51 million individuals, nearly half of the Mexican population, were enrolled in the programs as of 2011 (Parker, Saenz, & Wong, 2014), nearing universal coverage of the initially uninsured population (Parker et al., 2014; Teruel, Parker, Rubalcava, Arenas, & Flores, 2014).

Third, family support networks, once the major social institution responsible for elderly care, are changing. In countries like the United States, declines in multigenerational living and fertility levels occurred well before population aging. However, they are happening at the same time in Mexico (De Vos, Solis, & De Oca, 2004; Wong & Palloni, 2009), where intergenerational coresidence, a historically salient form of support (Kanaiaupuni, 2000) is giving way to new household configurations among the elderly. As the share of adults aged 65 and older who are living alone increases (Saad, 2010), older adults may have fewer adult children to rely on for immediate assistance.

Yet educational expansion in Mexico over the past half century presents a potential opportunity to ameliorate some of the challenges posed by rapid population aging. According to data from 2010, about 65% of Mexicans aged 65 and over have less than a primary school education compared to 11% of those aged 25–34 with less than primary schooling (authors' own calculations from Mexican Census data, Integrated Public Use Microdata Series [IPUMS], 2014). The vast majority of older Mexicans were raised under a

regime where compulsory education included completion of primary school at Grade 6 (Santibañez, Vernez, & Razquin, 2005). For these earlier birth cohorts, the opportunity cost of going to school was high, given expectations that children would work on family farms and in family businesses. For women, the returns to schooling were particularly low given cultural expectations of marriage, childbearing, and raising children that precluded work outside of the home for older cohorts (Wong & DeGraff, 2009). In 1992, compulsory education was officially raised to completion of lower secondary school at Grade 9, although educational expansion began well before then (Santibañez et al., 2005). Each successive cohort of Mexicans is better educated than the past, and, importantly, the offspring of Mexican older adults today are substantially better educated than their parents. As an example, whereas 44% of adults aged 25–34 had completed upper secondary school in 2011, this was twice the proportion of those aged 55–64, among whom only 23% had completed upper secondary qualifications. A similar trend can be seen for tertiary school completion: In 2010, 23% of adults aged 25–34 attained a college degree, whereas only 13% of adults aged 55–64 have done so (OECD, 2013a). The present study sheds new light on whether these institutional investments in Mexico's younger population are also paying dividends in Mexico's older generation.

Background

Intergenerational Relationships in Mexico

Recent research using data from the Mexican Health and Aging Study (MHAS) reveals distinct patterns in intergenerational relationships. Most noteworthy, perhaps, is that financial transfers between generations in Mexican families are dominated by “upward” flows from adult children to their older parents (Wong & Palloni, 2009, p. 244). Although financial transfers are only one manifestation of the ways in which parents and offspring interact, these ascending streams of financial transfers are in line with cultural norms of filial care that are central to Mexican family life (Bridges, 1980; Gomes, 2007). However, these financial transfers are far from static and are subject to change depending on parents' health, marital status, income, and wealth (Wong, 2008; Wong & Higgins, 2007). Even in Mexico, better-educated parents who possess greater wealth are less likely to receive help from offspring and are more likely, in fact, to provide transfers to children than those parents with no formal education (Wong & Higgins, 2007, p. 115). Still, family financial transfers remain an important source of income as individual's age. In 2001, among those aged 50 and over whom reported receiving transfers from children, those transfers constituted 60.7% of the older adult's total income (Aguila et al., 2011, p. 41).

Nonfinancial or time transfers between adult children and older parents are less dominated by upward streams in Mexico but are also subject to parental and offspring resources. Similar to financial transfers, mothers who are widowed receive more help from children than widowed fathers (Gomes, 2007). However, mothers are also more likely to assist in providing (grand-)childcare to offspring than fathers (Gomes, 2007). Where families live also matters. Families living in urban areas are generally less likely to report either giving or receiving nonfinancial assistance than their rural counterparts (Wong & Higgins, 2007). One

reason could be the greater availability of kin in rural areas or conversely, the paucity of formal resources for support in rural compared to urban areas.

Family Resources and Later-Life Health

Although financial and time transfers are well documented in the Mexican context, less research has examined how children's educational attainment—a potentially important resource itself—may influence parents' health. Recent studies from Taiwan, Sweden, and the United States demonstrate a link between older parents' health and adult children's education. In Taiwan, both parents' and children's education are negatively associated with parental reports of functional limitations. The differences are substantial, as Taiwanese parents of highly educated children have 39% lower odds of reporting a functional limitation than parents of lesser educated children, net of controls for household composition, and socioeconomic status. In addition, only children's education is associated with the severity of those limitations (Zimmer et al., 2002). Similar results are also found when examining the timing of Taiwanese parents' death, where children's and parents' education are both associated with parental mortality, but only children's education is associated with parental mortality once a limiting health condition is reported (Zimmer et al., 2007). Even in countries with fewer cultural obligations of parental care, research indicates that children's resources also matter. In the United States, Friedman and Mare (2014) find that both children and parents' education are negatively associated with the risk of parents' mortality. Torssander (2013) likewise finds that the education of the firstborn child is negatively associated with the timing of parents' death in Sweden, a particularly surprising result given low levels of intergenerational obligation in that context (Kalmijn & Saraceno, 2008).

Although there is growing evidence for these upward transfers of children's resources on parents' health, understanding the mechanisms through which this occurs is less clear. In societies where material transfers predominantly flow from adult children to older parents, the value of having highly educated children may be the monetary transfers that also flow upward. In a previous study of wealth among older Mexicans, Wong and DeGraff (2009) found that parents' wealth was positively associated with the highest education of children and that this association was stronger in more recent cohorts. Although the authors were cautious to avoid making strong causal arguments, the results hint at the increasing importance of education in determining the income potential of adult children and greater monetary assistance to parents (Wong & DeGraff, 2009, p. 11). It thus seems likely that in contexts where filial obligation is strong, monetary transfers from well-educated children to parents may be an important mechanisms linking offspring education with parental health.

Even beyond material resources, highly educated children might provide parents with informational support (Torssander, 2013), which could include advice about specific health-care services and health-related behaviors. Other forms of social support, such as instrumental support, are also associated with parental health, but previous research suggests that highly educated children may be less likely to provide instrumental support to parents given the opportunity costs of their time (Coward & Dwyer, 1990; Henretta, Hill, Li, Soldo, & Wolf, 1997; Laditka & Laditka, 2001).

Better-educated children, insofar that their education affects their own health, may also influence the health behaviors of their parents. Friedman and Mare (2014), for example, find that smoking and exercise appear to explain some of the association between children's education and the timing of parent's death. They argue for spillover effects, whereby behaviors of one family member affect others, although stronger measures of contact may be necessary to confirm such relationships (Friedman & Mare, 2014).

The current study extends this line of work by examining the association between Mexican children's educational attainment and the presence and number of their parents' functional limitations. Functional limitations are significant indicators of later-life health, as they are considered an important precursor to physical disability (Verbrugge & Jette, 1994) and are a more salient indicator of quality of life among older adults than specific diseases or chronic conditions (Berkman & Gurland, 1998). Also, prior research suggests that functionality and self-rated health are more sensitive in predicting assistance from children than chronic conditions (Wong & Higgins, 2007).

Method

Data, Sample, and Method

Data for this analysis come from the MHAS, a nationally representative panel study of noninstitutionalized individuals born prior to 1950. The baseline sample was collected in 2001. Households with at least one member aged 50 and over were eligible for inclusion in the baseline sample. If more than one person was age eligible, then one respondent was randomly selected for the study. Resident spouses and partners of the randomly selected person were also recruited for the study, regardless of their age. In 2001, 11,000 households were initially sampled. Two follow-up waves were collected in 2003 and 2012. A fourth wave of data collection is planned for 2015. The present study relies only on the first year of data collected in 2001. We examine cross-sectional data in this article to establish baseline estimates for comparison with previous research in Taiwan (Zimmer et al., 2002). This is the first part of a larger study using all waves of the MHAS data to understand how family resources influence the dynamics of health and aging in the older Mexican population over time.

The baseline wave of MHAS includes questions about chronic conditions, mental health outcomes, and physical health measures. It also includes detailed information on individual and household measures of socioeconomic status, including different sources of income and wealth. Important for this analysis is that questions about the education, financial status, and location of each of the respondent's children, regardless of whether or not they were coresiding with the respondent at the time of the survey, are asked. In addition, the sample included respondents from all 31 states in Mexico, the Federal district, and both rural and urban areas.

Our eligible sample from the MHAS 2001 wave includes only respondents who are aged 50 and over, and respondents who report having at least one child aged 25 and over in 2001 ($n = 11,055$). Children only contribute to our sample when they are aged 25 and over, given that most offspring will have completed their education by then. We exclude any respondents

who are missing data on functional limitations, our outcome variable of interest ($n = 1,394$). Multiple imputation of missing values on the explanatory variables (accounting for less than 10% of the sample) was conducted using the `-mi-` command in *Stata/SE 12*. This provides an analytical sample of 9,661 respondents and 30,149 children. All analyses were conducted in *Stata/SE 12*.

We use binomial logistic regression in our first set of models to predict the prevalence of functional limitations and negative binomial regression to predict the number of functional limitations. We choose negative binomial regression models to predict the number of functional limitations because prior analyses (not shown here) found that the data on counts of functional limitations are over dispersed, indicating that negative binomial models are indeed more appropriate than Poisson regression models (Hoffmann, 2004). All of our models account for household clustering.

Measures

Parents' health—Five functional limitation items are used to capture parents' health; these items are nearly identical to those items used by Zimmer and colleagues (2002) in their study of Taiwanese elderly. Although the MHAS data contain more information on functional limitations, we limit our analysis to these 5 items so that our results are comparable to the Taiwan study. These items include whether the respondent indicated having difficulty because of a health problem with: (1) stooping, kneeling, or crouching; (2) climbing one flight of stairs; (3) walking several blocks; (4) picking up a coin; or (5) extending arms (reaching). The respondent is coded as having a functional limitation if he or she reported having difficulty but could still perform the task, or if he or she reported not being able to perform the task at all. If respondents did not normally perform the task, or if they reported no difficulties, they are coded as not having that specific functional limitation. For the logistic regression models, the outcome variable is the presence of at least one functional limitation and the reference category is reporting no limitations. For the negative binomial regression models, our count variable is the sum of all possible functional limitations, ranging from zero to five.

Education—The respondent's education and the education of all of their living children aged 25 and older are the two focal variables of interest. Because a large share of respondents in our sample received little to no formal schooling, we categorize respondents into those who have less than a primary education (less than 6 years of schooling; referent), those who completed primary education, and those with more than primary school education. Due to rapid educational expansion in Mexico, the offspring in our sample are on average better educated than their parents. At the child level, we differentiate between offspring who never completed high school (less than 12 years of schooling) versus those who completed high school or more (12 or more years of schooling). Among all of the respondent's children aged 25 and older, we distinguish between those who have no children who completed high school (referent), some children who completed high school, and all children who completed high school. In analyses not shown here, we also used the mean, mode, and maximum of children's education. We also analyzed our data using different

educational categories (i.e., 13 years of schooling or more as the main cutoff). Our substantive results were robust to these different transformations.

Parent traits—In addition to education, we include other variables associated with health in our models: parents' gender (with females as the referent), age (measured continuously),¹ and marital status (married or in a consensual union; referent, divorced, never married, or widowed). We include marital status because it is a well-known correlate of health among older adults (Goldman, Korenman, & Weinstein, 1995; Umberson, 1992). In addition, we control for the total number of children ever born to account for the potential effects of parity on later-life health, especially for women (Aiken, Angel, & Miles, 2012; Grundy & Tomassini, 2005; Spence & Eberstein, 2009).

We add a variable capturing the respondent's migration history, given that prior research has shown how U.S. migration history negatively impacts certain health outcomes (Ullmann, Goldman, & Massey, 2011). We measure migration history with two separate variables indicating (1) whether a respondent was ever a domestic migrant or not and (2) whether a respondent was ever a U.S. migrant or not. Individuals may be both former domestic and U.S. migrants. We also include a variable indicating the respondent's current urban or rural status, given prior research suggesting its associations with later-life health in Mexico (Smith & Goldman, 2007; Wong & Gonzalez-Gonzalez, 2010). To account for the sampling design of the MHAS, we control for migrant heavy regions as well.

We include two measures of the respondent's socioeconomic status: respondent's income and wealth. We use variables constructed by the MHAS research team, given the significant missing data on income and wealth (Wong & Espinoza, 2004). Monthly income is based on whether the respondent is single or partnered. Single (never married, divorced, and widowed) respondents' income includes the respondent's own earned income, pensions and public transfers, business income, real estate rents, financial assets income, and private or family (mostly from children) transfers minus any outflows of money. Among those who are partnered (married or cohabiting), we added together the respondent's own income as well as that of their spouses. All of the "joint" income sources that are shared between partners: business income, real estate rents, financial assets income, and private or family transfers are also included here (see Wong & Espinoza, 2004, pp. 6, 11, for more details). Wealth includes the individual or couple's net worth of assets in the form of homes, businesses, rental properties, capital, vehicles, and other assets minus any debts. Following prior research using these variables, we use terciles of income and wealth based on Stata's *-cut-* function which creates three relatively equal groups (Smith & Goldman, 2007). For income and wealth, the lowest/poorest category is the reference category.

Offspring traits—We also include in our models measures of the gender composition of the respondent's offspring, current offspring migration status, and children's financial status. We classified respondents by whether they had all sons (referent), all daughters, or both, given the importance of children's gender in predicting whether an older parent receives care

¹We also estimated additional models examining nonlinearity in age. However, the main effect of the squared term was never significant and the model fit was worse compared to models that only included linear measures of age.

and the impact of offspring care on parental health in Mexico (Trujillo, Mroz, Piras, Angeles, & Nhan, 2012). We also include a categorical variable to capture offspring migration status. In Mexico, prior research establishes the negative effects of children's migration on parents' physical health outcomes (Antman, 2010). Respondents either have no children with U.S. migration experience (never migrated or no current migrants; referent), at least one child who was a previous U.S. migrant but no current U.S. migrant children, or at least one child who is a current U.S. migrant. We use the mean level of children's financial status in our models with the assumption that children pool income to help parents. Each child's financial status was reported on a 5-point scale ranging from *poor* (1) to *excellent* (5).

Results

Table 1 presents a descriptive overview of our sample. A little under half (47.6%) of parents in our sample report having at least one functional limitation. Separate analyses (not shown here) indicate that difficulty with stooping, kneeling, or crouching is the most commonly reported functional limitation: 39.0% of our sample reported this particular limitation. The sample is predominantly female and the average respondent is aged 63. Approximately 83.1% of parents in our sample have a primary school education (Grade 6) or less. Nearly 70% of respondents are married and 19.7% are widowed. On average, respondents report having had over six children. Almost 60% of parents report having been domestic migrants and 7.3% report having previously lived in the United States (not including vacations or short visits). A little under half (47.3%) of respondents are urban residents and 18.5% live in a migration heavy state.

Congruent with changes in cohort education, our samples show that on average, children are better educated than their parents. Approximately 44% of respondents report that some or all of their children completed 12 years of schooling or more, or at least a high school education. Nearly 14% of respondents report that all of their children had completed high school. Almost one fourth of respondents (24.8%) report having previous U.S. migrant children and 6.7% report having at least one current U.S. migrant child. Parents report on having children with predominantly fair or good financial status. Nearly 75% of respondents report having both sons and daughters.

Table 2 presents binomial logistic regression models showing the association between the presence of any functional limitations and parents' and children's traits. The models are nested, with Model 1 including parents' gender, age, and education and Model 2 adding in children's education. Model 3 includes remaining demographic traits of parents and Model 4 adds information about children. All models control for whether or not the respondent lives in a heavy migration state.

In Model 1, we find that as expected, a parent's education is significantly negatively associated with the presence of any functional limitations. Respondents with more than a primary school education are 38% less likely to report a functional limitation than those with less than 6 years of schooling. In addition, men have lower odds of reporting any limitations

compared to women; and older individuals are more likely to report a health problem than younger individuals.

When children's education is added in Model 2, we see that the association between the parent's education continues to be negatively associated with the presence of any functional limitations, and offspring education is also negatively associated with a parent reporting any functional limitation. Parents whose children all completed at least 12 years of schooling (high school) had more than a third lower odds of reporting any functional limitations compared to respondents with no children who completed high school. A likelihood ratio test also shows Model 2 to be an improvement in model fit over Model 1 ($D = 38.67$, $p < .01$).

In Model 3, when other parental traits such as the parent's wealth and income are added, the negative association between parents' health and offspring education persists. Those respondents who report having been domestic migrants also have greater odds of reporting at least one functional limitation than those who never migrated. Urban residents are more likely to report having problems with a functional limitation than those who live in rural areas. Similar to education, greater parental income and wealth are negatively associated with reports of functional limitations. Additionally, our indicator for parental income includes transfers from children and grandchildren in the past two years. Even after accounting for potential monetary transfers from the younger generation to parents, the association between having children who all completed high school and parents' functional limitations remains significant. Again we see an improvement in model fit with the likelihood ratio test ($D = 56.66$, $p < .01$).

Model 4 adds in offspring traits beyond children's education to assess possible pathways linking the effects of offspring education to the parent's functioning. Immediately evident is the finding that introducing offspring characteristics does not reduce the negative association between offspring education and parent's functional health. That is not to say that the offspring's traits are unimportant. Indeed, with the exception of the gender composition of the offspring, all of the traits are significantly associated with parents' physical functioning. Parents of former or current U.S. migrants are more likely to report a functional limitation than parents who report no migration history among their children, paralleling previous research finding that children's migration is negatively associated with parental health (Antman, 2010). Similar to education, children's financial status is also negatively associated with parental health: Better financial standing among children is associated with lower odds of reporting any functional limitation.

Next, we replicated the models shown in Table 2, but instead examine the total number of functional limitations rather than simply a binary presence/absence of a limitation. Table 3 presents results from the negative binomial regression models for the new outcome. Findings from these models are in general similar to those shown in Table 2. The results are presented as incidence rate ratios (IRRs), which translate to the change in parents' functional limitations in terms of a percentage increase or decrease, with the precise percentage determined by the amount the IRR is either above or below 1. For example, in the final model in Table 3, we see that the number of functional limitations decreases by

approximately 21% (1–0.79) among parents with all children who completed at least high school compared to parents with no children who completed high school. Combined, the results from the incidence and count models suggest that offspring education is associated with not only the presence but also the number of limiting conditions that parents report with regard to their physical health.

To better illustrate the effects of parents' and children's education on parents' health, we present Figure 1 to convey the substantive implications of the results shown in Table 2. Figure 1 presents the predicted probabilities of reporting any functional limitations and is based on estimates from Table 2, Model 4 with all other values held at the mean except the respondent's and children's education. Specifically, Figure 1 shows how the parent's education combines with offspring education to affect the probability of having a functional limitation. Note that the effects are additive; models were estimated to test for interactions between the parent's and offspring education and no interactions were statistically significant. The figure makes clear that with increasing levels of parents' own education, the likelihood of reporting at least one functional limitation decreases. Regardless of the education of the offspring, higher levels of educational attainment for the parent are associated with a lower probability of reporting one or more functional problems. Especially important is the role of achieving more than a primary education where the greatest reductions in the probabilities are observed.

Figure 1 also makes clear that the benefits of children's education add to parent's own education. Within each level of the parent's education, parents with no high school educated children are the most likely to report any limiting condition. Similarly, parents for whom all of their children completed 12 or more years of schooling were the least likely to report a problem with physical functioning. The combination of the parent's and offspring's education results in a very large gap in the probability of reporting any functional problems. Parents with less than a primary school education with no children who completed high school have a 50% probability of reporting any functional limitation. The probability is much lower among parents with more than a primary school education for whom all of their children completed high school; these advantaged parents have a 37% probability of reporting a limiting condition, controlling for parents' and children's traits as expressed in Table 2, Model 4.

Discussion

Our study finds that adult children's higher education is negatively associated with both the prevalence and number of parents' functional limitations in Mexico and echoes previous findings on the association between offspring education and parents' physical health in Taiwan (Zimmer et al., 2002). Given the cultural context in Mexico, we expected that an important pathway linking offspring education and parental health would be financial transfers from offspring to parents. However, even after accounting for children's financial status and parents' income that included transfers from children, the negative association between children's education and parental health remained significant.

Although our results point to a rather robust association between offspring education and parental health, it is important to recognize that the findings are far from conclusive and leave many questions unanswered. First, the association between children's education and parents' functional limitations could be due to characteristics of the parent or children that remain unaccounted for. Although we include a number of parents' and offspring's traits, omitted variables may bias our results. For example, parents' other health conditions that are linked to physical functioning may explain more variation in our model. However, in analyses not shown here, we estimated additional models where we controlled for reports of common chronic conditions, such as hypertension, diabetes, cancer, respiratory problems, heart attack, stroke, and arthritis, that may be tied to physical functioning. Even after controlling for the presence of these conditions, parents for whom all of their children completed high school have 29% lower odds of reporting one or more functional limitations compared to parents with no high school educated children. Second, this study, as with other studies that attempt to unravel the relationship between children's education and parental health, suffers from problems of endogeneity. Parents who are forward thinking and invest in their children's education may themselves also invest in their future health by adopting certain lifestyles and behaviors that would lead to fewer health problems in later life.

Third, we cannot pinpoint the exact pathways or mechanism(s) through which children's education influences parental physical functioning. We do not know whether having more educated children leads to changes in health behaviors or whether better educated children provide better access to new health information, as others have argued (Friedman & Mare, 2014; Torssander, 2013). One promising area of future research is to examine the relationship between time spent with parents among offspring who are well educated and assess whether this explains some of the relationship between children's education and parental health. Qualitative research on whether and how health information is communicated between family members would be especially important here.

Fourth, our study does not provide answers about whose education matters in the link between children and parental health. However, in separate analyses (not shown here), we examined differences in sons' and daughters' education and their correlation with parents' physical functioning. We found that daughters' education was significantly correlated with parents' health but not sons'. This finding provoked more questions, however, in that gender may be a proxy for geographic proximity or emotional closeness. Whereas the question of whose education matters is beyond the scope of our article, we see it as an important next step that will help shed light on potential mechanisms linking children's resources to parents' health as well.

Finally, our results are cross-sectional, based on data from 2001 and thus limit our ability to make strong claims about the causal influence of children's education on parental health. Future work should use the longitudinal structure of the MHAS data to assess how children's education influences trajectories of functional limitations and other health outcomes among older parents. In particular, it would be helpful to know whether children's education prevents the onset of functional limitations and whether once present, children's education can mitigate parental health decline. Longitudinal analyses would help strengthen the argument for the impact of offspring resources on parents' physical health.

Despite these limitations, a main contribution of this study is how the benefits of children's education add to parents' education in explaining variation in the physical functioning of older adults. These findings can be framed within the broader framework of cumulative advantages/disadvantages in health. As demonstrated across multiple country contexts (Chen, Yang, & Liu et al., 2010; Ross & Wu, 1996; van Kippersluis, O'Donnell, Doorslaer, & Ourti, 2010), the socioeconomic gap in health tends to widen as individuals age. One potential mechanism for this that our study highlights is that well-educated elderly, who overwhelmingly produce well-educated offspring, have the additional resources of their children to draw on in garnering health advantages. The resources of younger generations should be considered when thinking about these widening health disparities as individuals move across the life course.

Conclusions

This project sheds light on the “upstream” influence of adult children's schooling on parents' health in a context where educational expansion over the past decades has increased and could provide older adults—via their offspring—with additional social and economic resources. The results presented in this study add to mounting evidence that highly educated children may protect parents from deteriorating health conditions in later life (Friedman & Mare, 2014; Torssander, 2013; Zimmer et al., 2002; Zimmer et al., 2007). However, the rapidly changing social and demographic landscape of Mexico challenges the durability of these findings.

For one, policy changes such as the enrollment of older adults into the national health insurance scheme, Seguro Popular might alter the relationship between children's education and parental health. The adoption of new public health policies such as Seguro Popular will likely improve access to health care for the elderly population. At the same time, this may weaken the influence that children's resources have on older adult health.

Another important challenge is the potential weakening of family support systems for older adults through declining fertility and changes in norms about intergenerational coresidence, both of which decrease the number of children available for parents' immediate assistance. Nevertheless, even in contexts of low fertility and limited multigenerational living, children's education continues to matter (Torssander, 2013). One reason for this may be the relationship between women's fertility and investment in children (Arenas, Kye, Teruel, & Rubalcava, 2013). Having fewer children improves the chances of children attaining higher education, which in turn may positively influence parents' health later on in life. In addition, fewer children may translate to greater potential in building meaningful, more time-intensive relationships with each child.

Finally, findings from this study are subject to changes in patterns of social stratification. In Mexico, research across cohorts suggests declining intergenerational mobility (Cortés & Escobar, 2005). One implication of this is that parents who need the resources of their offspring the most are the least likely to have children who complete high school or attend college. Health disparities among older adults may widen if access to higher education among younger cohorts is unequal. Future work should investigate what the shifting social

and demographic context of Mexico means for the relationship between children's resources and older adult health.

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Figure 1. Probability of parents reporting any functional limitation, by parents' and adult children's education. Adapted from Mexican Health and Aging Study, 2001. Model controls for parents' and children's traits as listed in Model 4, Table 1. All values except parents' and children's education are held at the mean.

Table 1

Descriptive Statistics (Parents with 1+ Adult Child(ren) Aged 25+).

Variable	Mean or Percentage	SD
Parent's characteristics		
Number of functional limitations		
0	52.4	
1	18.3	
2	12.3	
3	9.7	
4	4.8	
5	2.6	
Male	45.1	
Age	63.2	9.22
Education		
Less than 6 years of schooling	30.7	
6 years of schooling	52.4	
More than 6 years of schooling	17.0	
Marital status		
Married	69.9	
Never married	1.1	
Divorced or single	9.3	
Widowed	19.7	
Number of children ever born	6.6	3.49
Ever U.S. migrant	7.3	
Ever domestic migrant	59.8	
Urban resident	47.3	
Heavy migration state	18.5	
Individual or couple income		
First tercile (mean = Mex\$1,680)	35.1	
Second tercile (mean = Mex\$2,357)	34.9	
Third tercile (mean = Mex\$25,008)	30.0	
Individual or couple wealth		
First tercile (mean = Mex\$29,060)	32.9	
Second tercile (mean = Mex\$198,242)	34.4	
Third tercile (mean = Mex\$884,381)	32.8	
<i>Children's characteristics</i>		
Education		
No children with 12+ years of schooling	55.9	
Some children with 12+ years of schooling	30.2	
All children with 12+ years of schooling	13.9	
Migration history		
No child ever U.S. migrant	68.5	

Variable	Mean or Percentage	SD
1+ Child previous migrant to the Unites States	24.8	
1+ Child currently living in the Unites States	6.7	
Mean financial status of children	2.2	0.64
Sex composition of children		
All sons	13.3	
All daughters	12.0	
Sons and daughters	74.6	
<i>N</i>	9,661	

Note. Descriptive statistics are weighted. Adapted from Mexican Health and Aging Study, 2001.

Table 2
Predicting Presence of Any Functional Limitation (Parents with 1+ Adult Child(ren) Aged 25+).

Variable	Model 1		Model 2		Model 3		Model 4	
	OR	SE	OR	SE	OR	SE	OR	SE
<i>Parent's characteristics</i>								
Male	0.50	.04***	0.49	.04***	0.49	.04***	0.50	.04***
Age	1.05	.00***	1.05	.00***	1.05	.00***	1.05	.00***
Education (ref: less than 6 years)								
6 years	0.95	.05	0.98	.05	0.98	.05	0.99	.06
More than 6 years	0.62	.07***	0.76	.08**	0.77	.08**	0.80	.08**
Marital status (ref: married)								
Never married					0.92	.19	0.91	.19
Divorced					0.97	.08	0.97	.08
Widowed					0.96	.06	0.97	.06
Children ever born					1.01	.01	1.01	.01
Migration history								
Ever U.S. migrant (ref: never migrant)					1.12	.08	1.07	.08
Ever domestic migrant (ref: never migrant)					1.19	.05***	1.17	.05**
Urban resident (ref: rural)					1.27	.05***	1.32	.05***
Migration heavy state (ref: nonmigrant heavy state)	1.19	.05***	1.18	.05**	1.18	.05***	1.15	.05**
Individual or couple income (ref: first tercile)								
Second tercile					0.92	.06	0.93	.06
Third tercile					0.88	.06*	0.89	.06 [‡]
Individual or couple wealth (ref: first tercile)								
Second tercile					0.91	.06	0.91	.06 [‡]
Third tercile					0.89	.06 [‡]	0.90	.06 [‡]
<i>Children's characteristics</i>								
Education (ref: no children with 12+ years)								
Some children with 12+ years			0.98	.05	0.96	.05	0.96	.05
All children with 12+ years			0.65	.08***	0.66	.08***	0.71	.08***

Variable	Model 1			Model 2			Model 3			Model 4		
	OR	SE		OR	SE		OR	SE		OR	SE	
Migration history (ref: no child/ever U.S. migrant)												
1+ child previous migrant to the United States										1.20	.09	*
1+ child currently living in the United States										1.21	.06	**
Mean financial status of children										0.80	.04	***
Sex composition (ref: all sons)												
All daughters										0.94	.09	
Sons and daughters										1.04	.07	
Constant	0.06	.17	***	0.06	.17	***	0.05	.19	***	0.08	.21	***
Log likelihood	-6.279			-6.260			-6.232			-6.207		
Likelihood-ratio test	-			38.67		***	56.66		***	48.89		***
N	9,661			9,661			9,661			9,661		

Note. Likelihood-ratio tests assess comparison with previous model. All models account for household clustering. Adapted from Mexican Health and Aging Study, 2001. OR = Odds ratio.

[†] $p < .1$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 3
Predicting the Count of Functional Limitations (Parents with 1+ Adult Child(ren) Aged 25+).

Variable	Model 1		Model 2		Model 3		Model 4	
	IRR	SE	IRR	SE	IRR	SE	IRR	SE
<i>Parent's characteristics</i>								
Male	0.65	.03 ***	0.65	.03 ***	0.65	.03 ***	0.65	.03 ***
Age	1.03	.00 ***	1.03	.00 ***	1.03	.00 ***	1.03	.00 ***
Education (ref: less than 6 years)								
6 years	0.91	.03 **	0.94	.03 *	0.96	.03	0.96	.03
More than 6 years	0.62	.04 ***	0.72	.05 ***	0.75	.05 ***	0.76	.05 ***
Marital status (ref: married)								
Never married					1.04	.12	1.03	.12
Divorced					0.99	.05	0.99	.05
Widowed					0.96	.03	0.96	.03
Children ever born					1.01	.00 *	1.00	.00
Migration history								
Ever U.S. migrant (ref: never migrant)					1.10	.05 †	1.06	0.05
Ever domestic migrant (ref: never migrant)					1.07	.03 *	1.06	.03 *
Urban resident (ref: rural)					1.10	.03 **	1.13	.03 ***
Migration heavy state (ref: nonmigrant heavy state)	1.12	.03 ***	1.11	.03 **	1.10	.03 **	1.08	.03 *
Individual or couple income (ref: first tercile)								
Second tercile					0.92	.03 *	0.93	.03 *
Third tercile					0.91	.04 *	0.92	.04 *
Individual or couple wealth (ref: first tercile)								
Second tercile					0.93	.03 *	0.92	.03 *
Third tercile					0.88	.04 **	0.88	.04 **
<i>Children's characteristics</i>								
Education (ref: no children with 12+ years)								
Some children with 12+ years	0.94	.03 *	0.94	.03 †	0.94	.03 †	0.93	.03 †

Variable	Model 1			Model 2			Model 3			Model 4		
	IRR	SE		IRR	SE		IRR	SE		IRR	SE	
All children with 12+ years		0.73		.05***	0.75		.06***	0.79		.06***		
Migration history (ref: no child ever U.S. migrant)												
1+ child previous migrant to the United States										1.20	.05***	
1+ child currently living in the United States										1.15	.03***	
Mean financial status of children										0.87	.03***	
Sex composition (ref: all sons)												
All daughters										0.96	.06	
Sons and daughters										1.03	.05	
Constant	0.16	.10***		0.16	.10***		0.16	.11***		0.20	.12***	
Log likelihood		-13.357			-13.336			-13.315			-13.287	
Likelihood-ratio test		-			42.04***			42.38***			56.33***	
N		9,661			9,661			9,661			9,661	

Note. Likelihood-ratio tests assess comparison with previous model. All models account for household clustering. Adapted from Mexican Health and Aging Study, 2001. IRR = incidence rate ratios.

† $p < .1$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.