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Justine Hervé
Stevens Institute of Technology

Subha Mani
Fordham University, University of Pennsylvania, IZA and GLO

Jere Behrman
University of Pennsylvania

Ramanan Laxminarayan
One Health Trust and Princeton University

Arindam Nandi
The Population Council and One Health Trust

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Intergenerational Mobility in Depression and Anxiety in India

This paper is the first to provide estimates of intergenerational associations in mental health for a low- and middle-income country. Using rich mental health data on ~4,000 parent-child pairs in India, we find intergenerational associations in depression and anxiety scores to be 0.61 and 0.68, respectively, suggesting low mobility in mental health. However, once we allow for the mobility estimates to vary along the distribution of parental mental health, we find notable heterogeneity – while minimal symptoms of anxiety and depression in parents persist into the next generation, children of parents with mild to severe symptoms experience significant improvements in mental health. This upward mobility in mental health is largely driven by high-socioeconomic-status households. Importantly, we show that even minimal symptoms have significant economic implications for both children and adults. Our findings suggest that programs that improve mental health in one generation can also facilitate intergenerational mobility in mental health and related outcomes.

JEL Classification: I14, I15, O12
Keywords: intergenerational mobility, mental health, India

Corresponding author:
Justine Hervé
Stevens Institute of Technology
1 Castle Point Terrace
Hoboken, NJ 07030
USA
E-mail: jherve@stevens.edu

1 Introduction

In recent years, research on intergenerational mobility in physical and mental health has increased substantially (Ahlburg, 1998; Bencsik et al., 2023; Case et al., 2005; Chang et al., 2024; Johnston et al., 2013; Palloni, 2006; Currie, 2009; Pascual and Cantarero, 2009). This is primarily due to the important influence that health has in determining economic outcomes as well as facilitating mobility through the human-capital channel (Bloom et al., 2024). Despite growing evidence on intergenerational transmission of physical health, research on mental health mobility remains limited, although there is a clear consensus that childhood and adult mental-health problems are negatively associated with economic outcomes such as schooling, employment and earnings (Currie et al., 2010; Biasi et al., 2021; Lund et al., 2024), even when the symptoms are mild (Jain et al., 2022). Furthermore, almost all evidence on intergenerational mobility in mental health comes from high-income countries (Bencsik et al., 2023; Bütikofer et al., 2024; Johnston et al., 2013; Vera-Toscano and Brown, 2022).

The lack of evidence on intergenerational mobility in mental health in low- and middle-income countries (LMICs) is mainly due to the unavailability of consistent data on mental health of parents and their children. This scarcity of evidence on the transmission of mental health in LMICs is striking, given that more than 80% percent of people with mental health problems live in LMICs (Rathod et al., 2017) and these contexts are precisely where the intergenerational transmission of mental health is most likely to perpetuate poverty traps (Ridley et al., 2020).

This paper addresses these gaps by presenting estimates of intergenerational mobility in mental health using data from ∼4,000 parent-child pairs in India. Our mental-health measures are obtained from responses to the PHQ-9 (Patient Health Questionnaire-9) and GAD-7 (General Anxiety Disorder-7) screening tools for depression and anxiety, respectively (Kroenke and Spitzer, 2002; Spitzer et al., 2006). These tools are extensively used worldwide, including in low- and middle-income countries (LMICs).[1] These measures en-

[1]Psychometric assessments have demonstrated strong internal consistency and construct validity in

able cross-study comparisons, distinguishing our work from previous research that relied on informal self-reports of depression (Akbulut-Yuksel and Kugler, 2016), studies that employed general well-being scales to measure mental health (Johnston et al., 2013), and studies that used different mental-health tools for parents and children (Eley et al., 2015; Hancock et al., 2013).

We first estimate both relative and absolute mobility in mental health as together they provide a nuanced view of how and why outcomes evolve across generations, shedding light on both individual progress and societal equity. We estimate the intergenerational associations in depression and anxiety scores to be 0.61 and 0.68, respectively. These suggest high intergenerational persistence in anxiety and depressive symptoms in India and are much higher than the average estimates (0.13-0.22) on intergenerational-mental-health associations documented for high-income countries (Johnston et al., 2013; Vera-Toscano and Brown, 2022; Bencsik et al., 2023). However, note that these papers use different measures of mental health than ours'.[2] Moreoever, the strong intergenerational persistence in mental health found here is also consistent with the broader evidence of higher intergenerational persistence and low mobility in education and earnings/wealth documented for India (Asher et al., 2024), and more generally LMICs (Zafar (2022); Bevis and Villa (2020); Asadullah (2012)), compared to high-income settings (Grawe (2006)).

Second, we examine the rank-rank slope in intergenerational mental health, which captures relative mobility in mental health between two generations by measuring how strongly a parent's rank in mental health predicts their child's rank. The rank-rank slope for depression is 0.69, indicating that a 10-percentile increase in parents' rank (indicating worse mental health) corresponds to a 6.9-percentile increase in their children's rank (indicating worse mental health). This suggests limited positional mobility, supporting the finding of low relative mobility. We observe a similar relationship for anxiety.

South Africa, Kenya, and India (De Man et al., 2021; Hart et al., 2025; Odero et al., 2023), affirming their utility for detecting depression and anxiety symptoms in these contexts.

[2]For instance, Johnston et al., 2013 use a 9-item subset of the 24-item Malaise Inventory, Vera-Toscano and Brown, 2022 use five questions from the Short Form 36 Health Survey and Bencsik et al., 2023 use five questions from the Short Form 12 Survey, making it difficult to compare among these studies.

Third, rank-rank measures focus on relative positions within a generation and do not directly capture absolute improvements or declines in mental health. As a result, the observed persistence in mental health across generations could arise from two different mechanisms: (1) children of parents at higher mental-health ranks (indicating worse mental health) inherit similarly poor outcomes, leading to high persistence and low mobility, or (2) children of parents at lower mental-health ranks (with less severe mental-health concerns) experience smaller relative increases in severity, which also results in high persistence and limited relative mobility. To separate these two channels, we estimate measures of absolute mobility in mental health using a spline specification, which allows the slope of the association between parental and child mental-health scores to vary along different points of the parental distribution of depression and anxiety. This specification shows high persistence in mental health at low levels of depression and anxiety among parents, and upward mobility in mental health when parents experience high levels of depression and anxiety. Specifically, a one-standard-deviation increase in parental minimal depression (anxiety) is associated with a 0.76 (0.85) standard deviation increase in children's depression (anxiety), while a one-standard-deviation increase in parental mild-to-severe depression (anxiety) is associated with a 0.26 (0.31) standard deviation decrease in children's depression (anxiety) score. In other words, when parents are minimally depressed, there is high persistence of these minimal symptoms among children. In contrast, when parents are mild-to-severely depressed, children tend to be significantly less depressed than their parents. Given that the economic burden of depression remains high even for those experiencing minimal symptoms (Jain et al., 2022), the high intergenerational persistence in minimal symptoms might still have significant economic consequences for children.

We further show in Section 3.4 that depressive symptoms among children and parents, even mild ones, can have significant economic consequences. This provides a possible mechanism for the documented link between children's mental health and adult economic outcomes (Currie et al., 2010; Fletcher, 2010; Hakulinen et al., 2019; Mojtabai et al., 2015; Ridley et al., 2020). Specifically, we show that children's mental health is negatively

associated with their schooling outcomes as well as their cognitive and non-cognitive skills. Similarly, parental mental health is also negatively associated with their cognitive skills and labor-market outcomes. These findings align with existing evidence documenting the costs of mental health on cognitive functioning (Gotlib and Joormann, 2010), belief formation (De Quidt and Haushofer, 2016), human-capital accumulation (Patton et al., 2016), and income (Goodman and Goodman, 2009).

To examine possible moderating factors in the transmission of mental health, we further explore whether the link between parents' and children's mental health varies along key family background characteristics. We pay special attention to socioeconomic status (SES), as it has been shown to be an important moderator of intergenerational mobility in health across different settings (Halliday et al., 2021; Wu et al., 2024; Kumar and Nahlen, 2023). Our findings indicate that the high persistence observed in minimal anxiety and depressive symptoms between parents and children is predominantly driven by high-SES households. Most importantly, upward mobility in depression, among children of mild-to-severely-depressed parents, occurs only in high-SES households; there is limited upward mobility in mental health for children from low-SES households. This finding aligns with previous research indicating that poor children are more likely to bear the consequences of poor maternal health than their high SES counterparts (Bhalotra and Rawlings, 2013). It also supports prior evidence wherein poverty is a strong predictor of poor mental health in LMICs (Ridley et al., 2020).

Lastly, we present several robustness checks including a detailed discussion on concerns about lifecycle bias and measurement error bias in Section 4.

This paper contributes to the literature on the transmission of health across generations by examining intergenerational mobility in mental health in India, the world's most-populous country. While there are quite a few papers documenting intergenerational mobility in physical and mental health for high-income countries (Halliday et al. (2021); Fletcher and Jajtner (2023); Vera-Toscano and Brown (2022); Currie and Moretti (2007); Akbulut-

Yuksel and Kugler (2016))[3], fewer studies examine intergenerational mobility in physical health for LMICs (Bhalotra and Rawlings (2011); Kumar and Nahlen (2023); Onyeneho et al. (2019)); (Halliday et al. (2021)), and none examine mobility in mental health for a LMIC. Existing estimates from high-income countries suggest intergenerational associations in mental health of about 0.21 in Australia (Vera-Toscano and Brown, 2022), 0.19-0.22 in the UK (Johnston et al., 2013; Bencsik et al., 2023). In the U.S., a mother reporting depression increases the likelihood of her child reporting depression by 9 percentage points (Akbulut-Yuksel and Kugler, 2016).[4] In contrast, we find notable heterogeneity in mental-health mobility - while minimal symptoms of anxiety and depression in parents persist into the next generation, children of parents with mild-to-severe-depressive symptoms experience significant upward mobility.

Our results also contribute to the broader literature on intergenerational mobility as it helps explain the high intergenerational persistence in economic outcomes found in LMICs. Specifically, our findings that both parental and child mental health matter for economic outcomes complement existing evidence of low intergenerational mobility in health, income, and education in LMICs compared to high-income countries: notably in Sub-Saharan Africa (Razzu and Wambile (2022)), China (Wu et al. (2024)), Indonesia (Kim et al. (2015); Zafar (2022)) and India (Hnatkovska et al., 2013; Azam and Bhatt, 2015; Asher et al., 2024; Kumar and Nahlen, 2023). By showing that poor mental health among adolescents is associated with poor cognition, worse schooling outcomes, and reduced self-esteem, we provide a plausible pathway for the intergenerational persistence in economic outcomes found in India and elsewhere. By extension, we also provide a new contributing factor, namely, limited mobility in mental health, to the perpetuation of poverty traps in LMICs (Ridley et al., 2020).

Finally, this paper also speaks to the literature on the effectiveness of mental-health

[3]In these studies, physical health is measured using quality adjusted life-years or QALY's, birth weights or body-mass indices.

[4]Akbulut-Yuksel and Kugler, 2016 define depression via a dummy variable taking the value one if "the respondent reported to have experienced depression sometimes, a moderate amount of time or most of the time during the past week and zero otherwise."

interventions in LMICs. Cognitive Behavioral Therapy (CBT) interventions have proven successful in various settings: increasing patience and identity while reducing crime and violence in Liberia (Blattman et al., 2017), decreasing perinatal depression and promoting investment in children in Pakistan (Baranov et al., 2020), and reducing mental distress in Ghana (Barker et al., 2022). Such interventions could potentially help limit the intergenerational persistence in human-capital accumulation and thereby well-being in the long run.

The rest of the paper is organized as follows. Section 2 describes the data and the variables used in the analysis. Section 3 presents the methodology, reports our main estimates on intergenerational association in mental health between parents and children, and explores moderating factors of the association. We present robustness checks in Section 4 and concluding remarks follow in Section 5.

2 Data

2.1 Sample description

This study uses endline household and individual surveys from a larger project designed to evaluate the effects of the Magic Bus Foundation's community-driven, sports-based curriculum on various outcomes, including education, gender attitudes, socioemotional development, and health in India using a cluster randomized control trial.[5] As part of this project, data were collected over three rounds. Additional funding was raised to collect data on mental health that was not part of the original study design or goals.[6]

The baseline survey, conducted between August and November 2015, covered youth from 158 rural villages across two districts in Andhra Pradesh and Maharashtra, India (for further details on sampling, see Hervé et al. (2022)). The first follow-up survey took place from March to May 2018, and the endline survey, targeting a random subset of

[5]The project is registered with the AEA under Trial ID: AEARCTR-0000518.

[6]Ethics clearance for the baseline survey was obtained from the Public Health Foundation of India, and those for the midline and endline surveys were obtained from Fordham University.

baseline respondents, was administered from March to June 2022. Since the mental health modules were introduced only in the endline survey, this paper focuses on the mental health data collected from adolescents and young adults (average age 17-18 years old) and their parents/other members of their households in 2022. The final sample uses 3,934 parent-child pairs, for whom mental health data are available at endline.[7] To ensure that our mobility estimates are not driven by the intervention, we show in Section 4 that the intergenerational mobility estimates found in the control sample are similar to those reported for the full sample.

2.2 Data description

The endline surveys gathered data on various child/adolescent (between the ages of 15 and 21 at the time of the survey in 2022) schooling, cognitive, and non-cognitive outcomes. Schooling outcomes included children's enrollment status, and completed grades of schooling. To assess children's cognitive abilities, the surveys incorporated math and language skills tests using the Annual Status of Education Report (ASER) testing tools (ASER, 2018), that are widely recognized for evaluating cognitive skills among children and adolescents (Banerji et al., 2013; Shah and Steinberg, 2017; Muralidharan et al., 2019; Khalid et al., 2024) in LMICs. The math tests evaluated respondents' abilities to divide, subtract, and recognize numbers. For language skills, individuals were tested on their reading abilities in their native language and English. For each language, the assessment covered reading a paragraph, sentence, words, and letters.

Importantly, the endline surveys also gathered data on the mental health of both the head of the household and all interviewed children at the time of the interviews, which are used to construct the main variables of this study. We measured symptoms for anxiety and depression using the Generalized Anxiety Disorder 7-item scale (known as, GAD-7) and the 9-item Patient Health Questionnaire (known as, PHQ-9) scale, respectively (Kroenke

[7] The raw sample in Andhra Pradesh and Maharashtra originally contained 4,379 head-of-the-household (or spouse of the head-of-the household) - child pairs, for which we have information on the mental health of both the child and the adult. Of these, 3,934 pairs could be identified as parent-child pairs.

and Spitzer, 2002; Spitzer et al., 2006). The scales ask the respondents to indicate if they had feelings of anxiety or depression in the past two-week period. The respondents are requested to indicate the severity of their feelings on a Likert scale. Both these scales have been confirmed as valid tools to measure anxiety and depression in LMICs (De Man et al., 2021; Hart et al., 2025; Hoang et al., 2023; Odero et al., 2023) and are widely used in economics and psychology.

Lastly, we merge endline data with baseline data to obtain information on household family background characteristics that were not collected in the endline survey (e.g., assets, caste, religion, electricity, and access to social protection).

2.3 Variable definitions

Table 1 provides definitions for all the variables used in this analysis. A brief description of how these variables were constructed is provided below:

Mental health: The anxiety and depression scores used in this paper are derived from the GAD-7 and PHQ-9 scales, respectively. On these scales, individuals rate their experiences of anxiety or depression on a 4-point Likert scale: 0 = not at all, 1 = several days, 2 = more than half the days, and 3 = nearly every day. For each outcome, the scores are summed, yielding a GAD-7 score ranging from 0 to 21 and a PHQ-9 score ranging from 0 to 27. These scores represent continuous measures of symptom severity, with higher values indicating more pronounced anxiety or depression. Depression and anxiety are categorized into four levels of severity: scores from 0–4 reflect minimal symptoms, 5–9 indicate mild symptoms, 10–14 correspond to moderate symptoms, and scores of 15 or higher signify severe symptoms (Kroenke and Spitzer, 2002; Spitzer et al., 2006). We standardize the anxiety and depression scores using the generation-specific means and standard deviations. A detailed description can also be found in Panel A Table 1. And see Table 2 for summary statistics on the individual questions implemented as part of the PHQ-9 and GAD-7 scales.

Child outcomes: Child outcomes can be broadly classified into: schooling outcomes, cognitive skills, and non-cognitive skills. Schooling outcomes include adolescents/youths'

enrollment status and completed grades of schooling. Cognitive skills are measured using the adolescents/youths' performance in three types of tests, which assess their math and reading abilities in native language and English, where higher scores reflect better performances on these tests. A detailed description of these scores can be found in Panel B Table 1. Similarly, we measure non-cognitive skills using adolescents/youths' responses to self-efficacy and self-esteem questions where once again higher scores reflect greater self-efficacy and self-esteem (see Table 1 for details on questions, scale and scoring).

Background characteristics: Finally, Panel C of Table 1 presents variable definitions for family background characteristics. For each adolescent/youth respondent, we have details on their age, gender, as well as the age and schooling of their parents. At the household level, we have information about caste, religion, household size, access to infrastructure (drinking water, cooking fuel, toilets), and participation in social protection programs. Importantly, we measure household socioeconomic status using the asset index calculated through the principal component analysis method developed by Pollitt et al., 1993.

2.4 Summary Statistics

Figure 1 reports kernel density plots for parents' and children's depression and anxiety scores. The dashed line in each subfigure represents the threshold between minimal and mild-to-severe depression and anxiety. Both subfigures suggest that parents, on average, have higher depression and anxiety scores than children (p-value on depression <0.01; p-value on anxiety <0.01). We report summary statistics for all variables used in the paper in Table 3. Panel A shows that the average parent and average child exhibit minimal symptoms of depression and anxiety, with average depression scores at 3.16 for parents and 2.76 for children, and average anxiety scores are 3.29 for parents and 2.86 for children. Among children, the distribution of depressive (anxiety) symptoms is as follows: minimal - 72 (70) percent, mild - 20 (26) percent, and moderate to severe - 8 (4) percent. Among parents, the distribution of depressive (anxiety) symptoms is as follows: minimal - 68 (64)

percent, mild - 27 (32) percent, and moderate to severe - 5 (4) percent.[8]

We note that our prevalence estimate of 28% for mild-to-severe depression (PHQ-9 and GAD-7 scores above or equal to 5) among adolescents/youths is lower than Chauhan et al. (2014) and Singh et al. (2017)'s estimates, who find prevalence of mild-to-severe depression of 38 and 40% among Indian adolescents. Our prevalence rates of moderate-to-severe depression and anxiety (PHQ-9 and GAD-7 scores above or equal to 10) of 8 and 4% are also lower than the 37% and 30% prevalence rates for moderate-to-severe depression and anxiety documented in Park et al. (2023).[9] These differences in prevalence rates may be attributable to the fact that the respondents in Park et al. (2023), Chauhan et al. (2014) and Singh et al. (2017) were collected from schools in urban areas with higher socioeconomic backgrounds, where participants may experience more academic pressures compared to our relatively disadvantaged rural participants. Indeed, our study is the first to administer the PHQ-9 and GAD-7 scales in community-based study in rural areas, where mental health issues have been shown to be lower than in urban areas (Nandi et al., 2000; Satyanarayana et al., 2017).We note that our prevalence rates are however close to the moderate-to-severe depression rates ranging between 6.5 and 10.6% percent noted among adults in the US (Anand et al. (2021); Cao et al. (2020); Crandal et al. (2022); Brody et al. (2018)).

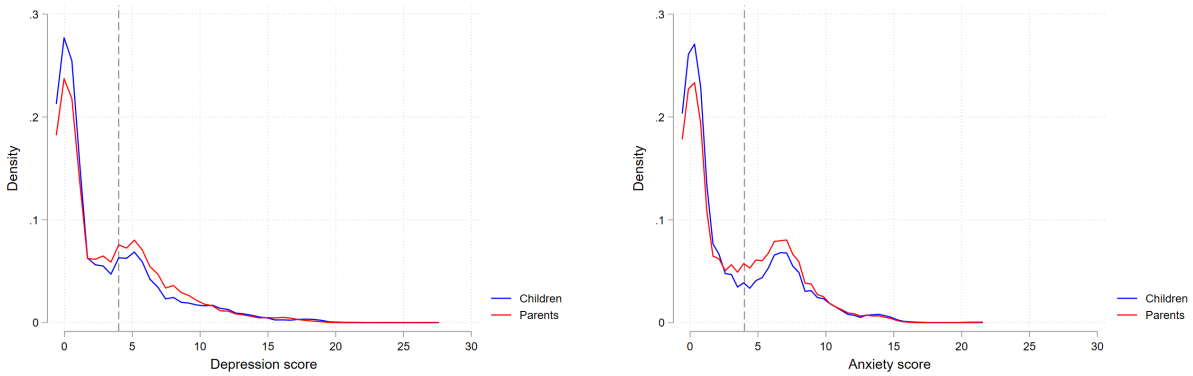
In Panel B, we show that 82 percent of the adolescents/youths are currently enrolled in school, and have completed about 8 grades of schooling. The average adolescent/youth is also able to read sentences (but not a paragraph) in their native language as well as English. Similarly, they are also able to complete subtraction problems but not division. Adolescents/youths also report high levels of self-efficacy and self-esteem, with both scores close to 70 percent.

In Panel C, we see that our sample is largely poor, 97 percent of our parent-child pairs live below the poverty line, with only 21 percent having access to toilets and 35 percent having access to cooking fuel. Almost two-thirds of all households are dependent

[8]Disaggregated data on the PHQ-9 and GAD-7 scales are presented in Table 2.

[9]In Park et al. (2023), 1,213 adolescents (enrolled in grades 7 to 12) attending English-medium secondary schools in Maharashtra completed the PHQ-9 and GAD-7 scales using Qualtrics.

on the world's largest social protection program, namely, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) for job support. In terms of individual characteristics, 58 percent of the children are male, and 97 percent of the parents who completed the mental health modules were fathers. The average age of the child is 17 years, while the average age of the father is 47 years and the average mother's age is 42 years. On average, fathers have 3 grades of schooling, and mothers have about 1 grade of schooling.



(a) Depression (b) Anxiety

Figure 1: Kernel densities of parent and children's anxiety and depression scores

3 Results

3.1 Empirical specification

To measure intergenerational associations in mental health, we estimate the following standard linear regression model using ordinary least squares (OLS):

$$MH_i^C = \alpha + \beta MH_i^P + \gamma' X_i + \phi_v + \epsilon_i^C \tag{1}$$

Where MH_i^C is the mental health score of child i, and MH_i^P is the mental health score of child i's parent. Both mental health scores are standardized using the generation-specific

means and standard deviations. β captures the mental health association between parent and child and can be interpreted as a β standard deviation change in child mental health in response to a one standard deviation change in parental mental health. Thus, β measures the persistence in mental health, while $1 - \beta$ captures mobility. This coefficient includes mental health association stemming from both genetic factors and environmental factors. We use this measure to compare our estimates to existing estimates of the intergenerational associations in mental health. X_i only controls for individual age and gender. We also control for village fixed effects ϕ_v, which help control for village-specific factors, such as the quality of local education or environmental conditions like rainfall or temperature variations.

Next, we estimate the rank-rank model of intergenerational mobility in mental health to derive a measure of intergenerational persistence that is less sensitive to changes in inequality in the distribution of depression and anxiety scores (Chetty et al., 2014; Asher et al., 2024, Solon, 1999). To estimate the association between parents' rank in the parental mental health distribution and their children's rank in the children's mental health distribution, we estimate the following regression model using OLS:

$$r_i^C = \alpha + \psi r_i^P + \theta' X_i + \phi_v + \epsilon_i^C \tag{2}$$

Where r_i^C and r_i^P represent the percentile rank of mental health in the child and parental generations, respectively. ψ is the rank-rank slope and can be interpreted as the persistence in relative ranks.

Finally, since the pathways connecting health transmission across generations point to significant non-linearities (Bhalotra and Rawlings, 2011), we augment equation 1 to develop a measure of absolute mobility using a spline regression model (similar to Björklund et al., 2012 and Bhalotra and Rawlings (2011), that allows the coefficient estimate on the intergenerational association in mental health to vary along the distribution of parental anxiety and depression scores. This approach also allows us to separate upward mobility

from downward mobility in mental health. In the regression model below, we specify the spline in parental depression and anxiety scores at two cutoffs: minimal anxiety or depression (which includes all scores between 0-4) labeled as MMH in equation (3) and mild-to-severe anxiety or depression (which includes all scores above 5) labeled as MSMH in equation (3) - both cutoffs are clinically determined thresholds for identifying patients with varying degrees of anxiety and depressive symptoms (Kroenke and Spitzer, 2002; Spitzer et al., 2006).

$$MH_i^C = \alpha + \beta_1 MMH_i^P + \beta_2 MSMH_i^P + \gamma' X_i + \phi_v + \epsilon_i^C \tag{3}$$

3.2 Estimates of intergenerational mobility in mental health

Table 4 presents the intergenerational association between standardized measures of parents' and children's depression and anxiety scores.[10] Our preferred estimates are reported in Columns (3) and (6), which show that the intergenerational associations in depression and anxiety are 0.61 and 0.68, respectively ($p<0.01$). In other words, a one standard deviation increase in a parent's average depression (anxiety) score is associated with a 0.61 (0.68) standard deviation increase in their children's depression (anxiety) score. These estimates are much larger than the intergenerational associations in overall health of 0.17-0.25 documented in the US. They are also larger than the persistence in mental health estimated for Australia at 0.20 (Vera-Toscano and Brown (2022)) and for the UK at 0.19-0.22 (Johnston et al. (2013); Bencsik et al. (2023)). To date, no comparable estimates on intergenerational persistence in mental health exist for LMICs. However, our result aligns with the high intergenerational persistence in education found for India being much higher than the global average of 0.42 across a pooled sample of 42 countries (Azam and Bhatt (2015); Asher et al., 2024).

[10] Appendix Table A1 presents estimated intergenerational associations between non-standardized parental and child's depression and anxiety scores.

Table 5 presents the rank-rank slope in mental health. Consistent with the results in Table 4, these estimates also suggest high rank persistence in anxiety and depressive symptoms across generations. Specifically, in Columns (3) and (6), the rank-rank slope estimates for depression and anxiety are 0.69 and 0.73, respectively. This indicates that, on average, every 10-percentile increase in parental depression and anxiety ranks is associated with a 6.9 and 7.3 percentile increase in children's depression and anxiety ranks, respectively.

The high intergenerational associations in mental health identified in Table 4 could potentially hide important heterogeneities. Specifically, the high persistence identified in Table 4 mostly comes from high transmission of minimal parental depression and anxiety symptoms to their children, but at high levels of parental depression and anxiety, children actually experience upward mobility in mental health. To illustrate this, we present absolute measures of intergenerational mobility in Table 6, by reporting estimates from spline regressions. First, we find evidence of high persistence in mental health at low levels of parental depression and anxiety, as indicated by the positive coefficients of 0.76 and 0.85 for minimal parental depression and anxiety scores, respectively ($p<0.01$). In contrast, we observe upward mobility in mental health at high levels of parental depression and anxiety, as reflected by the negative coefficients of -0.26 and -0.31 for mild-to-severe parental depression and anxiety scores ($p<0.01$). These results are also visible in Appendix Figure A1, where we plot the predicted values of children's standardized depression and anxiety scores across domains of parental depression and anxiety.[11] These results hold when we split the domain of parental mental health into three instead of two subdomains—minimal, mild and moderate-to-severe—in Appendix Table A2.

Overall, children whose parents suffer from minimal depression and anxiety tend to experience similar levels of symptoms as their parents, whereas children of parents with mild to severe depression and anxiety symptoms tend to be less depressed and anxious than their parents. This is good news, as it suggests an overall improvement in mental

[11] In Appendix Figure A1a, standardized depression scores range from 0 to 0.162 and 0.162 to 2 for minimal and mild-to-severe symptoms, respectively. Similarly, in Appendix Figure A1b, standardized anxiety scores range from 0 to 0.143 and 0.143 to 2 for minimal and mild-to-severe symptoms, respectively.

health among the younger generation. Nevertheless, given that even minimal symptoms of depression carry a significant economic burden (Jain et al., 2022), the persistence of symptoms at the lower end of the parental depression and anxiety distributions could still have substantial economic impacts on adolescents. This is further corroborated by the estimates discussed in Section 3.4.

3.3 Heterogeneity analysis

To assess whether certain factors moderate the intergenerational associations of mental health, we explore heterogeneity in the association between parental and child mental health across several dimensions: socioeconomic status (SES), mother's education, caste, and gender.

First, previous research suggests that socioeconomic background, captured through parental wealth or education, moderates the transmission of health across generations. In the US, Halliday et al. (2021) shows that lower income reinforces the transmission of health disadvantages. In LMICs, education has been shown to moderate the transmission of health in China (Wu et al. (2024)), and wealth moderates the intergenerational transmission of anemia in India (Kumar and Nahlen (2023)). Considering this, we examine whether socioeconomic status also moderates the intergenerational association in mental health in our context. We approximate socioeconomic status using the household's asset index. We first re-estimate equation (2), stratifying the sample into two groups: households with below-median assets (Low SES) and households with above-median assets (High SES). Table 7 presents the resulting mobility estimates for the low and high SES groups in Panels A and B, respectively. The low-SES group experience significantly lower persistence in mental health than the high-SES group, with rank-rank slope estimates for depression and anxiety at 0.61 and 0.65, respectively for the low-SES groups and at 0.76 and 0.80, respectively for the high-SES group.

We next estimate equation (3), stratifying the sample by SES to allow for the persistence parameter to vary along the distribution of parental mental health. The results are reported

in Table 8. The high-SES group shows higher persistence in minimal depressive symptoms across generations. Most importantly, the high-SES group experiences upward mobility in mental health at high levels of parental depression (with p-value<0.01 for the depression outcome). This is evident in the coefficient estimates for minimal depression, which increase from 0.64 in Panel A to 0.90 in Panel B (p<0.01), while the coefficient estimate for mild-to-severe depression moves from being insignificant at -0.14 in Panel A to significant(p<0.01) at -0.38 in Panel B. This is suggestive of strong upward mobility in mental health among children residing in high-SES households compared to those residing in low-SES households. Most importantly, these findings indicate that the results from Table 7 are mostly driven by high-SES households. Particularly, the result of upward mobility in depression is fully driven by high-SES households as it does not exist for low-SES households. In other words, a certain level of wealth is necessary to reverse the transmission of mild-to-severe depressive symptoms across generations. We find similar SES differences in anxiety - there is evidence of upward mobility in children's mental health among high- and low-SES parents who suffer from mild-to severe anxiety, though, the mobility is much larger among high-SES than low-SES children.

Estimates from Tables 9 and 10 do not allow us to conclude that the intergenerational association in mental health is moderated by other socioeconomic indicators such as maternal education or caste status. The absence of heterogeneity in maternal education might be attributable to the fact that mothers in our poor rural context have little education (62 percent of mothers in our sample have not completed even one grade of schooling) so having above-median grades of schooling is not enough to significantly alter the intergenerational association in mental health. The lack of difference in mobility by caste status might be due to the fact that our sample contains very few upper-caste households (25%). Moreover, these upper-caste households are also predominantly poor, as over 97% of the households are reported to live below the poverty line.

Gender of the children and parents have also been identified as moderators of intergenerational persistence in mental health. For instance, the intergenerational associations

in health and mental health are higher for daughters or from mother to their offspring in the US (Halliday et al. (2021); Johnston et al. (2013)). Considering this, we also examine whether the gender of the child moderates the transmission of mental health in our sample. We re-estimate a specification similar to that used in Table 5, stratifying the sample by gender. These results are presented in Table 11. We find no evidence that the gender of the child significantly moderates the transmission of mental health across generations. While we would have liked to perform a similar test using the gender of the parent, our data do not allow us to examine heterogeneity along the parent's gender because most of our intergenerational association estimates are from father to children (93 percent of parents who complete the PHQ-9 and GAD-7 modules are males).

We also estimate the spline specification stratified by maternal education, caste and gender. These estimates are presented in Appendix Tables A3, A4 and A5. The conclusions remain unchanged: maternal education, caste and gender do not moderate the transmission of mental health across generations.

Overall, the finding that socioeconomic status is the only factor moderating the intergenerational transmission of mental health—where higher SES leads to significantly larger upward mobility in mental health across generations—in our sample is particularly interesting. It complements previous findings about the association between SES and mental health—high persistence in mental health can explain the high persistence in economic outcomes across generations previously noted in the literature (Asher et al., 2024), and it also aligns with the evidence that poverty is a strong predictor of mental health outcomes in LMICs (Ridley et al., 2020).

3.4 Economic costs of mental health

We next assess whether the intergenerational persistence in mental health could partially explain the documented high intergenerational persistence in education documented for India (Asher et al., 2024; Azam and Bhatt, 2015). We first examine whether adolescent mental health predicts schooling outcomes, cognitive skills and non-cognitive skills, which

are important determinants of economic success in adulthood. Schooling outcomes include school enrollment status and completed grades of schooling. Cognitive outcomes include reading score in native language, reading score in English and math score. Finally, non-cognitive measures include self-efficacy and self-esteem. The resulting estimates are presented in Table 12. In Columns (1) to (2), among adolescents' schooling outcomes, a one standard deviation increase in anxiety is associated with a 1.5 percentage point reduction in the probability of school enrollment. Symptoms of depression are also associated with declines in educational attainment: a one standard deviation increase in the depression score is associated with 0.18 fewer grades of schooling (from a mean value of 5.18, $p<0.10$). In Columns (3) to (7), we show that adolescents' depression and anxiety seem to be strongly associated with poor cognitive and non-cognitive skills. In Panel A, a one standard deviation increase in anxiety is associated with 0.12, 0.17, and 0.05 standard deviation declines in performance in native language, English, and math tests. We also see 0.013 and 0.022 standard deviation declines in self-efficacy and self-esteem scores, respectively.

An even stronger pattern emerges in Panel B for the association between depression and cognitive and non-cognitive outcomes. A one standard deviation increase in child depression is associated with 0.25, 0.31, and 0.18 standard deviation declines in performance in native language, English, and math tests. And similar reductions are also observed in self-efficacy and self-esteem. These results continue to hold even when we restrict the sample to children with minimal levels of depression or anxiety (see Appendix Table A6). Our finding that even minimal depressive symptoms, defined by a score of 1-4 on the PHQ-9 scale (Kroenke and Spitzer, 2002), can significantly reduce economically relevant outcomes in adolescents may help explain why early-life experiences influence economic outcomes in adulthood (Currie et al., 2010; Fletcher, 2010; Hakulinen et al., 2019; Mojtabai et al., 2015; Ridley et al., 2020).

We also examine how mental health predicts cognitive and economic outcomes among adults/parents in our sample. In Table 13, we regress parental Raven's test scores and employment status on anxiety and depression scores. In Panel B, a one standard devi-

ation increase in the parental depression score is associated with a 0.26 point decline in Raven's test scores ($p<0.01$) and a three percentage point decline in the probability of being employed ($p<0.05$). These results show strong associations between mental health and economically relevant outcomes pointing to the need for addressing mental health concerns in LMICs.

Overall, by showing that mental health is associated with lower schooling outcomes and cognitive development among adolescents, as well as poorer labor market and cognitive outcomes among adults (see Tables 12 and 13), this study helps explain why mental health may serve as a key mediator in the intergenerational transmission of income and wealth. Specifically, our results showing that adolescent and parent mental health decrease schooling and labor market outcomes, as well as cognitive abilities, self-esteem, and self-efficacy, are consistent with existing literature on the relationships between mental health and cognitive function (Gotlib and Joormann, 2010), belief systems (De Quidt and Haushofer, 2016), and human-capital development (Patton et al., 2016).

4 Robustness checks

We assess the robustness of our estimates to two types of bias - lifecycle bias and measurement error bias.

Lifecycle bias—First, previous research on intergenerational mobility in income has identified the presence of lifecycle bias (Solon, 1999; Grawe, 2006; Chetty et al., 2014) where measuring children's incomes at ages younger than those of their parents can lead to significant underestimation of mobility and high persistence in income across generations. Similarly, in the case of intergenerational associations in health, discrepancies in the timing of health assessments between the parents' and children's generations can introduce a form of lifecycle bias, especially for health outcomes that have strong associations with age such as, diabetes, arthritis, cataracts, dementia, and cardiovascular diseases. Previous studies have pointed to the possibility of introducing lifecyle bias in health mobility by measuring

children's health at a much younger ages than parental health (Halliday et al., 2021; Pascual and Cantarero, 2009). Similarly, there is evidence that mental health worsens between adolescence and middle age (Bell, 2014; Blanchflower and Oswald, 2016; Blanchflower and Oswald, 2008; Cheng et al., 2017; Fiske et al., 2003; Prior et al., 2020; Steptoe et al., 2015; Thomas et al., 2016), which corresponds to the age difference between parents and children in our sample. The average age of fathers in our sample is 47, and the average age of children is 17–18.[12]

This suggests that our estimates are likely to suffer from a lifecycle bias with regard to mental-health mobility. If such a bias exists, it would suggest that our estimates underestimate the persistence of mental-health problems across generations, as fathers' mental health at the time of the study (measured at middle age) is worse than it would have been, had it been measured at the same age as that of their offspring. We therefore interpret our estimates of high persistence in minimal mental health symptoms as an upper bound on the actual persistence of minimal mental-health problems across generations. Additionally, to further check for such concerns in our sample, we check whether children's age predicts children's mental health, and, similarly, whether parental age predicts their mental health. The results are reported in Table 14. Adolescents' age (and parental age) are not correlated with adolescent's (parental) mental health alleviating concerns about the extent to which lifecycle bias might affect our mobility estimates.

Measurement error bias—Second, another well-documented source of bias in the intergenerational mobility literature is the existence of measurement error bias, leading to attenuation in the persistence parameter (Behrman and Taubman, 1990; Mazumder, 2005; Johnston et al., 2013; Chetty et al., 2014). Similarly, measurement error in mental health measures might bias our estimates downward, leading us to underestimate the persistence in intergenerational mental health between parents and children. In our case, two considerations alleviate the concern of measurement error in parental mental health. First,

[12]The parent-child gaps in age are noted in other papers in the literature - for instance, Bütikofer et al., 2024 examine association between parent and child mental health when parents are aged 25–30 and children are aged 13–18. Similarly, Pascual and Cantarero, 2009 estimate mobility, even when the age gap in their sample is larger, with parents aged 55 and children aged 24 on average.

we measure mental health using two similar and widely accepted measures of depression and anxiety for both parents and children, rather than relying on measures of subjective well-being or other related, but not solely mental health-focused measures that have been used in other studies (Akbulut-Yuksel and Kugler, 2016; Eley et al., 2015; Hancock et al., 2013; Johnston et al., 2013).[13] Second, to obtain estimates that are purged of measurement error, we instrument our measures of depression (anxiety) with our measure of anxiety (depression) assuming that the random measurement error in anxiety is uncorrelated with the random measurement error in depression. Similar IVs have been used in other contexts to purge measurement error bias in right-side variables (Mani et al., 2012; Aizer et al., 2018). The IV estimates are presented in Table 15. As expected, the use of instrumental variables results in higher coefficients on the intergenerational persistence parameters in depression and anxiety, with coefficients respectively jumping from 0.61 and 0.68 in Table 4, to 0.73 and 0.78 in Table 15. Overall, our findings suggest that there is low relative mobility in mental health in India, which aligns with the low mobility in other outcomes found in the literature for LMICs. We also present results on instrument validity - the F-statistics on the excluded instrument is above the Lee et al., 2022's threshold of 104.67, ruling out concerns about weak instruments biasing the IV results. Additionally, the coefficient estimates on the instruments from the first-stage regressions (see Appendix Table A7) are all statistically significant at the one percent level, depicting strong correlation between the excluded instrument and the endogenous regressor. In sum, the IVs are both strong and valid.

Mobility estimates in the control sample—We assess whether the intergenerational mobility estimates found in the complete sample are similar to those found in the control

[13]For instance, Akbulut-Yuksel and Kugler, 2016 measure depression based on participants' self-reporting of feeling depressed (e.g., 'sometimes,' 'a moderate amount of this,' or 'most of the time during the past week'). Eley et al., 2015 use different tools to measure anxiety in parents and children: for parents, they use 20 items from the Karolinska Scales of Personality, while for children, they use items from the Child Behavior Checklist. Similarly, Hancock et al., 2013 employ different mental-health measures for children (SDQ questionnaire), parents (Essler K6 scale of nonspecific psychological distress), and grandparents (a binary question: 'Did your father/mother suffer from nervous or emotional trouble or depression?'). Finally, Johnston et al., 2013 measure mental distress using a non-depression or anxiety-specific scale: a 9-question subset of the 24-item Malaise Inventory.

villages/control sample. We re-estimate the intergenerational association in mental health now restricting our analysis to the control sample. The results in Appendix Table A8 show a similar level of intergenerational mental-health mobility to the full sample.

5 Conclusion

We use a unique dataset that used clinical screening tools to measure both parents' and children's mental health to produce the first estimates of intergenerational transmission of mental health for a low- and middle-income country. Using rich data on anxiety and depression for almost 4000 parent-child pairs, we report high persistence in depression and anxiety symptoms across generations in India. However, this high persistence masks significant heterogeneity in mobility across the distribution of parental mental health. Importantly, our initial result of high persistence in mental health is mostly driven by high persistence in minimal parental depression and anxiety symptoms in the children's generation. In contrast, we find significant upward mobility in mental health among children of parents who experience mild-to-severe levels of parental depression and anxiety. Additionally, we find that this upward mobility in mental health for children of mild-to-severely depressed/anxious parents is largely driven by children from high-SES households. Considering that even minimal symptoms of depression carry a significant economic burden (Jain et al., 2022 and as shown in Section 3.4), the high persistence in minimal symptoms for both low- and high-SES children could still have substantial economic impacts.

Additionally, our finding that children from higher-SES families experience larger upward mobility in mental health, coupled with the significant negative associations between mental health and schooling, cognitive and labor-market outcomes, supports the hypothesis that the intergenerational persistence in mental health partly explains the intergenerational transmission of education, income, and wealth. This also aligns with research showing that mental-health concerns, both in the parents' and children's generations, can have significant detrimental impacts on the children's long-run economic prospects (Goodman and

Goodman, 2009; Smith and Smith, 2010; Fletcher, 2010; Currie et al., 2010).

A direct implication of our results is that mental-health interventions might be even more crucial in LMICs than in high-income countries, given the greater magnitude of mental-health issues in these settings and their potential role in perpetuating poverty and limiting opportunities. In high-income countries, there is already evidence that psychotropic and Cognitive Behavioral Therapy (CBT) based mental-health interventions have positive effects on mental health(Bolier et al., 2013; Tolin, 2010; Cuijpers et al., 2008; Heller et al., 2017; Biasi et al., 2021). Moreover, Bütikofer et al. (2024) show that a policy targeting additional health resources for children of adults with mental-health problems in Norway reduced the parent–child mental-health association by 39 percent. Interestingly, their finding that the intervention reduced the average parent–child mental-health association more in higher-SES families compared to lower-SES families aligns with our finding that high-SES children experience larger upward mobility in mental health when their parents experience mild-to-severe depression and anxiety symptoms in India.

There is also growing evidence from LMICs that mental-health interventions can have meaningful psychological and economic impacts (Blattman et al., 2017; Lund et al., 2024). For instance, Barker et al. (2022) show that CBT interventions can have positive effects on mental health, cognitive and non-cognitive skills, and economic empowerment in Ghana. Similarly, Rahman et al. (2008) show that CBT for perinatally depressed women in rural Pakistan reduced postpartum depression. Baranov et al. (2020) examine the long-term psychological and economic impacts of this intervention and find that women who received the intervention had lower rates of depression, higher control over household and personal expenditures, and were more likely to send their children to better schools compared to the control group. Similarly, other RCTs have found that treating maternal depression improves interactions with their children and their children's mental health (Cuijpers et al., 2015). Finally, Bhat et al., 2022 find that targeting psychotherapy to moderate-to-severely depressed adults in India can reduce the likelihood of being depressed by 11 percent at the cost of only 66 USD per recipient. Our results suggest that similar low-cost, CBT or

psychotherapy interventions could have meaningful roles in facilitating intergenerational mobility in mental health and related economic and other outcomes in India and possibly other LMICs.

6 Declaration of generative AI and AI-assisted technologies in the writing process.

During the preparation of this work the authors used ChatGPT in order to improve the readability and language of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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Tables

Table 1: Variable definitions

Variable name	Definitions
Panel A: Mental health indices	
Parent depression score	Ranges from 0 to 27: based on the 9-item Patient Health Questionnaire (PHQ-9) scale
Child depression score	Ranges from 0 to 27: based on the 9-item Patient Health Questionnaire (PHQ-9) scale
Parent anxiety score	Ranges from 0 to 21: based on the Generalized Anxiety Disorder 7-item (GAD-7) scale
Child anxiety score	Ranges from 0 to 21: based on the Generalized Anxiety Disorder 7-item (GAD-7) scale
Panel B: Cognitive and Non-Cognitive skills	
Enrolled	Current enrollment status
Completed grades of schooling	Ranges from 0 to 15
Reading score in native language	Ranges from 0 to 4: 0 – if the respondents cannot read letters, 1 – if they can read letters, 2 – if they can read words, 3 – if they can read sentences (grade 1 level text), and 4 – if they can read a paragraph (grade 2 level text)
Reading score in English	Ranges from 0 to 4: 0 – if the respondents cannot read letters, 1 – if they can read letters, 2 – if they can read words, 3 – if they can read sentences (grade 1 level text), and 4 – if they can read a paragraph (grade 2 level text)
Math score	Ranges from 0 to 4: 0 – if the respondents cannot read numbers, 1 – if the respondents can read one-digit numbers, 2 – if the respondents can read two-digit numbers, 3 – if the respondents can subtract, 4 – if the respondents can divide
Self-esteem	Averaged over the following 9 binary variables: =1 if child feels proud of the job she/he does, =1 if child feels proud of the jobs her/his parents do, =1 if child feels proud about her/his school achievements, =1 if the child feels proud of where she/he lives, =1 if the child is happy with her/his shoes, =1 if the child is happy about her/his clothes, =1 if is happy about the work she/he does, =1 if the child is not worried about not having the correct uniform, =1 if the child is not worried about not having the correct books, pencils or tools

Table 1 – continued from previous page

Variable name	Definitions
Self-efficacy	Averaged over the following 5 binary variables: =1 if 1 if the child likes to make plans for her/his future studies/work, =1 if the child feels that she/he can improve her/his situation in life if she/he works hard, =1 if the child feels that she/he will get a better job if she/he studies hard, =1 if the child has some choice about the work she/he does, =1 if, aside from his family members, the child can make decisions about how he spends his time
Panel C: Family background characteristics	
Child's age at endline	Age in years
Male	=1 if male, 0 if female
Mother's age at endline	Mother's age in years
Mother's schooling	Mother's completed grades of schooling
Father's age at endline	Father's age in years
Father's schooling	Father's completed grades of schooling
Scheduled Caste	=1 if belongs to scheduled caste, 0 otherwise
Scheduled Tribe	=1 if belongs to scheduled tribe, 0 otherwise
Other Backward Caste	=1 if belongs to other backward caste, 0 otherwise
Hindu	=1 if Hindu, 0 otherwise
Household size	Number of individuals in a household
Tercile of asset index	Principal component analysis used to construct a variable recording an individual asset level. This variable is a proxy for socio-economic status
Drinking water available	=1 if household has access to drinking water, 0 otherwise
Lighting available	=1 if household has access to lighting, 0 otherwise
Cooking fuel available	=1 if household has access to cooking fuel, 0 otherwise
Toilets available	=1 if household has access to toilets, 0 otherwise
Grandparents in HH	=1 if household has access to grandparents in the household, 0 otherwise
Below Poverty Line Card	=1 if household has below poverty line card, 0 otherwise
MGNREGA	=1 if household receives benefits from the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA), 0 otherwise

Table 2: Summary statistics on individual questions used to construct the anxiety and depression scores

	Parent (1)	Child (2)
Panel A: Items on the PHQ-9 scale		
Had little interest in doing things?	0.40	0.32
Feeling down, depressed or hopeless?	0.50	0.40
Trouble falling asleep or sleeping too much?	0.42	0.36
Feeling tired or having little energy?	0.47	0.37
Weight loss or poor appetite?	0.47	0.42
Feeling bad about yourself- or that you are a failure or have let your family down	0.23	0.16
Trouble concentrating on things, such as reading the newspaper or watching television	0.33	0.27
Moving or speaking slowly that other people could have noticed	0.25	0.22
Thoughts that you would be better off dead, or of hurting yourself?	0.10	0.25
Panel B: Items on the GAD-7 scale		
Feeling nervous, anxious, or on edge?	0.42	0.38
Not being able to stop or control worrying?	0.48	0.45
Worrying too much about different things?	0.48	0.40
Trouble relaxing?	0.56	0.49
Being so restless that it's hard to sit still?	0.44	0.35
Becoming easily annoyed or irritable?	0.55	0.49
Feeling afraid as if something awful might happen?	0.36	0.30

Table 3: Summary statistics

Variable	Mean (sd)
Panel A: Mental health indices	
Parent depression score	3.16 (3.797)
Child depression score	2.76 (3.868)
Parent anxiety score	3.29 (3.622)
Child anxiety score	2.86 (3.672)
Panel B: Cognitive and Non-Cognitive skills	
Enrolled	0.82 (0.380)
Completed grades of schooling	7.68 (4.152)
Reading score in native language	3.20 (1.062)
Math score	3.66 (1.382)
Reading score in English	3.07 (1.032)
Self-efficacy	0.70 (0.182)
Self-esteem	0.67 (0.165)
Panel C: Family background characteristics	
Male	0.58 (0.494)
Child's age	17.87 (1.815)
Mother's age	42.26 (5.530)
Mother's schooling	1.38 (2.708)
Father's age	47.02 (5.814)
Father's schooling	3.17 (4.314)
Scheduled caste	0.15 (0.354)

Table 3 – continued from previous page

Variable	Mean (sd)
Scheduled tribe	0.01
	(0.102)
OBC	0.59
	(0.492)
Hindu	0.78
	(0.412)
Household size	4.32
	(1.177)
Asset index	0.17
	(1.379)
Drinking water	0.97
	(0.161)
Cooking fuel	0.35
	(0.477)
Toilet	0.21
	(0.406)
BPL	0.97
	(0.163)
MNREGA	0.67
	(0.468)
Observations	3,934

Notes: In Panel C, except mother's age, father's age, and child's age - all other variables are reported from the 2015 wave.

Table 4: Estimates of intergenerational association in mental health

	Child depression score			Child anxiety score		
	(1)	(2)	(3)	(4)	(5)	(6)
Parent depression score	0.668***	0.667***	0.612***			
	(0.038)	(0.038)	(0.039)			
Parent anxiety score				0.721***	0.721***	0.682***
				(0.032)	(0.032)	(0.034)
Observations	3,934	3,934	3,934	3,934	3,934	3,934
R-squared	0.413	0.413	0.466	0.474	0.475	0.524
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes

Notes: Each column presents the coefficient estimates from regressions of standardized child mental health scores on standardized parental mental health scores. Robust standard errors clustered at the village level are reported in parentheses. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table 5: Estimates of rank-rank mobility in mental health

	Child's depression rank			Child's anxiety rank		
	(1)	(2)	(3)	(4)	(5)	(6)
Parent's depression rank	0.728***	0.728***	0.690***			
	(0.032)	(0.032)	(0.032)			
Parent's anxiety rank				0.758***	0.758***	0.735***
				(0.026)	(0.026)	(0.027)
Observations	3,934	3,934	3,934	3,934	3,934	3,934
R-squared	0.475	0.476	0.515	0.513	0.514	0.543
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes

Notes: This table reports rank-rank slopes. Each column presents the coefficient estimates from regressions of the percentile rank of child mental health on the percentile rank of parental mental health. Robust standard errors clustered at the village level are reported in parentheses. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table 6: Estimates of absolute mobility in mental health

	Child's depression score			Child's anxiety score		
	(1)	(2)	(3)	(4)	(5)	(6)
Minimal parent depression score	0.758***	0.756***	0.768***			
	(0.057)	(0.057)	(0.053)			
Mild-severe parent depression score	-0.153*	-0.149*	-0.264***			
	(0.089)	(0.088)	(0.084)			
Minimal parent anxiety score				0.797***	0.796***	0.853***
				(0.059)	(0.059)	(0.059)
Mild-severe parent anxiety score				-0.138	-0.137	-0.316***
				(0.093)	(0.092)	(0.085)
Observations	3,934	3,934	3,934	3,934	3,934	3,934
R-squared	0.414	0.415	0.470	0.475	0.476	0.528
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes

Notes: This table reports coefficients from spline regressions of standardized child mental health scores on standardized parental mental health scores. Robust standard errors clustered at the village level are reported in parentheses. Minimal depression and anxiety scores refer to scores below or equal to 4, and mild to severe depression and anxiety scores refer to scores above 5 in the GAD-7 scale and the PHQ-9 scales, respectively. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table 7: Estimates of rank-rank mobility in mental health, by SES

	Child's depression rank			Child's anxiety rank		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Low SES						
Parent's depression rank	0.652***	0.651***	0.612***			
	(0.031)	(0.031)	(0.031)			
Parent's anxiety rank				0.689***	0.691***	0.658***
				(0.030)	(0.030)	(0.032)
Observations	1,906	1,906	1,906	1,906	1,906	1,906
R-squared	0.399	0.400	0.457	0.431	0.433	0.485
Panel B: High SES						
Parent's depression rank	0.798***	0.798***	0.767***			
	(0.033)	(0.033)	(0.036)			
Parent's anxiety rank				0.819***	0.819***	0.804***
				(0.025)	(0.025)	(0.026)
Observations	2,028	2,028	2,028	2,028	2,028	2,028
R-squared	0.549	0.550	0.592	0.594	0.594	0.622
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes
Coefficients' p-values from						
Parent score*High SES dummy	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Notes: This table reports rank-rank slopes, stratifying the sample by socioeconomic status. Each column presents the coefficient estimates from regressions of the percentile rank of child mental health on the percentile rank of parental mental health. Robust standard errors clustered at the village level are reported in parentheses. Respondents in the low SES group have below median assets and those in the high SES group have above median assets. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table 8: Absolute mobility in mental health, by SES

	Child's depression score			Child's anxiety score		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Low SES						
Minimal depression score	0.653***	0.649***	0.641***			
	(0.071)	(0.070)	(0.068)			
Mild-severe depression score	-0.068	-0.062	-0.147			
	(0.129)	(0.128)	(0.122)			
Minimal anxiety score				0.725***	0.726***	0.731***
				(0.066)	(0.066)	(0.064)
Mild-severe anxiety score				-0.132	-0.132	-0.226**
				(0.120)	(0.120)	(0.113)
Observations	2,062	2,062	2,062	2,062	2,062	2,062
R-squared	0.378	0.379	0.457	0.410	0.413	0.481
Panel B: High SES						
Minimal depression score	0.849***	0.850***	0.901***			
	(0.065)	(0.065)	(0.069)			
Mild-severe depression score	-0.211*	-0.212*	-0.386***			
	(0.117)	(0.116)	(0.137)			
Minimal anxiety score				0.862***	0.862***	0.977***
				(0.069)	(0.069)	(0.073)
Mild-severe anxiety score				-0.129	-0.129	-0.412***
				(0.115)	(0.115)	(0.123)
Observations	1,872	1,872	1,872	1,872	1,872	1,872
R-squared	0.453	0.453	0.509	0.547	0.547	0.603
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes
Coefficients' p-values from						
Minimal parent score*High SES dummy	0.01	0.02	0.01	<0.07	0.07	<0.01

Notes: This table reports coefficients from spline regressions of standardized parental mental health scores on standardized child mental health scores, stratified by socioeconomic status. Robust standard errors clustered at the village level are reported in parentheses. Respondents in the low SES group have below median assets and those in the high SES group have above assets. Minimal depression and anxiety scores refer to scores below or equal to 4, and mild to severe depression and anxiety scores refer to scores above 5 in the GAD-7 scale and the PHQ-9 scales, respectively. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table 9: Estimates of rank-rank mobility in mental health, by maternal education

	Child's depression rank			Child's anxiety rank		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Low maternal education						
Parent's depression rank	0.709***	0.709***	0.667***			
	(0.030)	(0.030)	(0.031)			
Parent's anxiety rank				0.742***	0.742***	0.715***
				(0.025)	(0.025)	(0.028)
Observations	2,523	2,523	2,523	2,523	2,523	2,523
R-squared	0.450	0.450	0.493	0.489	0.490	0.524
Panel B: High maternal education						
Parent's depression rank	0.761***	0.759***	0.737***			
	(0.043)	(0.043)	(0.048)			
Parent's anxiety rank				0.787***	0.787***	0.769***
				(0.035)	(0.035)	(0.038)
Observations	1,399	1,399	1,399	1,399	1,399	1,399
R-squared	0.520	0.522	0.592	0.556	0.558	0.607
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes
Coefficients' p-values from						
Parent score*High maternal education dummy	0.13	0.14	0.24	0.14	0.14	0.18

Notes: This table reports rank-rank slopes, stratifying the sample by maternal education. Each column presents the coefficient estimates from regressions of the percentile rank of child mental health on the percentile rank of parental mental health. Robust standard errors clustered at the village level are reported in parentheses. Respondents in the low maternal education group have below median grades of schooling and those in the high maternal education group have above median grades of schooling. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table 10: Estimates of rank-rank mobility in mental health, by caste

	Child's depression rank			Child's anxiety rank		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Upper caste						
Parent's depression rank	0.751***	0.750***	0.711***			
	(0.040)	(0.040)	(0.048)			
Parent's anxiety rank				0.758***	0.759***	0.734***
				(0.038)	(0.038)	(0.042)
Observations	991	991	991	991	991	991
R-squared	0.512	0.513	0.582	0.511	0.516	0.591
Panel B: SC/ST/OBC						
Parent's depression rank	0.720***	0.719***	0.685***			
	(0.033)	(0.033)	(0.033)			
Parent's anxiety rank				0.758***	0.758***	0.742***
				(0.026)	(0.026)	(0.027)
Observations	2,943	2,943	2,943	2,943	2,943	2,943
R-squared	0.461	0.462	0.511	0.513	0.513	0.549
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes
Coefficients' p-values from						
Parent score*Upper caste dummy	0.38	0.40	0.59	0.99	0.99	0.55

Notes: This table reports rank-rank slopes, stratifying the sample by caste status. Each column presents coefficient estimates from regressions of the percentile rank of child mental health on the percentile rank of parental mental health. Respondents in Panel A belong to upper castes and those in Panel B belong to scheduled castes, scheduled tribes, or other backward castes. Robust standard errors clustered at the village level are reported in parentheses. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table 11: Estimates of rank-rank mobility in mental health, by gender

	Child's depression rank			Child's anxiety rank		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Female						
Parent's depression rank	0.736***	0.735***	0.700***			
	(0.034)	(0.034)	(0.037)			
Parent's anxiety rank				0.743***	0.742***	0.723***
				(0.028)	(0.028)	(0.029)
Observations	1,652	1,652	1,652	1,652	1,652	1,652
R-squared	0.491	0.491	0.542	0.497	0.499	0.539
Panel B: Male						
Parent's depression rank	0.723***	0.722***	0.687***			
	(0.034)	(0.034)	(0.034)			
Parent's anxiety rank				0.769***	0.769***	0.744***
				(0.028)	(0.028)	(0.030)
Observations	2,282	2,282	2,282	2,282	2,282	2,282
R-squared	0.464	0.465	0.515	0.524	0.525	0.561
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes
Coefficients' p-values from						
Parent score*Male dummy	0.60	0.61	0.87	0.25	0.23	0.14

Notes: This table reports rank-rank slopes, stratifying the sample by gender. Each column presents coefficient estimates from regressions of the percentile rank of child mental health on the percentile rank of parental mental health. Robust standard errors clustered at the village level are reported in parentheses. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table 12: Association between child mental health and outcomes

	Schooling outcomes		Cognitive skills			Non-cognitive skills	
	Enrolled	Completed grades of schooling	Reading score in native language	Reading score in English	Math score	Self efficacy	Self esteem
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Anxiety							
Child anxiety score	-0.015*	-0.018	-0.120***	-0.173***	-0.055*	-0.013**	-0.022***
	(0.009)	(0.102)	(0.037)	(0.046)	(0.033)	(0.005)	(0.005)
Observations	3,785	3,785	3,785	3,785	3,785	3,785	3,785
R-squared	0.187	0.169	0.219	0.217	0.166	0.182	0.240
Panel B: Depression							
Child depression score	-0.016	-0.188*	-0.250***	-0.313***	-0.185***	-0.011*	-0.018***
	(0.011)	(0.105)	(0.042)	(0.050)	(0.035)	(0.006)	(0.005)
Mean	0.82	7.68	3.20	3,07	3,66	0.70	0.67
Observations	3,785	3,785	3,785	3,785	3,785	3,785	3,785
R-squared	0.187	0.171	0.257	0.248	0.193	0.181	0.235
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table presents the coefficient estimates obtained from regressions of child outcomes on standardized child mental health scores, selected covariates (see Panel C of Table 1) and village fixed effects. Robust standard errors clustered at the village level in parentheses. Panel A reports estimates on anxiety scores and Panel B reports estimates on depression scores. *** p<0.01, ** p<0.05, * p<0.10.

Table 13: Association between parental mental health and outcomes

	Raven score	Employed
	(1)	(2)
Panel A: Anxiety		
Parent anxiety score	-0.145	-0.012
	(0.093)	(0.016)
Observations	3,785	3,772
R-squared	0.266	0.119
Panel B: Depression		
Parent depression score	-0.262***	-0.034**
	(0.084)	(0.014)
Observations	3,785	3,772
R-squared	0.271	0.124
Controls	Yes	Yes
Village FE	Yes	Yes

Notes: This table presents the coefficient estimates obtained from regressions of parental outcomes on standardized parental mental health scores, selected covariates (see Panel C of Table 1) and village fixed effects. Robust standard errors clustered at the village level are reported in parentheses. Panel A reports estimates on anxiety scores and Panel B reports estimates on depression scores. *** p<0.01, ** p<0.05, * p<0.10.

Table 14: Association between respondent's age and mental health

	Depression		Anxiety	
	Child score	Parent score	Child score	Parent score
	(1)	(2)	(3)	(4)
Child's age	0.016		0.018	
	(0.010)		(0.011)	
Parent's age		-0.006		-0.003
		(0.003)		(0.004)
Observations	3,934	3,934	3,934	3,934
Controls	No	No	No	No
Village FE	No	No	No	No

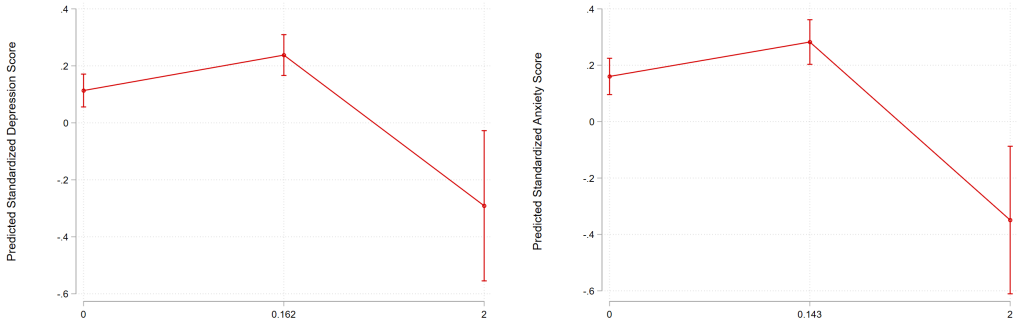
Notes: This table reports coefficients from regressions of standardized child and parental mental health scores on child and parental age, respectively. Robust standard errors clustered at the village level reported in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 15: IV estimates of intergenerational association in mental health

	Child depression score	Child anxiety score
	(1)	(2)
Parent depression score	0.739***	
	(0.024)	
Parent anxiety score		0.789***
		(0.023)
Cragg-Donald F statistics	4894.16	4894.16
Observations	3,934	3,934
R-squared	0.453	0.514
Controls	Yes	Yes
Village FE	Yes	Yes

Notes: This table reports IV estimates of the intergenerational association in mental health where we instrument parental depression (anxiety) score with the parental anxiety (depression) scores. Robust standard errors clustered at the village level are reported in parentheses. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Online Appendix



(a) Depression (b) Anxiety

Figure A1: Absolute intergenerational association in mental health

Table A1: Estimates of intergenerational association in mental health

	Child depression score			Child anxiety score		
	(1)	(2)	(3)	(4)	(5)	(6)
Parent depression score	0.654***	0.654***	0.600***			
	(0.038)	(0.038)	(0.038)			
Parent anxiety score				0.698***	0.698***	0.660***
				(0.031)	(0.031)	(0.033)
Observations	3,934	3,934	3,934	3,934	3,934	3,934
R-squared	0.413	0.413	0.466	0.474	0.475	0.524
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes

Notes: Each cell presents coefficient estimates on parental mental health obtained from regressions of child mental health scores on parental mental health scores. Robust standard errors clustered at the village level are reported in parentheses. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table A2: Estimates of absolute mobility in mental health

	Child's depression score	Child's anxiety score
	(1)	(2)
Minimal depression score	0.692***	
	(0.047)	
Mild depression score	0.014	
	(0.114)	
Moderate-severe depression score	-0.462***	
	(0.171)	
Minimal anxiety score		0.834***
		(0.052)
Mild anxiety score		-0.260**
		(0.106)
Moderate-severe anxiety score		-0.113
		(0.211)
Observations	3,934	3,934
R-squared	0.474	0.528
Controls	Yes	Yes
Village FE	Yes	Yes

Notes: This table reports coefficients on parental mental health obtained from spline regressions of standardized child mental health scores on standardized parental mental health scores. Robust standard errors clustered at the village level are reported in parentheses. Minimal depression and anxiety scores refer to scores below or equal to 4, mild depression and anxiety scores refer to scores between 5 and 9, and severe depression and anxiety scores refer to scores above 10 in the GAD-7 scale and the PHQ-9 scales, respectively. The control variables included in the regressions are age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table A3: Absolute mobility in mental health, by maternal education

	Child's depression score			Child's anxiety score		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Low maternal education						
Minimal depression score	0.741***	0.738***	0.741***			
	(0.059)	(0.060)	(0.061)			
Mild-severe depression score	-0.171*	-0.168*	-0.271***			
	(0.101)	(0.101)	(0.102)			
Minimal anxiety score				0.777***	0.775***	0.815***
				(0.062)	(0.062)	(0.066)
Mild-severe anxiety score				-0.154	-0.151	-0.300***
				(0.108)	(0.108)	(0.107)
Observations	2,523	2,523	2,523	2,523	2,523	2,523
R-squared	0.386	0.386	0.451	0.441	0.442	0.502
Panel B: High maternal education						
Minimal depression score	0.777***	0.774***	0.792***			
	(0.072)	(0.072)	(0.067)			
Mild-severe depression score	-0.094	-0.090	-0.183			
	(0.106)	(0.106)	(0.125)			
Minimal anxiety score				0.828***	0.828***	0.911***
				(0.082)	(0.082)	(0.082)
Mild-severe anxiety score				-0.100	-0.101	-0.326**
				(0.121)	(0.120)	(0.127)
Observations	1,399	1,399	1,399	1,399	1,399	1,399
R-squared	0.470	0.471	0.557	0.539	0.540	0.618
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes
Coefficients' p-values from						
Minimal parent score*High maternal education dummy	0.59	0.61	0.61	0.20	0.20	0.19
Mild-severe parent score*High maternal education dummy	0.51	0.51	0.66	0.48	0.48	0.35

Notes: This table reports coefficients on parental mental health obtained from spline regressions of standardized child mental health scores on standardized parental mental health scores, stratified by maternal education. Robust standard errors clustered at the village level are reported in parentheses. Respondents in the low maternal education group have below median grades of schooling and those in the high maternal education group have above median grades of schooling. Minimal depression and anxiety scores refer to scores below or equal to 4, and mild to severe depression and anxiety scores refer to scores above 5 in the GAD-7 scale and the PHQ-9 scales, respectively. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table A4: Absolute mobility in mental health, by caste

	Child's depression score			Child's anxiety score		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Upper caste						
Minimal depression score	0.792***	0.794***	0.834***			
	(0.082)	(0.084)	(0.090)			
Mild-severe depression score	-0.042	-0.046	-0.213			
	(0.155)	(0.157)	(0.152)			
Minimal anxiety score				0.824***	0.823***	0.877***
				(0.089)	(0.089)	(0.101)
Mild-severe anxiety score				-0.128	-0.124	-0.327*
				(0.155)	(0.154)	(0.167)
Observations	991	991	991	991	991	991
R-squared	0.509	0.509	0.592	0.507	0.509	0.602
Panel B: SC/ST/OBC						
Minimal depression score	0.746***	0.742***	0.760***			
	(0.063)	(0.063)	(0.058)			
Mild-severe depression score	-0.196*	-0.191*	-0.305***			
	(0.099)	(0.099)	(0.092)			
Minimal anxiety score				0.788***	0.787***	0.857***
				(0.066)	(0.066)	(0.064)
Mild-severe anxiety score				-0.142	-0.140	-0.328***
				(0.111)	(0.111)	(0.103)
Observations	2,943	2,943	2,943	2,943	2,943	2,943
R-squared	0.380	0.381	0.448	0.464	0.465	0.528
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes
Coefficients' p-values from						
Minimal parent score*Upper caste dummy	0.60	0.60	0.42	0.48	0.48	0.63
Mild-severe parent score*Upper caste dummy	0.37	0.37	0.60	0.17	0.17	0.30

Notes: This table reports coefficients on parental mental health obtained from spline regressions of standardized child mental health scores on standardized parental mental health scores, stratified by caste. Robust standard errors clustered at the village level are reported in parentheses. Minimal depression and anxiety scores refer to scores below or equal to 4, and mild to severe depression and anxiety scores refer to scores above 5 in the GAD-7 scale and the PHQ-9 scales, respectively. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table A5: Absolute mobility in mental health, by gender

	Child's depression score			Child's anxiety score		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Female						
Minimal parent depression score	0.722***	0.719***	0.750***			
	(0.069)	(0.070)	(0.069)			
Mild-severe parent depression score	-0.086	-0.080	-0.232*			
	(0.119)	(0.118)	(0.120)			
Minimal parent anxiety score				0.787***	0.784***	0.849***
				(0.076)	(0.077)	(0.077)
Mild-severe parent anxiety score				-0.146	-0.142	-0.334***
				(0.128)	(0.127)	(0.125)
Observations	1,652	1,652	1,652	1,652	1,652	1,652
R-squared	0.429	0.429	0.500	0.464	0.465	0.525
Panel B: Male						
Minimal parent depression score	0.783***	0.781***	0.785***			
	(0.063)	(0.063)	(0.058)			
Mild-severe parent depression score	-0.200*	-0.198*	-0.293***			
	(0.103)	(0.103)	(0.097)			
Minimal parent anxiety score				0.805***	0.806***	0.861***
				(0.061)	(0.061)	(0.063)
Mild-severe parent anxiety score				-0.135	-0.135	-0.313***
				(0.096)	(0.096)	(0.093)
Observations	2,282	2,282	2,282	2,282	2,282	2,282
R-squared	0.404	0.404	0.470	0.483	0.483	0.545
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes
Coefficients' p-values from						
Minimal parent score*Male dummy	0.37	0.36	0.30	0.96	0.99	0.85
Mild-severe parent score*Male dummy	0.39	0.38	0.38	0.61	0.64	0.49

Notes: This table reports coefficients on parental mental health obtained from spline regressions of standardized child mental health scores on standardized parental mental health scores, stratified by gender. Robust standard errors clustered at the village level are reported in parentheses. Minimal depression and anxiety scores refer to scores below or equal to 4, and mild to severe depression and anxiety scores refer to scores above 5 in the GAD-7 scale and the PHQ-9 scales, respectively. The control variable included in the regressions is child's age. *** p<0.01, ** p<0.05, * p<0.10.

Table A6: Association between child mental health and economic outcomes, for minimal levels of child depression/anxiety

	Schooling outcomes		Cognitive skills			Non-cognitive skills	
	Enrolled	Completed grades of schooling	Reading score in native language	Reading score in English	Math score	Self efficacy	Self esteem
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Anxiety							
Child anxiety score	-0.113***	-0.302	-0.433***	-0.467***	-0.204*	-0.123***	-0.120***
	(0.038)	(0.316)	(0.110)	(0.143)	(0.113)	(0.020)	(0.020)
Observations	2,648	2,648	2,648	2,648	2,648	2,648	2,648
R-squared	0.215	0.176	0.263	0.243	0.172	0.183	0.239
Panel B: Depression							
Child depression score	-0.075*	-0.402	-0.453***	-0.510***	-0.128	-0.047**	-0.072***
	(0.038)	(0.243)	(0.088)	(0.104)	(0.088)	(0.022)	(0.017)
Observations	2,753	2,753	2,753	2,753	2,753	2,753	2,753
R-squared	0.222	0.178	0.267	0.256	0.172	0.163	0.237

Notes: This table presents the coefficient estimates on child mental health obtained from regressions of child outcomes on standardized child mental health scores, controlling for selected covariates and village fixed effects, restricting the sample to children with minimal levels of child depression/anxiety (i.e., child depression and anxiety scores below or equal to 4). The control variables included in the regressions are described in Panel C of Table 1. Panel A reports estimates on anxiety scores and Panel B reports estimates on depression scores. Robust standard errors clustered at the village level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table A7: First-stage results: Anxiety and depression scores

	Parent depression score	Parent anxiety score
	(1)	(2)
Parent anxiety score	0.746***	
	(0.014)	
Parent depression score		0.750***
		(0.013)
Observations	3,934	3,934
Controls	Yes	Yes
Village FE	Yes	Yes

Notes: This table reports the first-stage estimates associated with the IV results reported in Table 15. Robust standard errors clustered at the village level are reported in parentheses. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.

Table A8: Intergenerational association in mental health using the control sample

	Child's depression rank			Child's anxiety rank		
	(1)	(2)	(3)	(4)	(5)	(6)
Parent's depression rank	0.700***	0.701***	0.671***			
	(0.044)	(0.044)	(0.046)			
Parent's anxiety rank				0.742***	0.744***	0.720***
				(0.038)	(0.039)	(0.040)
Observations	1,118	1,118	1,118	1,118	1,118	1,118
R-squared	0.437	0.438	0.488	0.488	0.491	0.536
Controls	No	Yes	Yes	No	Yes	Yes
Village FE	No	No	Yes	No	No	Yes

Notes: This table reports estimates on intergenerational association in mental health, restricting the sample to Magic Bus control villages only. Each column presents coefficient estimates on parental mental health obtained from regressions of standardized child mental health scores on standardized parental mental health scores. Robust standard errors clustered at the village level are reported in parentheses. The control variables included in the regressions are child's age and gender. *** p<0.01, ** p<0.05, * p<0.10.