

Relationships between Gender, School Attendance and Student Achievement in Nepal

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- We examine positive links between school attendance and student achievement in the context of secondary schools in Nepal via original data collection matched to administrative records.
- We pay attention to gender since previous work is suggestive of menstruation affecting school attendance in this context. We also examine other non-attendance determinants of achievement, including individual and family-related characteristics, for comparison.
- This ongoing research contributes to understanding gender disparities in access to education and educational attainment as relevant to UN Sustainable Development Goals (United Nations, 2017).

Previous work by PAC@REDI¹ involving secondary school students in Nepal suggested that experience surrounding menstruation may widen gender gaps in school attendance rates. We push this analysis further to examine how school attendance, which may be gendered, affects educational achievement specifically and ultimately student outcomes.

We argued previously that the daily decision of whether to attend school may depend on social, economic, personal, and institutional factors, and collected information on student, household, and school characteristics in an original survey in school settings in and around Kathmandu Valley, Nepal. We matched these survey data to school-provided attendance records for 365 students in seven schools. In this follow-up analysis, we match these records to student test/achievement data which was provided from official records in a subset of these schools.²

Table 1: Correlations between Attendance Rates and Test Scores by Gender over Time

Year	All	Boys	Girls
1	0.685	0.767	0.643
2	0.654	0.717	0.619
3	0.464	0.627	0.402

We examine simple correlations between attendance and test scores over three years for which we have data on both variables (Table 1). We note a positive correlation between attendance and achievement in all cases. As gender may affect school attendance at least partially through mechanisms associated with female health, and since school attendance is found positively related to achievement, these summary statistics are suggestive of relationships between these mechanisms and eventual student outcomes in Nepal. However, we find that correlations across genders are of larger magnitude in earlier years (years

¹ Bhattarai, N., Bernasek, A., & Pena, A. A. Gender, Health, and Urban-Rural Influences on School Attendance in Nepal. *REDI Report*, April 2018, https://redi.colostate.edu/wp-content/uploads/sites/50/2018/04/REDI_Report_Nepal.pdf

² Four of the original survey schools provided testing results information. Unfortunately, changes to the reporting scale and standards in one of these locations (a change from percentage test scores to a western GPA scale) resulted in unusable data for our purposes. We therefore report results for three schools, which reduces the final sample size to 108 student observations. We are working to expand the coverage of the student achievement data for inclusion in a longer manuscript.

1 and 2). We hypothesize that the decline in correlation in year 3 (despite remaining positive) is a function of a major earthquake in Nepal at the start of that school year (April 2015³) that may have affected both attendance rates and achievement. Further study reveals that while test scores are highly correlated over time (correlation coefficients ranging from 0.927 to 0.973 between various scores in our sample), school attendance is less correlated especially for those pairs of years that include year 3 (e.g., correlation coefficient=0.942 between years 1 and 2, but only 0.727 between years 1 and 3 and 0.709 between years 2 and 3). We further attribute these differences to changes associated with the earthquake, which is a limitation for our analysis.

The positive correlations in Table 1 suggest that while attendance and achievement (as proxied via test scores) are positively related for all students, this pattern may be stronger for boys. This suggests that the determinants of attendance to begin with, including gender as indicated in our previous work, matter for ultimate student outcomes. In Table 2, we examine correlations between test scores and other characteristics. We note that patterns (in terms of positive versus negative associations with test scores) hold across genders, though the strength of correlation differs by variable. Age, for example, is more strongly negatively correlated with test scores for girls which is consistent with female biological changes affecting school attendance and in turn achievement. Continuing work will formalize our understanding of these channels.

Table 2: Correlations between Test Scores and Student Characteristics by Gender

	All	Boys	Girls
Female (=1)	0.028	.	.
Age (years)	-0.134	-0.058	-0.195
Household size (number)	-0.037	-0.065	-0.010
Family owns home (=1)	0.166	0.105	0.202
Travel time to school (minutes)	-0.123	-0.154	-0.094
Household activities (hours)	-0.196	-0.185	-0.218
Study time (hours)	0.386	0.590	0.264
Privileged caste (=1)	0.189	0.147	0.228
Educated father (=1)	0.126	0.018	0.200
Educated mother (=1)	0.090	0.078	0.097
Father does not have a job (=1)	-0.175	-0.184	-0.181
Mother does not have a job (=1)	0.108	0.127	0.097

The Poverty Action Center (PAC@REDI) aims to utilize interdisciplinary academic tools and mixed-methods research approaches to help guide poverty action locally and globally. We are using original survey design and econometric data analysis to answer questions at the intersection of poverty, access to education, and student achievement. PAC@REDI is interested in extensions of this and other work in the areas of education and health within and beyond Nepal, and is poised to partner locally and internationally. Interested parties should contact Dr. Anita Alves Pena at anita.pena@colostate.edu.

³ This earthquake measured magnitude 7.8 and involved 9,000 deaths and 23,000 injuries in addition to widespread property damage <https://earthquake.usgs.gov/research/everyone/2016/nepal2015/>.

