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DO SUBJECTIVE PARENTAL EXPECTATIONS AFFECT ACTUAL STUDENT TEST SCORES? EVIDENCE FROM PAKISTAN

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Abstract

Studies suggest that expectations and perceptions of parents affect education outcomes. Survey data from Sindh, Pakistan was evaluated to study the effect of parent perception of test on actual student test. Results show that there is a positive correlation between parent perception of test and actual student test scores. A unit increase in parent perception of test scores was associated with a 0.32 unit increase in actual test scores. Further, mother's perceptions seems to be more strongly correlated with female student test scores and father's perceptions to that of male test scores.

Background

The Sindh Education Sector Reform Program (SERP-I and SERP-II) in the province of Sindh Pakistan, created School Management Committees in rural Sindh. The School Management Committees were formed to serve as a formal channel for local communities to engage with government schools and to address problems, such as teacher absenteeism, high dropout rates and poor maintenance of school facilities. However, when School Management Committees were functional, their Executive Body members often lacked training and capacity to act on community identified needs for school improvement. [1]

The World Bank is currently implementing a pilot project to provide technical and advisory support to the Government of Sindh and is aimed at improving the quality and performance of government primary schools under the multi-pronged Sindh Education Sector Reform Program (SERP-II). The pilot interventions informed community members of their rights, roles and responsibilities. They were also provided with options for engaging with government schools. [1]

The data used in the present study were collected to evaluate the impact of this intervention. [1] We evaluate the impacts of parent perception of how much their children will score in test on actual student test scores.

A 1997 study by Sam Redding by the name "Academic achievement, poverty and the expectations of parents and teacher" sought to examine the following 2 premises.

- "Predominant perceptions and expectations among the community of people who constitute a school, especially teacher and parents, affect academic achievement.
- "In a school community, the school and the home are part of the *same* "system" and family behaviors are not static, external influences on school learning malleable internal contributors."

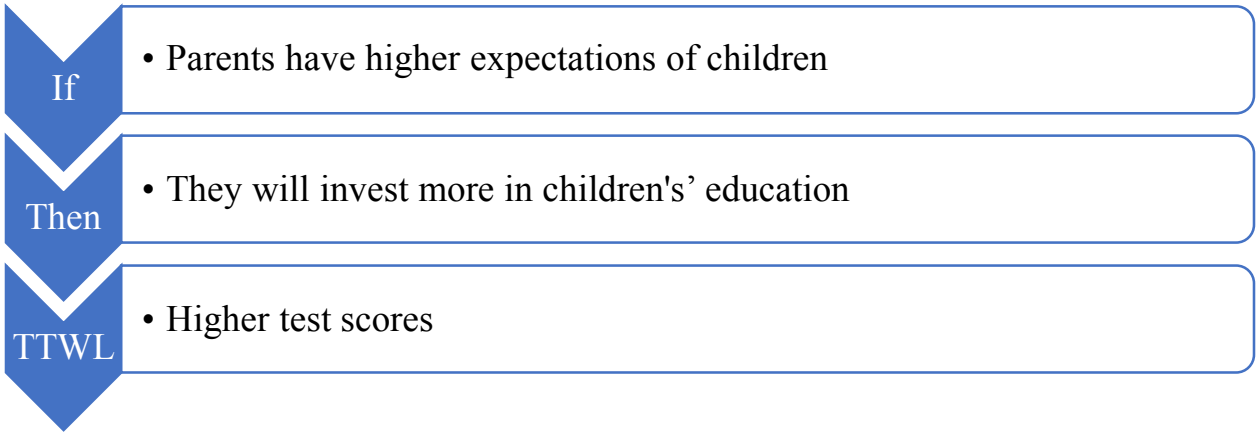
The study results suggest that, while poverty has negative impact on educational achievements such as reading and attendance, its impact is compounded by alterations in parent and teacher perceptions in and expectations.[2]

The present study derives much from this paper. It assumes that parental perception influences academic achievement. In proposing interventions to change parental perceptions it also assumes that this expectation is malleable.

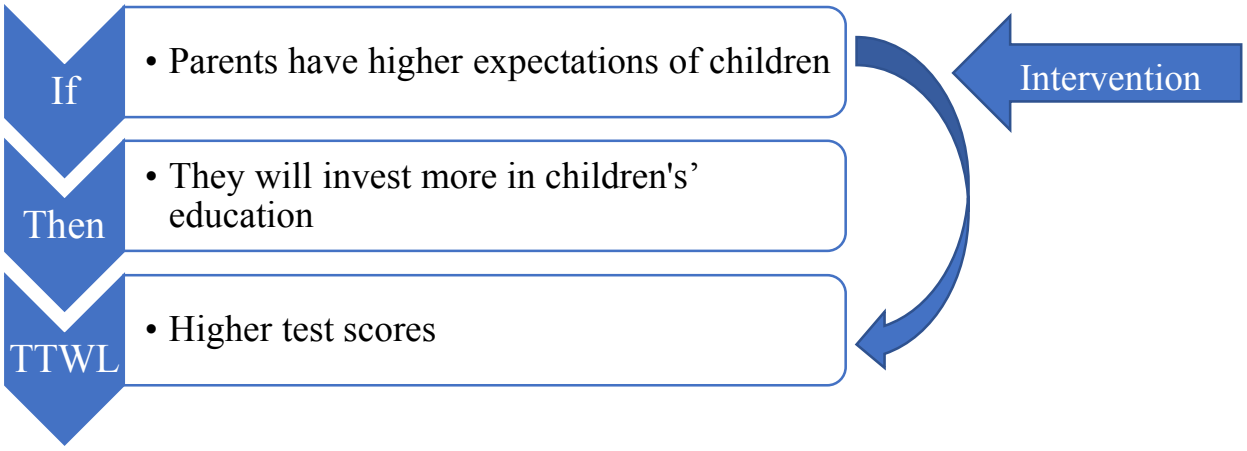
Empirical evidence from two studies that were conducted by Nguyen in 2008 and Jensen in 2010 in Madagascar and the Dominican Republic show that children and parents have lower perceived returns to schooling and significant improvements in education outcomes are possible by simply revising upwards their perceptions based on information on actual returns.[3] Building on their work, this study aims to examine the extent and nature of gaps in perceived versus actual student achievements. In doing so the paper adds to the scarce empirical literature on eliciting and analyzing subjective expectations data in the context of developing countries.

Research Question

This paper assumes the theory that if parents have higher expectation of their children then they will invest more in their children's education and then that will lead to higher student test scores. This paper will evaluate if there is a correlation between parent expectations and higher test scores by answering the research question "Is there a correlation between parent perception of test scores and actual student test scores?"



If we find a positive correlation, assuming that the theory is valid, an intervention to adjust parent expectations will lead higher student test scores.



Data

Selection of Districts[1]

Three districts in rural Sindh, Mitiari, Mirpurkhas, and Sanghar, were selected for the collection of data.

Districts in the Study

Map 1: Sindh Province, Pakistan

Map 2: Districts Mitiari, Sanghar, Mirpur Khas[4]

The Pakistan Social and Living Standards Measurement Survey was used to rank the districts based on two basic education indicators: the proportion of adults who have ever attended school, and school participation rates of primary age children (5-12 years). The districts were further ranked according to size (measured by the number of schools and villages in each district) using administrative school census data. Out of a total 28 districts in the province, Mitiari was ranked the third-smallest, Mirpur Khas was ranked 12th and Sanghar was ranked 18th. In terms of education indicators, Mirpur Khas had one of the lowest levels of education outcomes, followed by Mitiari (close to the median), while Sanghar ranked among the highest. Overall, these three districts are a relatively representative sample of rural Sindh and were deemed relatively safe for the teams to operate in. In these three districts, a total of 287 sample villages were targeted for the interventions. A random sample of 25 households was drawn from the census list for each of the study villages in the three districts.

Survey Data Used

The primary data for this study comes from a World Bank project: "Community Engagement for School Committees in Sindh". The cross-sectional survey data was collected from mother, father, and children in 2012. Apart from soliciting demographic and income data, perception questions about test scores were also asked. In each of the sampled households all children ages 7-13 years were tested using a competency based learning assessment designed and piloted by the research team. The scores from this assessment will be used as 'objective' estimates of student's cognitive achievement as opposed to the subjective estimates elicited from the household.

Competency based learning assessments were conducted for Sindhi, English and Mathematics.

Methodology

Regressions were conducted controlling for differences between districts. Analysis of data is broadly divided into three sections:

- Analysis of test scores where percent scores are used instead of total scores because the test for Sindhi, English and Mathematics have different number of questions.
- Bivariate regressions controlled for district level differences to establish correlation between parent perception of test scores and actual student test scores.
- Multivariate regressions to control for influencing factors.

Inclusion Criteria

Data was included for analysis if the student had attempted at least one question even if the total score was zero. The second condition for inclusion was if parent perception data had non-zero values. After applying these inclusion criteria 2,243 observations were available for analysis. Of the 2243 students 1388 were male and 854 were female. For example, in Table 1, the obervation one to three were included because the student had attempted atleast one question. Note that observation in row three was included despite the total score being zero because the student attempted at least one question.

Total Sindhi	Total Math	Total English	Attempted	Included for Test Score Analysis
23	9	5	Yes	Yes
4	0	0	Yes	Yes
0	0	0	Yes	Yes
0	0	0	0	No

Table 1: Inclusion Criteria

Additionally, for the regressions, which had parent perception data as a variable, another condition of inclusion was introduced. Only non-zero perception data were used. Note that observation in row two (Table 2) the student has attempted tests but there is no perception data

so it was not used. Similarly, observation in row four has perception data but the student has not attempted the test and therefore it was not used.

Total Sindhi	Total Math	Total English	Attempted	Non-Zero Perception Data	Included for Regressions
23	9	5	Yes	Yes	Yes
4	0	0	Yes	No	No
0	0	0	Yes	Yes	Yes
0	0	0	No	Yes	No

Table 2: Inclusion Criteria

Analysis without Inclusion Criteria

Bivariate and Multivariate regressions were also performed without the inclusion criteria to evaluate change in values. The number of students available for analysis increases without the inclusion criteria as shown in tables 3 and 4.

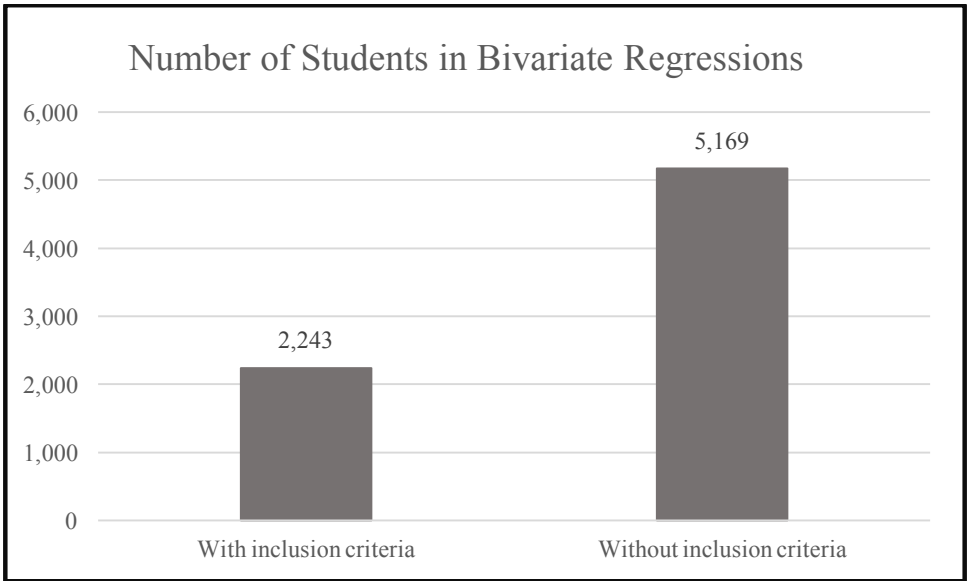


Table 3: Number of Students in Bivariate Regressions

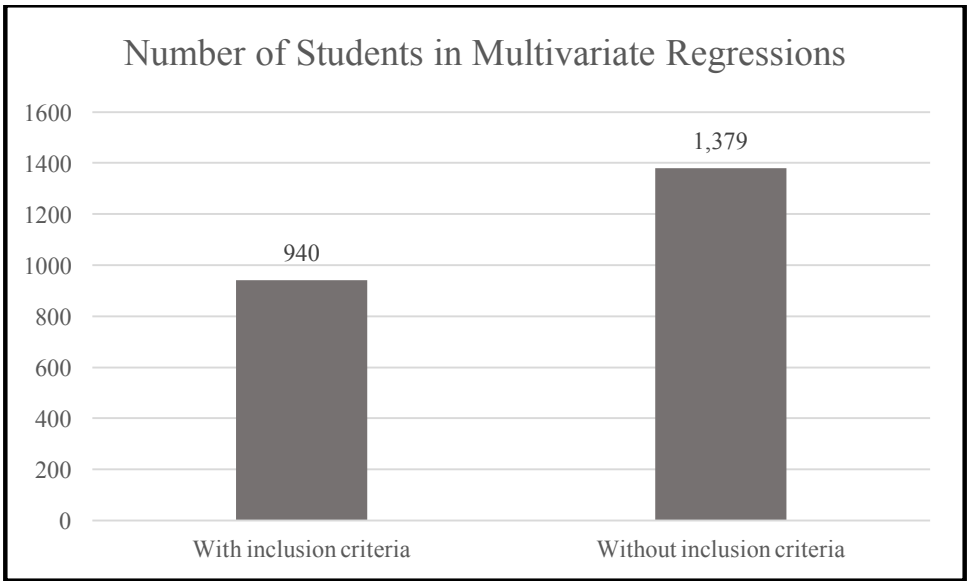


Table 4: Number of Students in Multivariate Regressions

Data Cleaning and Modification

Merging of Documents

The data for mother, father and child were received in separate files and the first step was to merge them so that STATA commands could be applied to them. Every individual surveyed was identified with two identifications numbers, the Household ID (HHID) and member ID (MID). For example, a household with 4 members would have information as represented in Table 5.

HHID	MID	Relationship
54467	1	Head
54467	2	Spouse
54467	3	Child
54467	4	Child

Table 5: Data for head of the family

Therefore, between the HHID and MID of each individual could be identified uniquely and files were merged in STATA using the two variables. Additionally, the MID 1 was always assigned to the head of the family and 2 was always assigned to spouse. The member id variable

was named as MID in some files and as mid in others. The name was made uniform before merging.

Test Scores

The data received contained test answers A, B, C, D as ticked by the students or NA for not attempted, MR for multiple responses. To calculates test scores, a right answer received 1 point and any other response received 0 points.

For example, Tables 6 depicts data as received and Table 7 shows data after it was modified. The right answer for question 1 is A, that for question 2 is B and that for question 3 is C. Once the binary test scores were calculated, total score, percent score and normalized scores were calculated.

Student Name	Question 1	Question 2	Question 3
ABC	A	**B**	A
CDF	B	C	C
GHI	NA	MR	NA
JKL	A	B	C

Table 6: Raw test data

Student Name	Question 1	Question 2	Question 3	Total Score	Percent Score	Normalized Scores
ABC	1	1	0	2		
CDF	0	0	1	1		
GHI	0	0	0	0		
JKL	1	1	1	3		

Table 7: Modified test data

The above steps were repeated for Sindhi, English and Math test data. There were 25 questions in the Math test. Question number 20 was not used for analysis because the question asks two responses for a right answer and this format is not compatible with binary conversion. The English test also had 25 questions. Questions six and 19 were not considered for this study because the answers were descriptive in nature and again were incompatible for binary conversion. The Sindhi test had 30 questions.

Regressions

Bivariate Regressions Controlled for District Level Differences

For the bivariate regression, the following questions from the surveys for Father and Mother were used to calculated perception data.

- Survey question: Assume that [name of child] appears for a class exam in Mathematics/Sindhi/English with 100 questions from textbook.
- What do you think is the maximum/minimum number of questions that he/she will answer correctly on this exam?

The midpoint of the answers received from maximum and minimum values given by mother and father were used as the perception of scores and were the independent variables. Since, perception data was available separately for mother and father, parent perception data was generated by taking the average of mother and father perception data. Test scores calculated as described above were used as the independent variable. A 95% confidence interval was used. Variations between districts was controlled for.

Score = $\beta_0 + \beta_1\ Parent\ Perception$ + β_2Mitiari + β_2Sanghar

Bivariate regressions were done to gauge the effect of gender of the parent and gender of the child as follows:

- Effect of Mother's perception on male child's test scores
- Effect of Mother's perception on female child's test scores
- Effect of Father's perception on male child's test scores
- Effect of Father's perception on female child's test scores

Multivariate Regressions

After the bivariate regressions were analyzed, it became apparent that there is a correlation between parent perception and student test scores. For multivariate regressions aggregate values were used instead of the gender based segregation of data that was used in the bivariate regression.

Control variables were selected based on the following criteria:

- What does the literature say?
- What might affect parent perception?
- What might affect student scores?
- Evaluate if there's considerable variation exists in selected variables

We will discuss each of variable analyzed for inclusion in regression model.

Age: Age is a demographic variable that can have a bearing on perception as well as actual test scores. In order to use Father's age and Mother's age for regression along with test scores and perception scores, we required the age of the mother and father to be in the same row as the test scores. To achieve this, two more variable called Age mother and Age father were created where the ages of the parents were populated as shown in table 8.

Relationship	**Age**	**Perception Score**	**Student Score**	**Age Mother**	**Age Father**
Head	45				
Spouse	42				
Child	13	45	46	42	45
Child	10	34	34	42	45

Table 8

Gender: Male was assigned 1 and female was assigned 2 for analysis.

Parent Education Level: It can be postulated that parent who have higher education will have greater expectations from their children. The data for education had the same issues as age data

and two new variables called Education Mother and Education Father were created. A loop code was created so that the four variables could be created with just one set of codes.

Child Motivation: Children motivation variables were derived from the following survey question.

Question: What is the highest grade you want to attain? 1-12= Grades 1-12 13= Polytechnic Diploma, 14= BA/BSc., 15= Degree in Engineering, 16= Degree in Medicine, 17= Degree in Agriculture, 18= Degree in Law, 19= Post-graduate (MA/MSc), 20= M.Phil/PhD, 21=Other (specify)

The desire to achieve higher grades and degrees was used as proxy for motivation. Based on the possible answers the following three dummy variables were created. Child_motivation_high_school was assigned 1, Child_motivation_pre_graduation was assigned 2 and Child_motivation_higher_education was assigned 3 as depicted in Table 9.

Child_motivation_high_school	If child answered 1 to 10
Child_motivation_pre_graduation	If child answered 11 or 12
Child_motivation_higher_education	If child answered above 12

Table 9

Grade: Grade was included because as the child has a higher grade expectations from the child may increase.

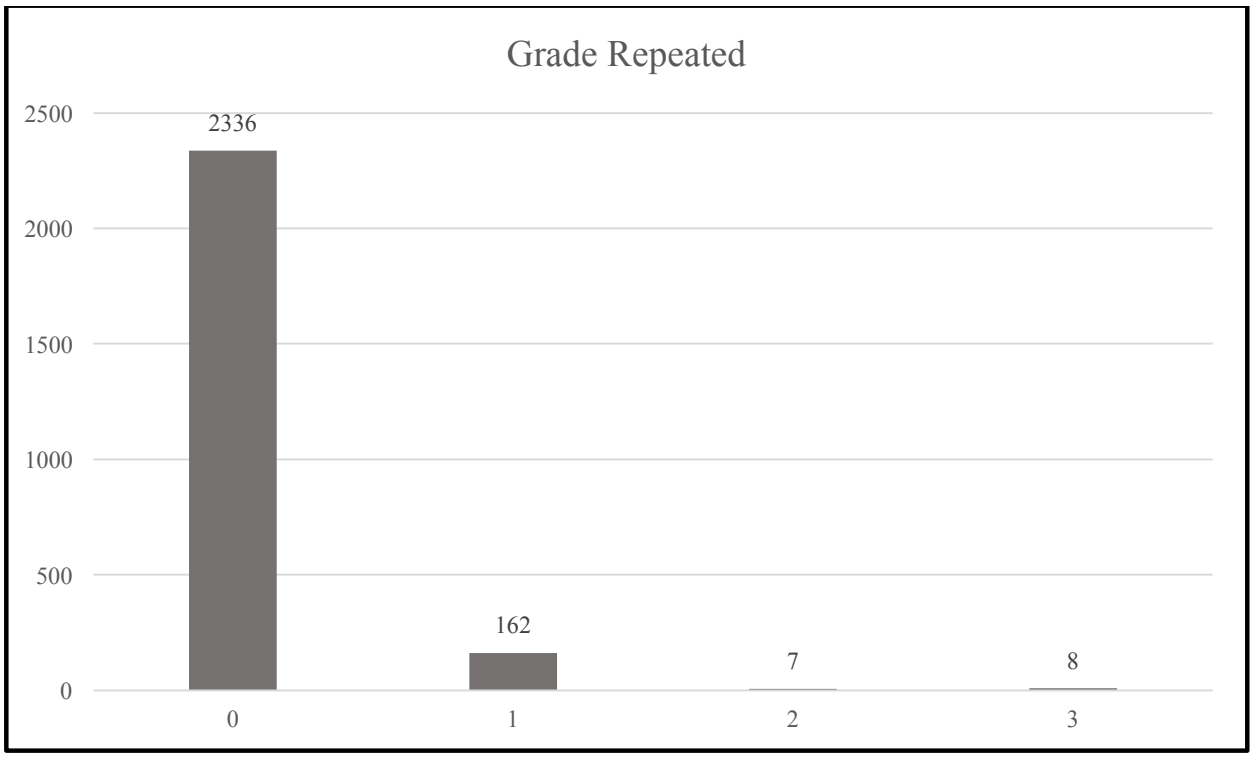
Teacher Qualification: Teacher qualification was included because it is possible that knowledge of better teaching may increase expectations and vice versa. It was also included to factor in to some measure the quality of the school. The question in the survey used for teacher qualification was the following.

What is the education qualification of [name's] head teacher?

1=Primary 2= Middle 3= Matric 4= FA/FSc 5=BA/Bed 6= MA/Med or above

A variable teacher qualification was created with binary values with 0 representing answers one to four and 1 representing answers five and six.

Control variables were not used if there was low variation between the responses. For example, the number of times a child repeated a grade had low variation with majority of the students not having repeated a grade (Graph 1).



Graph 1: Grade repeated

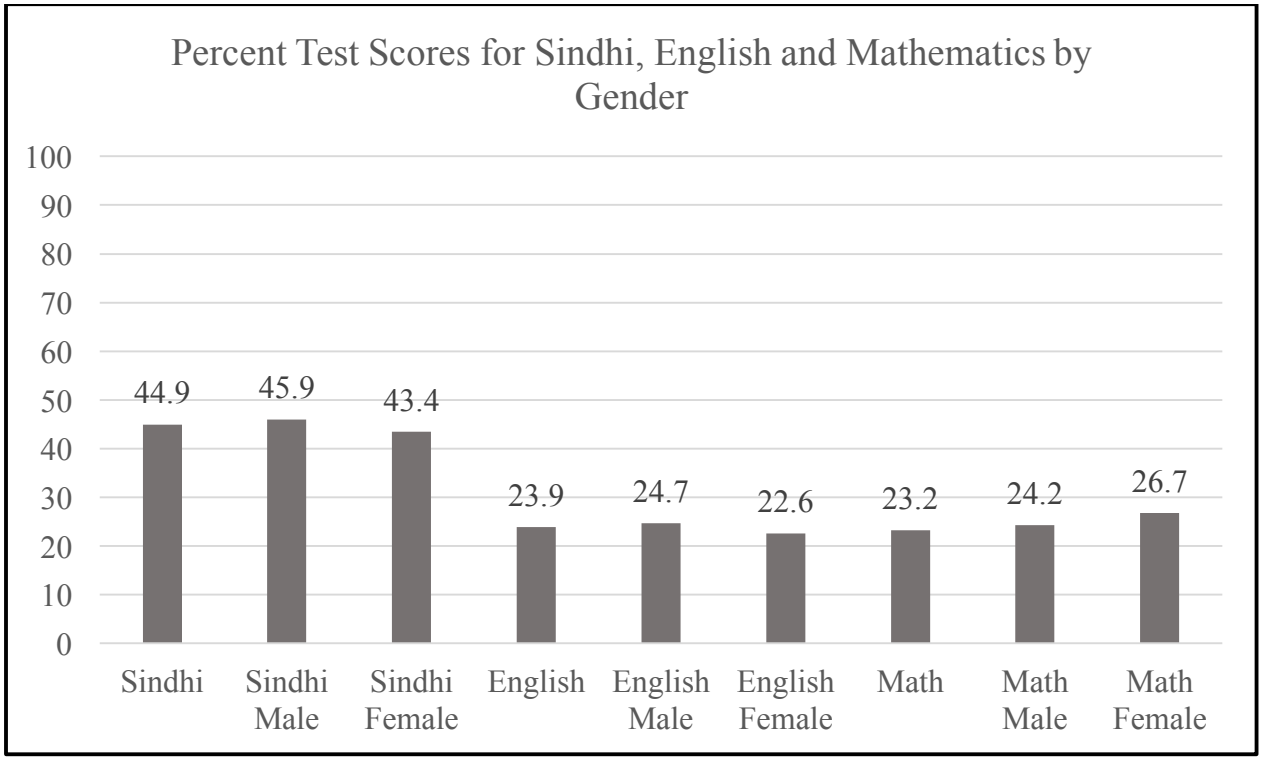
Findings

Test Scores

Before running the regressions, we need to get a sense of average scores in Sindhi, English and Mathematics. Scores for a total of 2885 students were available for Sindhi, English and Mathematics after applying the first inclusion criteria of using data if the student had

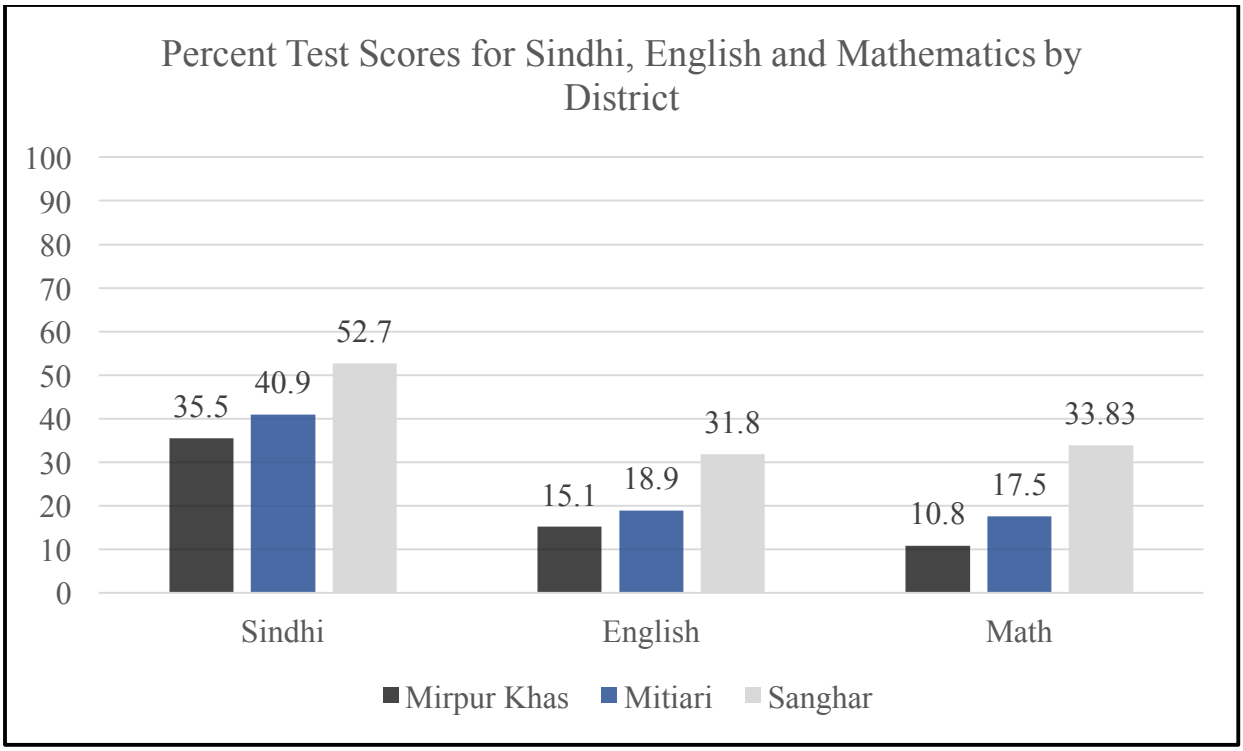
attempted a question as described in the methodology. Of the 2885 students 1769 were male and 1108 were female.

Students scored higher in Sindhi compared to English and Mathematics (Graph 2). This is probably explained by the fact that Sindhi is their mother tongue. Although, some difference in scores between males and females was observed, the difference is not big. For example, for calculation of Sindhi test scores which has 30 questions, a change of one percent in test scores is only 0.3 points.



Graph 2: Percent Test Scores for Sindhi, English and Mathematics by Gender

Students in Mirpur Khas scored the least in all the three tests followed by Mitiari and then Sanghar (Graph 3). This is consistent with the selection criteria of districts where in terms of education indicators, Mirpurkhas had one of the lowest levels of education outcomes, followed by Mitiari (close to the median), while Sanghar ranked among the highest.



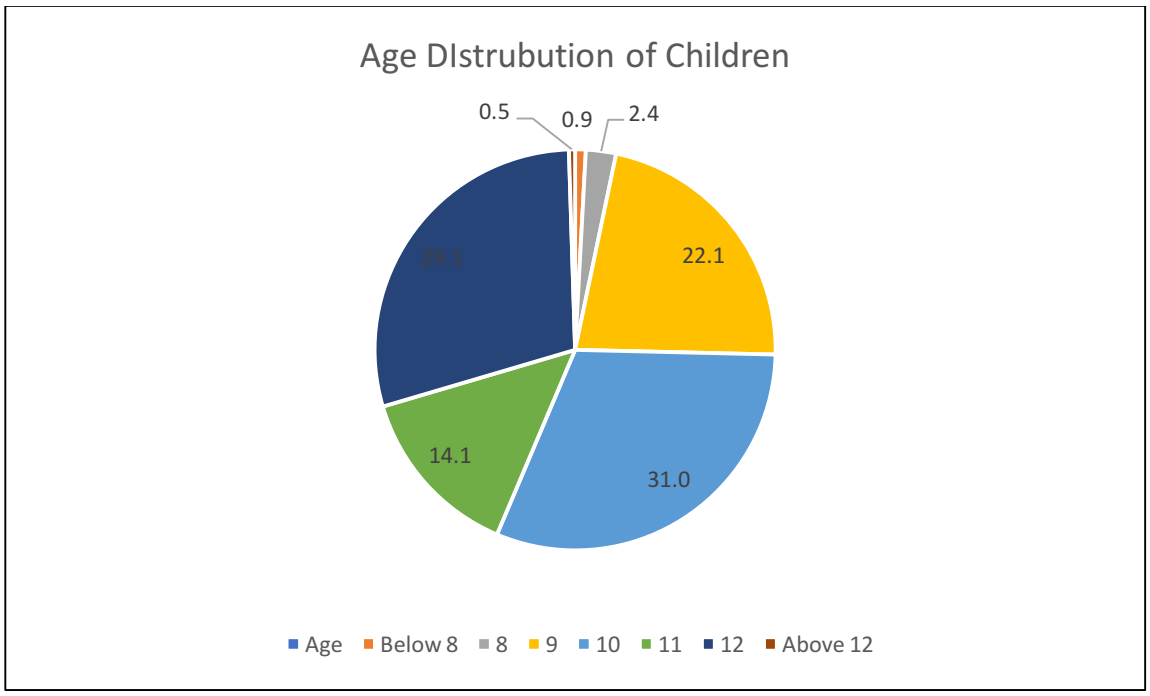
Graph 3: Percent Test Scores for Sindhi, English and Mathematics by District

Bivariate Regressions Controlled for District Level Differences

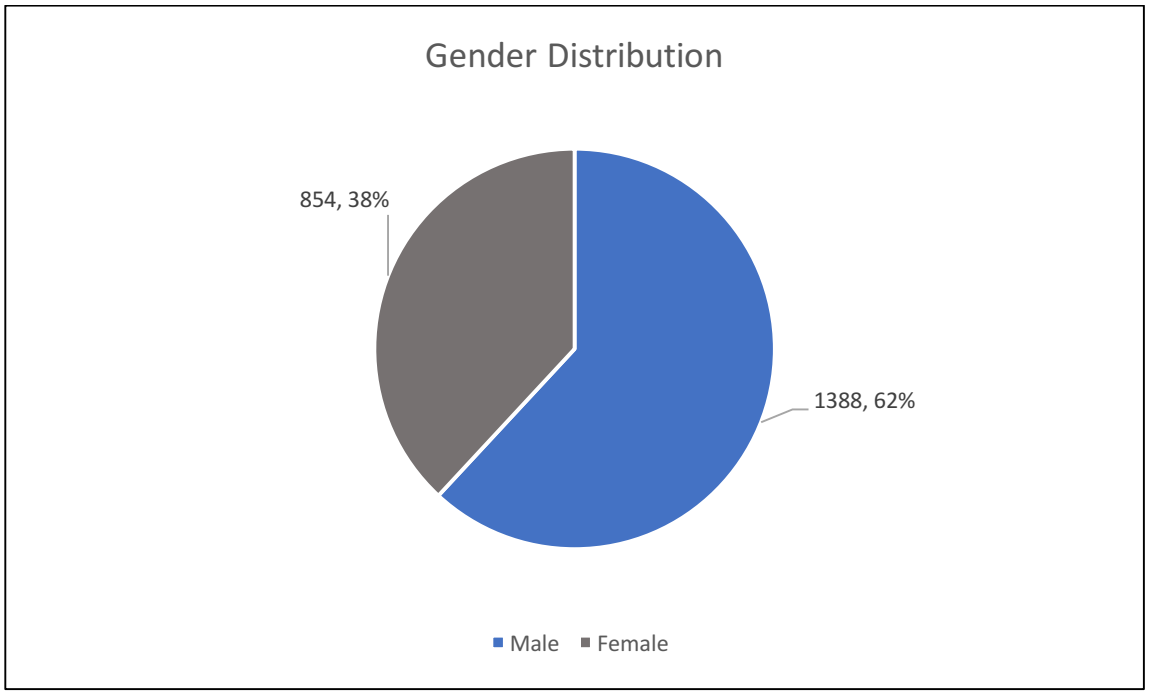
Regressions with Inclusion Criteria Applied

For the bivariate regressions, the dependent variable is student test scores and independent variable is parent perception of test scores. For both the variables z-scores or standard normal scores were used to account for differences such as difficulty level and number of questions between the three tests.

After inclusion criteria were applied, the age distribution of the students was as shown in Pie Chart 1. Most of the students (a total of 2189) were between the ages of eight and 12. Additionally, the gender distribution after application of inclusion criteria was as shown in Pie Chart 2. The number of male student is higher than female students.



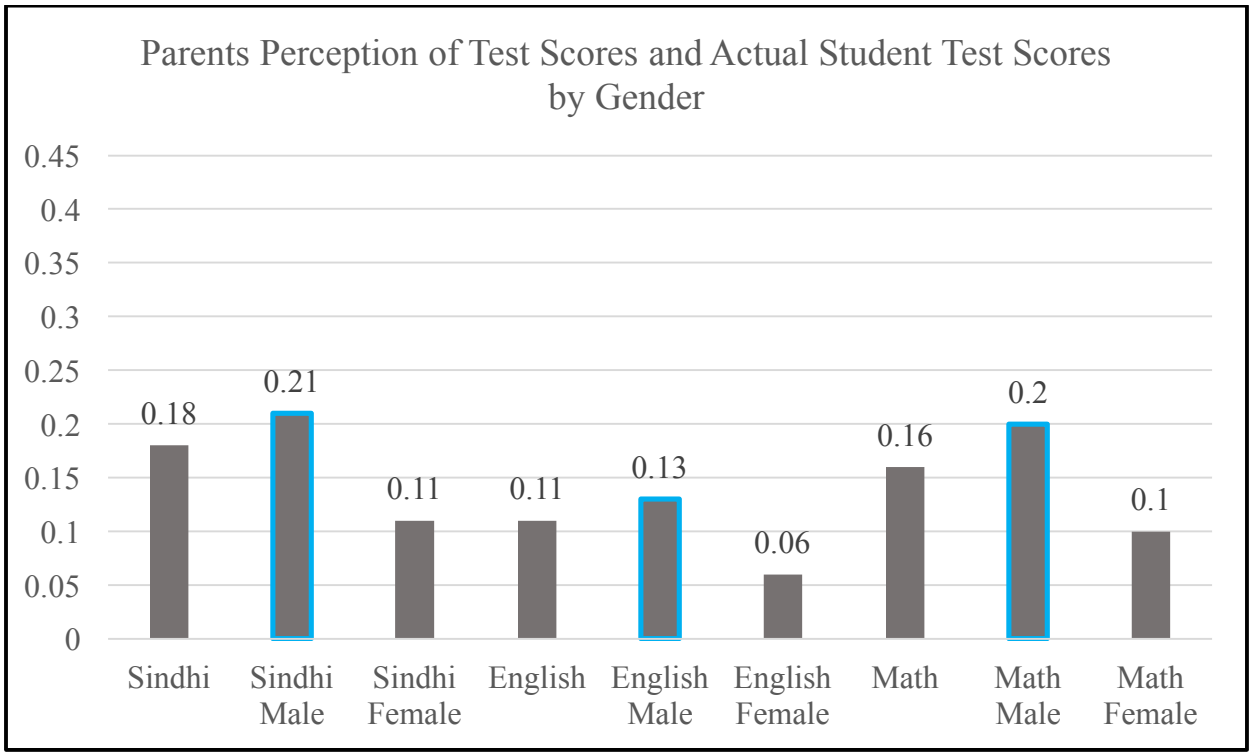
Pie Chart 1: Age distribution of students



Pie Chart 2: Gender distribution of students

Bivariate regression was performed to evaluate the effect of perception of parents on actual student test scores. On an average, a one unit increase in parent perception of test scores was associated with a .15 unit increase in actual student test scores. When disaggregated by gender of the child, higher parent expectations had a greater effect on the male child compared to the female child (Graph 4). A unit increase in parent perception of test scores was associated with a 0.18 unit increase in actual test score of male and 0.09 unit increase in actual test score of female child. Recalling the program theory, which assumed that higher expectations led to increased investment in education which in turn led to higher test scores, greater effect of parent perception on male test scores may be because of greater investment in the male child.

> A one unit increase in parent perception of test scores was associated with a 0.15 unit increase in actual student test scores

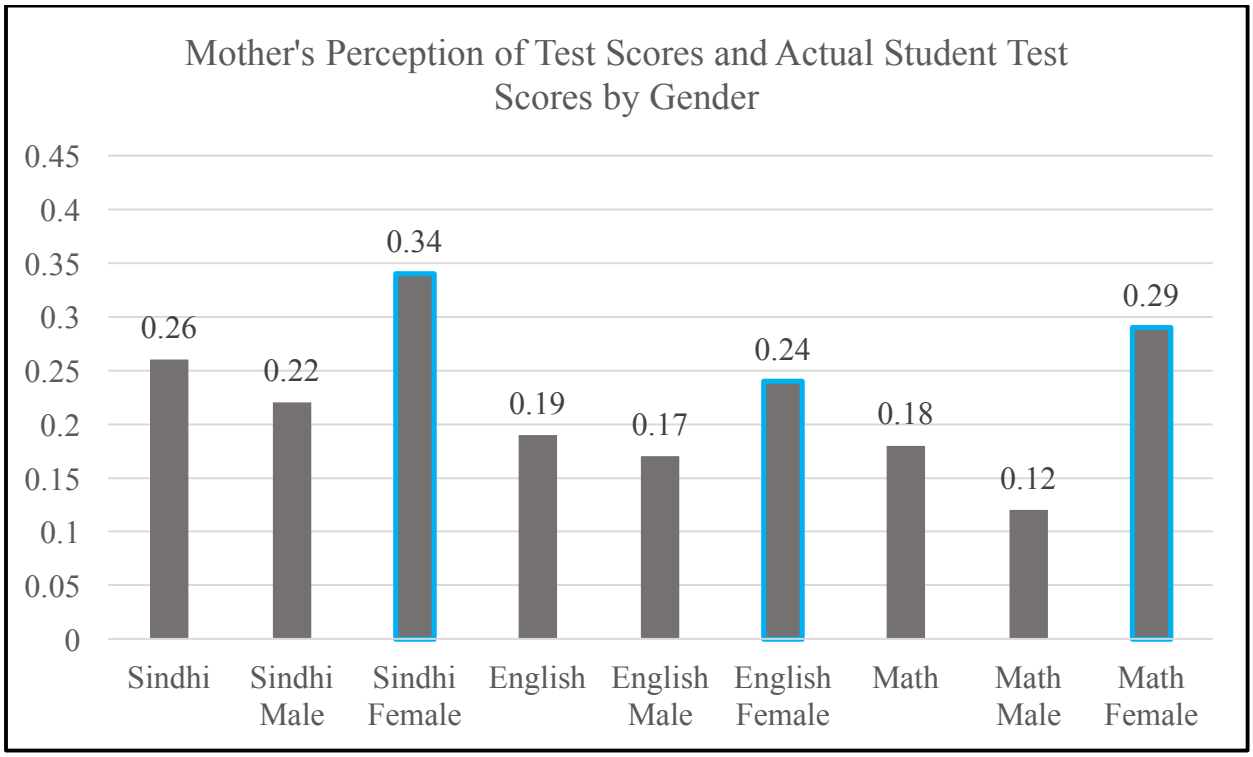


Graph 4: Parents Perception of Test Scores and Actual Student Test Scores by Gender

Although, the bivariate regression using parent test scores suggest an increase in test scores secondary to higher expectation, especially in male children, it is unclear whether it is the father or the mother who has a greater influence. To evaluate this, bivariate regressions were performed separately for mother's and father's perception data.

On an average, a one unit increase in mother's perception of test scores was associated with a 0.21 unit increase in actual student test scores (Graph 5). Additionally, higher expectations from the mother had a greater effect on the actual test scores of the female child with one unit increase in test scores associated with 0.29 unit increase in actual female student test scores as opposed to 0.17 in actual male student test scores.

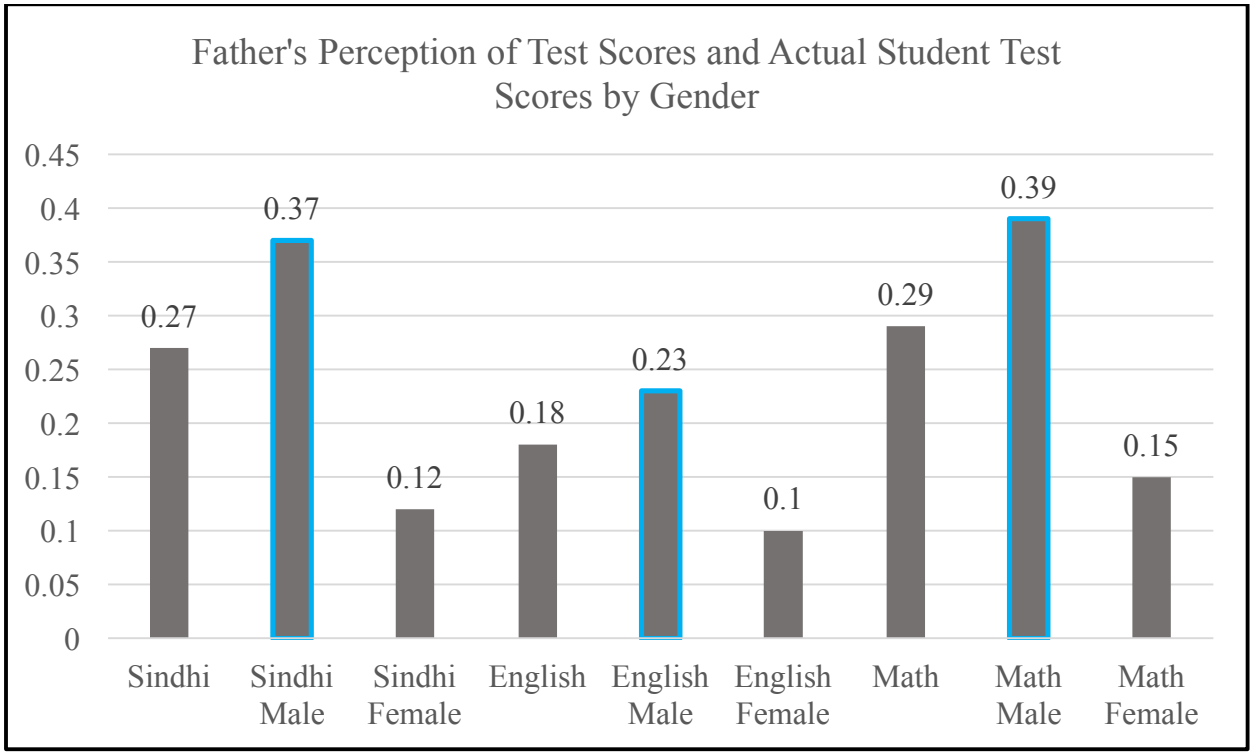
A one unit increase in mother's perception of test scores was associated with a 0.21unit increase in actual student test scores.



Graph 5: Mother's Perception of Test Scores and Actual Student Test Scores by Gender

When similar bivariate regression was performed with father's perception data, it was found that, on an average, a one unit increase in father's perception was associated with 0.24 unit increase in actual student test scores (Graph 6). However, father's expectations had a greater bearing on the test scores of male students. A one unit increase father's expectaion was asociated with an increase of 0.33 unit increase in actual male test scores as opposed to 0.12 unit increase in actual female test scores.

> A one unit increase in father's perception was associated with 0.24 unit increase in actual student test scores



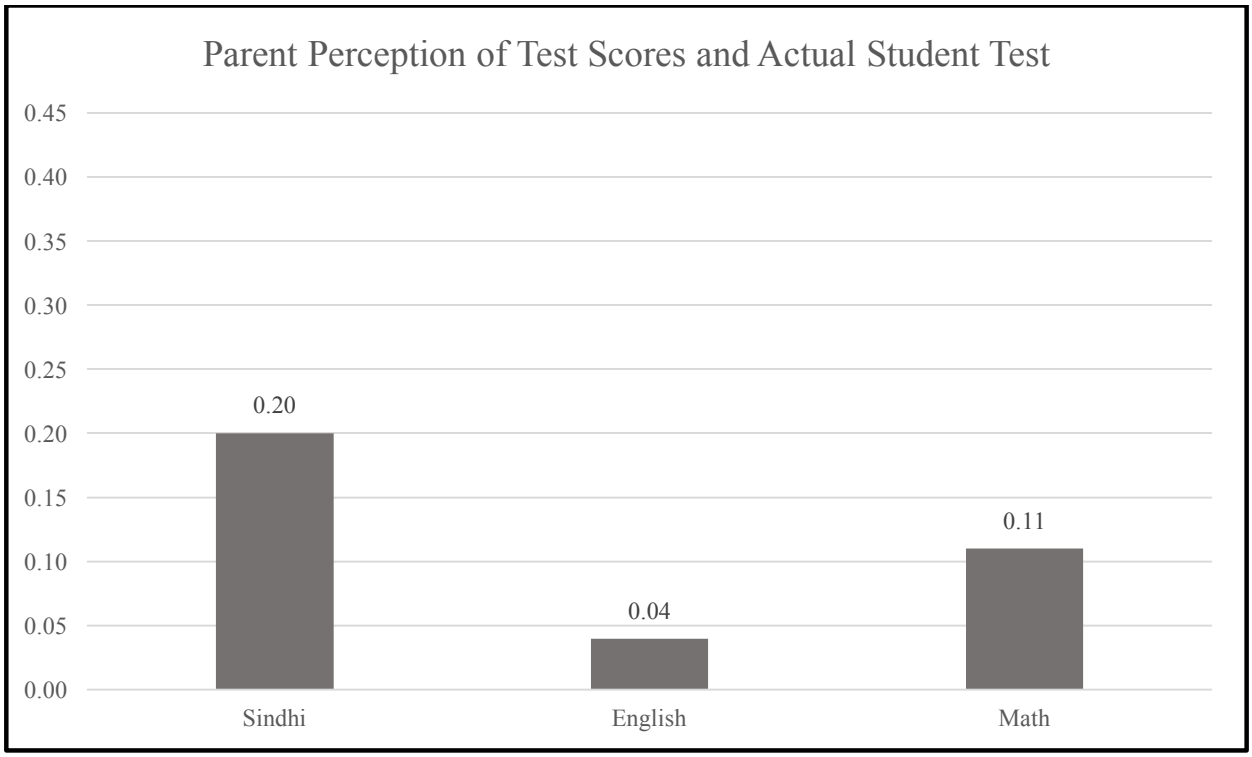
Graph 6: Father's Perception of Test Scores and Actual Student Test Scores by Gender

To summarize, father's perceptions mattered slightly more than mother's perception. This can probably be explained by the possibility that most household in Pakistan are headed by fathers and they have bigger decision-making role as far the children' education is concerned.

However, mother's perception seems to have a greater impact on female children and father's perception on male children. This suggests that the investment is not just monetary in nature but probably also includes investment of time, words of encouragement etc.

Regressions without Inclusion Criteria

However, if the inclusion criteria are not applied, i.e. data of students who have not attempted any question and perception data of parents with zero as values are included, the association weakens (Graph 7). On an average, a 1 unit increase in parent perception of test scores is associated with a 0.12 unit increase in actual student test score.



Graph 7: Parent Perception of Test Scores and Actual Student Test Scores without Inclusion criteria

A scatter plot of perception data and actual test scores shows a mild trend which suggests that as perception of test scores increases the actual test scores also increase.

Scatter Plot 1

Multivariate Regressions Controlled for District Level Differences

Multivariate were not done by gender. However, gender was included as a control variable to account for differences between gender.

Regressions with Inclusion Criteria Applied

After controlling for age, gender, parent education, child motivation, teacher qualification and teacher skills, a 1 unit increase in parent perception of test scores was associated with a 0.32 unit increase in actual test scores (Table 10).

A unit increase in parent perception of test scores was associated with a 0.32 unit increase in actual test scores.

normal_total_score	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
normal_parent_perception	.3215065	.0613096	5.24	0.000	.2011843	.4418286
edu_father	.0274269	.0095302	2.88	0.004	.0087236	.0461303
edu_mother	.0082366	.0157668	0.52	0.602	-.0227062	.0391795
age_father	.0004193	.0102118	0.04	0.967	-.0196217	.0204602
age_mother	.0205391	.0113923	1.80	0.072	-.0018186	.0428968
child_motivation_high_school	.0078651	.0166578	0.47	0.637	-.0248265	.0405566
child_motivation_pre_graduation	.0186279	.0193994	0.96	0.337	-.019444	.0566998
child_motivation_higher_edu	.0205146	.0254424	0.81	0.420	-.0294171	.0704463
age_child	.0818208	.0525405	1.56	0.120	-.0212918	.1849333
gender	-.2206536	.1302845	-1.69	0.091	-.4763414	.0350342
grade	.1685933	.03728	4.52	0.000	.0954301	.2417565
teacher_qualification	.2853734	.1295579	2.20	0.028	.0311115	.5396354
teacher_skills	-.4431836	.132461	-3.35	0.001	-.7031428	-.1832243
discode						
Mitiari	.8780755	.1812521	4.84	0.000	.522362	1.233789
Sanghar	1.566169	.1518171	10.32	0.000	1.268223	1.864116
_cons	-1.256181	.7153835	-1.76	0.079	-2.660146	.1477838

Table 10: Regression results with inclusion criteria applied
Values in green boxes signify correlation is significant at .05 level (tow-tailed)

Regressions without Inclusion Criteria

However, if the inclusion criteria are not applied, i.e. data of students who have not attempted any question and perception data of parents with zero as values are included, the association weakens (Table 11). A unit increase in parent perception of test scores is associated with a 0.15 unit increase in actual student test score.

normal_total_score	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
normal_parent_perception	.1532574	.038371	3.99	0.000	.0779848	.22853
edu_father	.0246199	.0083998	2.93	0.003	.008142	.0410978
edu_mother	.0105497	.0140737	0.75	0.454	-.0170587	.038158
age_father	.0016007	.0091033	0.18	0.860	-.0162573	.0194588
age_mother	.0113129	.0102196	1.11	0.268	-.0087349	.0313607
child_motivation_high_school	.007676	.0142361	0.54	0.590	-.0202511	.0356031
child_motivation_pre_graduation	.0118352	.0169193	0.70	0.484	-.0213555	.0450258
child_motivation_higher_edu	-.0084071	.0224412	-0.37	0.708	-.0524302	.0356159
age_child	.0820975	.0388461	2.11	0.035	.0058928	.1583022
gender	-.1130084	.1141613	-0.99	0.322	-.3369594	.1109425
grade	.1951098	.0336856	5.79	0.000	.1290285	.261191
teacher_qualification	.3655233	.1128536	3.24	0.001	.1441376	.5869089
teacher_skills	-.4783921	.1170768	-4.09	0.000	-.7080623	-.2487219
discode						
Mitiari	.9469557	.1577902	6.00	0.000	.6374177	1.256494
Sanghar	1.805646	.1288353	14.02	0.000	1.552909	2.058383
_cons	-.9558132	.5337672	-1.79	0.074	-2.002907	.0912811

Table 11: Regression data with no inclusion data applied
Values in green boxes signify correlation is significant at .05 level (tow-tailed)

Study Results Suggest that Theory Holds

The results of this study suggest that the higher parental expectations are associated with higher test scores. If the theory assumed is correct, an intervention aimed at improving expectation will lead to higher investment in children' education and eventually to higher test scores.

Limitations of Study

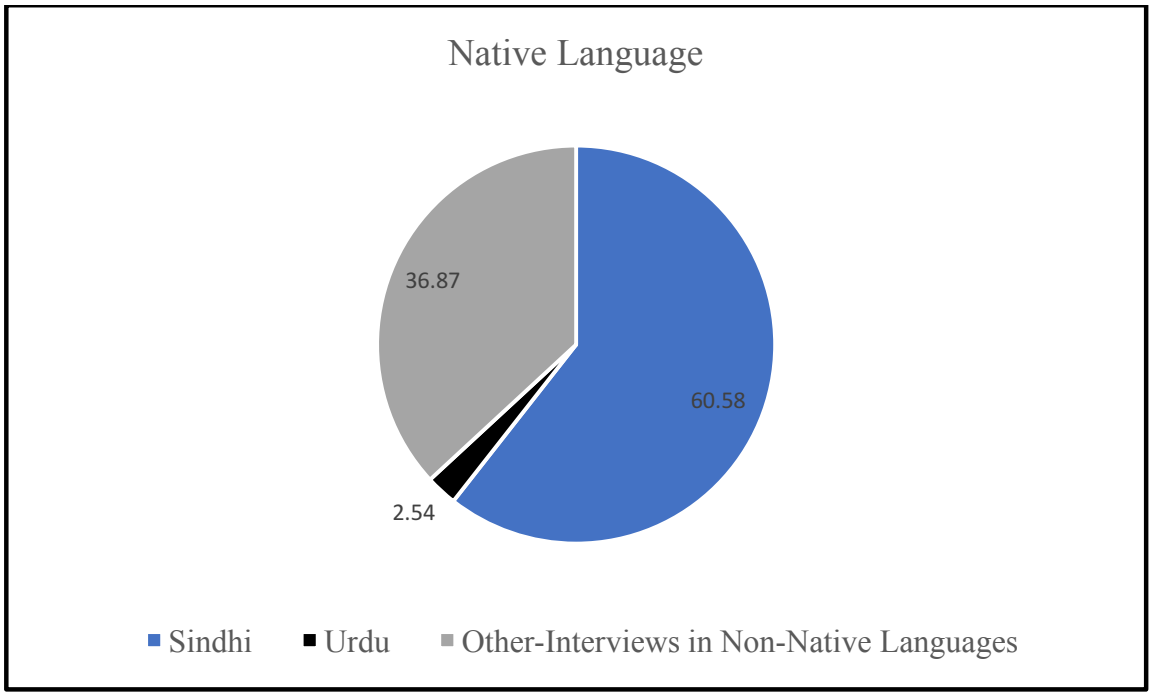
Inclusion Criteria

In the case of both bivariate and multivariate regressions the association between parent perception of test scores and actual student test scores weakens when inclusion criteria is not used.

Data collection and quality of data

The huge size of the dataset may lead to the following problems.

- **Language barriers**: The survey forms were translated in 2 languages Urdu and Sindhi. However, some respondents' first language was not any of the above. A little over 36 percent of the interviews were conducted in non-native languages (Pie Chart 3). This could have led to misunderstanding of and collection of inaccurate data, especially in the case of children.



Pie Chart 3: Percent of interviews conducted in non-native languages

- **Coding and Data Entry Errors:** Some data points required providing codes for responses and there a possibility of incorrect recording of answers. Further, this massive data needed to be entered electronically. This is another point where errors could have crept in.
- **Response bias:** Response biases are a set of biases where respondents give responses that are away from accurate answers because of various reasons like the way in which the question was asked or whether others were present. This could especially true for the

survey question about what parents expect their children to score. It's possible that they felt the need to present their children in a positive light.[5]

- **Recall problem:** Participants may also have had recall issues and some of the information given may be inaccurate because they didn't remember accurate data.
- **Missing data and sample size:** Although this is a huge dataset**,** after the inclusion criteria were applied the data available for analysis decreases. After applying the first inclusion criteria of using test data if the student had attempted at least one question, the data available went down from a total of 5282 students to 2885. When the second criteria of using non-zero values of perception data was applied, the number was 2,243 students. Further, as depicted in results section, the age distribution and age distribution is uneven. Finally, for multivariate regressions, after including control variables number of students is 940. This reduction in number is because of missing values in the controls used.

Threats to Validity

- **Causal Validity:** We are assuming that higher parental expectations in test scores lead to higher investments in education which in turn lead to higher student test scores. The first threat is that higher expectation may not always lead to higher investment. For example, even if parents are willing to invest more, better education facilities may not be present in the village.

- **Circularity:** We have assumed a linear cause and effect model here. We have assumed that higher expectation of test scores leads to higher test scores (Figure 1). However, the reverse may also play a role. Knowledge of how much a child has been scoring may inform expectations (Figure 2).

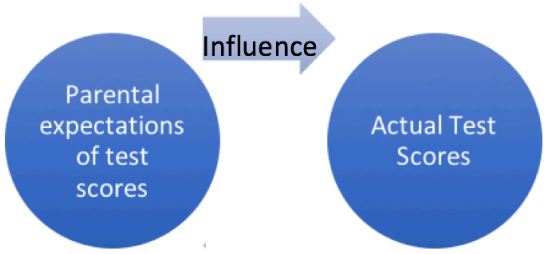


Figure 1

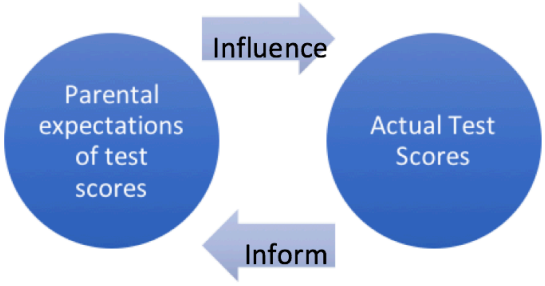


Figure 2

Next Steps

Only parts of the entire data available have been used for this study. Further, the research question is limited in nature. It seeks to find the correlation between parental expectations of test scores and actual student test scores. A broader research question that will inform design of intervention would be "How does parental perception of value of education affect educational outcomes such as school enrollment and test scores"

For example, the following survey question gathers information about how much more the son will earn as he acquires more education.

SECTION 9A: PERCEPTIONS ABOUT SON'S EARNINGS

Just assume that you have a son aged 25. Now I'll ask some questions about your imaginary son. Please keep this in mind that questions are being asked about the imaginary son of age 25.

1.	**Assume your son has not acquired any education:**	
1a.	In your opinion, what is the maximum amount he can earn per month at the age of 25?	
1b.	In your opinion, what is the minimum amount he can earn per month at the age of 25?	

2.	**Assume your son has completed education till grade 5 primary:**	
2a.	In your opinion, what is the maximum amount he can earn per month at the age of 25?	
2b.	In your opinion, what is the minimum amount he can earn per month at the age of 25?	

3.	**Assume your son has completed education till grade 10 / matric:**	
3a.	In your opinion, what is the maximum amount he can earn per month at the age of 25?	
3b.	In your opinion, what is the minimum amount he can earn per month at the age of 25?	

Include Socio-Economic Data

The present study does not take into account socio-economic status. If we recall the selection criteria of districts, they were selected to represent all socio-economic classes. However, we can still expect there to be differences that were not captured by this selection. Socio-economic status is important because we can expect parents from higher socio-economic strata to be more aware of the benefits of education and have higher expectations of their children. Further, they are more capable of acting on higher expectations because they may more resources to mobilize toward education. Socio-economic data will be evaluated from the following section of the questionnaire.

Section 6: HOUSEHOLD ANNUAL INCOME

In the past 12 months please record the total income earned (cash or kind) by the household from the following:

	Income Head	**Amount in Rupees**	**Schedule** **1**=Monthly **2**=Annual
1.	Non-farm Wage Income		
2.	Total Income from Business/Enterprise [***Profits net of investments into the business (amount taken out every year)***]		
3.	Own Farm Income (Produce Sold on the Market)		
4.	Own Farm Income (Market value of self-consumed produce)		
5.	Total remuneration from Farm Work (Rabi + Kharif)		
6.	Rental Income (Land, Machinery, assets and interest incomes)		
7.	Remittance Income (Domestic)		
8.	Remittance Income (International)		
9.	Pension Income		
10.	Assistance from Government (***Includes: Benazir Income Support Program; Food Support; Zakat from Government; NGO assistance etc.)***		
11.	Assistance from individuals (***Zakat, Fitrana, Ushr***)		

Table 12: Household Annual Income

However, it is possible that the respondents may not have been able to recall values of they received in each of the categories and data may not be accurate.

To address this problem, we can use the following assets data (Table 13) to create and asset index using Principal Component Analysis (PCA).

Section 6: HOUSEHOLD ASSETS / HOUSING

NECESSITIES:

Type of Asset	Owned ❶Yes❷No	Type of Asset	Owned ❶Yes❷No
a) Chaarpai/Bed		m) Air Conditioner	
b) Tables/Chairs		n) Geyser	
c) Cooking Stove		o) Bicycle	
d) Fans (Pedestal; Ceiling)		p) Motorcycle/Scooter	
e) Air Cooler/Heater		q) Motorcycle Rickshaw (Qingchi)	
f) Radio /Cassette /CD Player		r) Carts/Tongas with horse	
g) Mobile phone		s) Tractor/Trolley	
h) TV/VCR/DVD player		t) Harvester/Thresher	
i) Fridge/Freezer		u) Plough/other hand tools	
j) Sewing Machine		v) Car/Taxi/Van	
k) Washing Machine		w) Gold Jewelry	
l) Microwave oven		x) Tubewell	

Table 13: Data to be used for principal component analysis

Conduct Sibling Analysis

To further corroborate the findings of this study, a household level analysis of households with siblings can be conducted. In a given household, we can expect all conditions to be similar and we can make a stronger attribution to the effect of parental expectations. However, we will still need to control for demographic data such as age and gender.

Explore Effects of Gender

Important differences were found in bivariate regressions where gender was taken into account. If an intervention is designed, it would be prudent to further explore the role of gender.

Include more information about quality of school and availability of educational facilities

Differences in access to education can influence expectation and investment and therefore have to be controlled for.

Conclusion

The present study seems to suggest that parent perception of test scores is positively associated with actual student test scores. Fathers seems to have a greater effect on male test scores and mothers seem to have a greater effect of female test scores. Further analyses are required to definitively prove these results and design interventions based on the results.

References

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Appendices

Appendix 1: Stata Results for Test Scores

```
. mean percent_sindhi if attempted == 1
Mean estimation                   Number of obs   =      2,885

------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------
percent_sindhi |    44.9301   .5461022      43.85931    46.00089
------------------------------------------------------------------

. mean percent_sindhi if attempted == 1 & gender == 1 //Male

Mean estimation                   Number of obs   =      1,769

------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------
percent_sindhi |   45.96571   .6985901      44.59556    47.33586
------------------------------------------------------------------

. mean percent_sindhi if attempted == 1 & gender == 2 //Female

Mean estimation                   Number of obs   =      1,108

------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------
percent_sindhi |   43.41456   .8780744      41.69168    45.13744
------------------------------------------------------------------

. mean percent_sindhi if attempted == 1 & discode == 1 // Mirpur
Khas

Mean estimation                   Number of obs   =        805

------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------
percent_sindhi |    35.5735   .8803782      33.84539    37.30161
------------------------------------------------------------------

. mean percent_sindhi if attempted == 1 & discode == 2 //
Mitiari

Mean estimation                   Number of obs   =        725
```

```
------------------------------------------------------------------------------
               |       Mean   Std. Err.     [95% Conf. Interval]
---------------+--------------------------------------------------------------
percent_sindhi |   40.92414   1.057954      38.84711    43.00116
------------------------------------------------------------------------------

. mean percent_sindhi if attempted == 1 & discode == 3 //
Sanghar

Mean estimation                   Number of obs   =      1,347

------------------------------------------------------------------------------
               |       Mean   Std. Err.     [95% Conf. Interval]
---------------+--------------------------------------------------------------
percent_sindhi |   52.79139   .8209715      51.18087    54.40191
------------------------------------------------------------------------------

.
. mean percent_eng if attempted == 1

Mean estimation                   Number of obs   =      2,885

------------------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 percent_eng |   23.90174    .497181      22.92687    24.87661
------------------------------------------------------------------------------

. mean percent_eng if attempted == 1 & gender == 1 //Male

Mean estimation                   Number of obs   =      1,769

------------------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 percent_eng |   24.72534   .6439089      23.46244    25.98824
------------------------------------------------------------------------------

. mean percent_eng if attempted == 1 & gender == 2 //Female

Mean estimation                   Number of obs   =      1,108

------------------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 percent_eng |   22.65343   .7845125      21.11413    24.19273
------------------------------------------------------------------------------
```

```
. mean percent_eng if attempted == 1 & discode == 1 // Mirpur
Khas

Mean estimation                   Number of obs   =        805

------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------
 percent_eng |   15.18228   .6695593      13.86799    16.49658
------------------------------------------------------------------

. mean percent_eng if attempted == 1 & discode == 2 // Mitiari

Mean estimation                   Number of obs   =        725

------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------
 percent_eng |   18.94453   .9468591      17.08561    20.80344
------------------------------------------------------------------

. mean percent_eng if attempted == 1 & discode == 3 // Sanghar

Mean estimation                   Number of obs   =      1,347

------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------
 percent_eng |   31.83564   .7894727      30.28691    33.38437
------------------------------------------------------------------

.
. mean percent_math if attempted == 1

Mean estimation                   Number of obs   =      2,885

------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------
percent_math |   23.27701   .4729982      22.34956    24.20446
------------------------------------------------------------------

. mean percent_math if attempted == 1 & gender == 1 //Male

Mean estimation                   Number of obs   =      1,769
```

```
--------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+------------------------------------------------
percent_math |   24.24863   .6120618      23.04819    25.44907
--------------------------------------------------------------

. mean percent_math if attempted == 1 & gender == 2 //Female

Mean estimation                   Number of obs   =      1,108

--------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+------------------------------------------------
percent_math |   21.79227    .746727      20.32711    23.25743
--------------------------------------------------------------

. mean percent_math if attempted == 1 & discode == 1 // Mirpur
Khas

Mean estimation                   Number of obs   =        805

--------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+------------------------------------------------
percent_math |   10.87992   .6178963      9.667037     12.0928
--------------------------------------------------------------

. mean percent_math if attempted == 1 & discode == 2 // Mitiari

Mean estimation                   Number of obs   =        725

--------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+------------------------------------------------
percent_math |   17.53448   .8576181      15.85077     19.2182
--------------------------------------------------------------

. mean percent_math if attempted == 1 & discode == 3 // Sanghar

Mean estimation                   Number of obs   =      1,347

--------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+------------------------------------------------
percent_math |   33.83135   .7157584      32.42723    35.23548
--------------------------------------------------------------
```

Appendix 1: Stata Results for Bivariate Regressions

```
reg normal_score_sindhi normal_parent_perception_sindhi i.discode if attempted == 1 & parent_per
> ception !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =     64.02
       Model |   769.60631         3  256.535437   Prob > F        =    0.0000
    Residual |   8972.1194     2,239  4.00719937   R-squared       =    0.0790
-------------+----------------------------------   Adj R-squared   =    0.0778
       Total |  9741.72571     2,242  4.34510513   Root MSE        =    2.0018

------------------------------------------------------------------------------
           normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------------------------+----------------------------------------------------------------
normal_parent_perception_sindhi |   .2952836    .039156     7.54   0.000     .2184977    .3720696
                               |
                        discode |
                       Mitiari  |   .3108657   .1164002     2.67   0.008     .0826022    .5391292
                       Sanghar  |   .9460973   .1037052     9.12   0.000     .7427289    1.149466
                               |
                          _cons |   1.773475   .1257604    14.10   0.000     1.526855    2.020094
------------------------------------------------------------------------------

. bys s1q5: reg normal_score_sindhi normal_parent_perception_sindhi i.discode if attempted == 1 &
> parent_perception !=0

------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     43.96
       Model |  520.824531         3  173.608177   Prob > F        =    0.0000
    Residual |  5465.27091     1,384  3.94889516   R-squared       =    0.0870
-------------+----------------------------------   Adj R-squared   =    0.0850
       Total |  5986.09544     1,387  4.31585828   Root MSE        =    1.9872

------------------------------------------------------------------------------
           normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------------------------+----------------------------------------------------------------
normal_parent_perception_sindhi |   .3191334   .0490308     6.51   0.000     .2229507    .4153161
                               |
                        discode |
                       Mitiari  |   .4285968   .1453116     2.95   0.003     .1435421    .7136515
                       Sanghar  |   .9884069   .1299031     7.61   0.000     .7335787    1.243235
                               |
                          _cons |   1.756709   .1564232    11.23   0.000     1.449857    2.063561
------------------------------------------------------------------------------

------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     21.49
       Model |  262.608129         3  87.5360429   Prob > F        =    0.0000
    Residual |  3463.04243       850  4.07416757   R-squared       =    0.0705
-------------+----------------------------------   Adj R-squared   =    0.0672
       Total |  3725.65056       853  4.36770288   Root MSE        =    2.0185

------------------------------------------------------------------------------
           normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------------------------+----------------------------------------------------------------
normal_parent_perception_sindhi |   .2495437   .0648073     3.85   0.000     .1223426    .3767448
                               |
                        discode |
                       Mitiari  |     .13126   .1940084     0.68   0.499    -.2495317    .5120517
                       Sanghar  |   .8973838   .1719538     5.22   0.000     .5598799    1.234888
```

```
                           |
                     _cons |   1.809576   .2106287     8.59   0.000     1.396163     2.22299
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations

. reg normal_score_sindhi normal_mother_perception_sindhi i.discode if attempted == 1 &
parent_per
> ception !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =     55.31
       Model |  672.147102         3  224.049034   Prob > F        =    0.0000
    Residual |  9069.57861     2,239  4.05072738   R-squared       =    0.0690
-------------+----------------------------------   Adj R-squared   =    0.0677
       Total |  9741.72571     2,242  4.34510513   Root MSE        =    2.0126

------------------------------------------------------------------------------------------------
            normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------------------------+---------------------------------------------------------------
normal_mother_perception_sindhi |   .2623908   .0462411     5.67   0.000      .171711    .3530706
                                |
                        discode |
                       Mitiari  |   .3152909   .1172498     2.69   0.007     .0853612    .5452206
                       Sanghar  |   1.001275   .1036775     9.66   0.000     .7979605    1.204589
                                |
                          _cons |   2.511749   .0815913    30.78   0.000     2.351747    2.671752
------------------------------------------------------------------------------------------------

. bys s1q5: reg normal_score_sindhi normal_mother_perception_sindhi i.discode if attempted == 1 &
> parent_perception !=0

------------------------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     33.94
       Model |  410.168857         3  136.722952   Prob > F        =    0.0000
    Residual |  5575.92658     1,384  4.02884869   R-squared       =    0.0685
-------------+----------------------------------   Adj R-squared   =    0.0665
       Total |  5986.09544     1,387  4.31585828   Root MSE        =    2.0072

------------------------------------------------------------------------------------------------
            normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------------------------+---------------------------------------------------------------
normal_mother_perception_sindhi |   .2150884   .0573653     3.75   0.000     .1025561    .3276207
                                |
                        discode |
                       Mitiari  |   .4214241   .1470327     2.87   0.004     .1329931    .7098551
                       Sanghar  |   1.063821   .1308897     8.13   0.000     .8070571    1.320584
                                |
                          _cons |   2.557128   .1012367    25.26   0.000     2.358534    2.755722
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     23.32
       Model |  283.304562         3  94.4348541   Prob > F        =    0.0000
    Residual |    3442.346       850  4.04981882   R-squared       =    0.0760
-------------+----------------------------------   Adj R-squared   =    0.0728
       Total |  3725.65056       853  4.36770288   Root MSE        =    2.0124

------------------------------------------------------------------------------------------------
            normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
```

```
-------------------------------+----------------------------------------------------------------
normal_mother_perception_sindhi |    .348883   .0779613     4.48   0.000     .1958638    .5019022
                                |
                         discode |
                        Mitiari  |   .1646658   .1938932     0.85   0.396    -.2158998    .5452314
                        Sanghar  |   .9317691   .1697877     5.49   0.000     .5985168    1.265021
                                |
                           _cons |   2.420578   .1372471    17.64   0.000     2.151195    2.689961
-------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations

. reg normal_score_sindhi normal_father_perception_sindhi i.discode if attempted == 1 &
parent_per
> ception !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =     56.76
       Model |  688.552452         3  229.517484   Prob > F        =    0.0000
    Residual |  9053.17325     2,239  4.04340029   R-squared       =    0.0707
-------------+----------------------------------   Adj R-squared   =    0.0694
       Total |  9741.72571     2,242  4.34510513   Root MSE        =    2.0108

-------------------------------------------------------------------------------------------------
            normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------------------------+----------------------------------------------------------------
normal_father_perception_sindhi |   .2762588   .0458433     6.03   0.000     .1863591    .3661585
                                |
                         discode |
                        Mitiari  |   .2657473    .116723     2.28   0.023     .0368507    .4946439
                        Sanghar  |   1.005464   .1033453     9.73   0.000     .8028012    1.208127
                                |
                           _cons |   2.512291   .0815161    30.82   0.000     2.352436    2.672146
-------------------------------------------------------------------------------------------------

. bys s1q5: reg normal_score_sindhi normal_father_perception_sindhi i.discode if attempted == 1 &
> parent_perception !=0

-------------------------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     43.34
       Model |  514.049774         3  171.349925   Prob > F        =    0.0000
    Residual |  5472.04567     1,384  3.95379022   R-squared       =    0.0859
-------------+----------------------------------   Adj R-squared   =    0.0839
       Total |  5986.09544     1,387  4.31585828   Root MSE        =    1.9884

-------------------------------------------------------------------------------------------------
            normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------------------------+----------------------------------------------------------------
normal_father_perception_sindhi |   .3725719   .0584726     6.37   0.000     .2578675    .4872764
                                |
                         discode |
                        Mitiari  |   .3828238   .1451892     2.64   0.008     .0980092    .6676384
                        Sanghar  |   1.050064   .1285112     8.17   0.000     .7979663    1.302162
                                |
                           _cons |   2.548045   .1001849    25.43   0.000     2.351514    2.744575
-------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     17.26
       Model |  213.947685         3  71.3158951   Prob > F        =    0.0000
```

```
    Residual |  3511.70287       850  4.13141515   R-squared       =    0.0574
-------------+------------------------------------   Adj R-squared   =    0.0541
       Total |  3725.65056       853  4.36770288   Root MSE        =    2.0326

------------------------------------------------------------------------------------------------
            normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------------------------+---------------------------------------------------------------
normal_father_perception_sindhi |   .1239188   .0734918     1.69   0.092    -.0203278    .2681655
                                |
                        discode |
                        Mitiari |   .0853385   .1949405     0.44   0.662    -.2972828    .4679597
                        Sanghar |   .9655313   .1727845     5.59   0.000     .6263969    1.304666
                                |
                          _cons |   2.435822    .138816    17.55   0.000     2.163359    2.708284
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations

.
. reg normal_score_eng normal_parent_perception_eng i.discode if attempted == 1 &
parent_perceptio
> n !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =     73.55
       Model |  1676.66706         3  558.889018   Prob > F        =    0.0000
    Residual |  17012.6351     2,239  7.59831848   R-squared       =    0.0897
-------------+----------------------------------   Adj R-squared   =    0.0885
       Total |  18689.3021     2,242   8.3359956   Root MSE        =    2.7565

------------------------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_parent_perception_eng |   .1681228   .0462475     3.64   0.000     .0774304    .2588153
                             |
                     discode |
                     Mitiari |   .4354848   .1601982     2.72   0.007     .1213322    .7496375
                     Sanghar |   1.746089   .1432376    12.19   0.000     1.465197    2.026982
                             |
                       _cons |   1.069497   .1480491     7.22   0.000     .7791694    1.359825
------------------------------------------------------------------------------------------------

. bys s1q5: reg normal_score_eng normal_parent_perception_eng i.discode if attempted == 1 &
parent
> _perception !=0

------------------------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     37.04
       Model |  888.172281         3  296.057427   Prob > F        =    0.0000
    Residual |  11062.0093     1,384   7.9927813   R-squared       =    0.0743
-------------+----------------------------------   Adj R-squared   =    0.0723
       Total |  11950.1816     1,387   8.6158483   Root MSE        =    2.8272

------------------------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_parent_perception_eng |   .1768674   .0594787     2.97   0.003     .0601891    .2935456
                             |
                     discode |
                     Mitiari |   .5990532   .2065392     2.90   0.004     .1938895    1.004217
                     Sanghar |   1.638329   .1854868     8.83   0.000     1.274463    2.002194
                             |
                       _cons |   1.178787   .1878848     6.27   0.000     .8102167    1.547356
------------------------------------------------------------------------------------------------
```

```
-------------------------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     41.07
       Model |  848.028583         3  282.676194   Prob > F        =    0.0000
    Residual |  5849.97354       850  6.88232181   R-squared       =    0.1266
-------------+----------------------------------   Adj R-squared   =    0.1235
       Total |  6698.00212       853  7.85228854   Root MSE        =    2.6234

------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_parent_perception_eng |   .1535877   .0730128     2.10   0.036     .0102812    .2968942
                             |
                     discode |
                    Mitiari  |   .2020562    .252383     0.80   0.424    -.2933107     .697423
                    Sanghar  |   1.949035   .2238211     8.71   0.000     1.509728    2.388342
                             |
                       _cons |   .8678347   .2392792     3.63   0.000     .3981874    1.337482
------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations

. reg normal_score_eng normal_mother_perception_eng i.discode if attempted == 1 &
parent_perceptio
> n !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =     72.04
       Model |  1645.11133         3  548.370443   Prob > F        =    0.0000
    Residual |  17044.1908     2,239  7.61241215   R-squared       =    0.0880
-------------+----------------------------------   Adj R-squared   =    0.0868
       Total |  18689.3021     2,242   8.3359956   Root MSE        =    2.7591

------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_mother_perception_eng |   .1945051   .0646717     3.01   0.003     .0676824    .3213277
                             |
                     discode |
                    Mitiari  |   .4368555   .1604658     2.72   0.007     .1221783    .7515328
                    Sanghar  |   1.786207   .1420713    12.57   0.000     1.507602    2.064813
                             |
                       _cons |   1.454581   .1123031    12.95   0.000     1.234352     1.67481
------------------------------------------------------------------------------

. bys s1q5: reg normal_score_eng normal_mother_perception_eng i.discode if attempted == 1 &
parent
> _perception !=0

-------------------------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     35.42
       Model |  852.021086         3  284.007029   Prob > F        =    0.0000
    Residual |  11098.1605     1,384   8.0189021   R-squared       =    0.0713
-------------+----------------------------------   Adj R-squared   =    0.0693
       Total |  11950.1816     1,387   8.6158483   Root MSE        =    2.8318

------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_mother_perception_eng |    .172274   .0830259     2.07   0.038     .0094038    .3351442
```

```
                           |
                  discode  |
                  Mitiari  |   .5989012   .2069897     2.89   0.004     .1928538    1.004949
                  Sanghar  |   1.690877   .1842009     9.18   0.000     1.329533     2.05222
                           |
                     _cons |   1.577747   .1436331    10.98   0.000     1.295985    1.859509
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     41.50
       Model |  855.787855         3  285.262618   Prob > F        =    0.0000
    Residual |  5842.21427       850  6.87319326   R-squared       =    0.1278
-------------+----------------------------------   Adj R-squared   =    0.1247
       Total |  6698.00212       853  7.85228854   Root MSE        =    2.6217

------------------------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_mother_perception_eng |   .2415156   .1024272     2.36   0.019     .0404758    .4425555
                             |
                     discode |
                     Mitiari |   .2154212   .2525195     0.85   0.394    -.2802137    .7110561
                     Sanghar |   1.971394   .2215708     8.90   0.000     1.536504    2.406284
                             |
                        _cons |   1.225196    .179066     6.84   0.000     .8737321    1.576659
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations

. reg normal_score_eng normal_father_perception_eng i.discode if attempted == 1 &
parent_perceptio
> n !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =     71.70
       Model |  1638.20342         3  546.067806   Prob > F        =    0.0000
    Residual |  17051.0987     2,239  7.61549742   R-squared       =    0.0877
-------------+----------------------------------   Adj R-squared   =    0.0864
       Total |  18689.3021     2,242   8.3359956   Root MSE        =    2.7596

------------------------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_father_perception_eng |   .1803101   .0632189     2.85   0.004     .0563362    .3042839
                             |
                     discode |
                     Mitiari |   .4149419   .1602078     2.59   0.010     .1007706    .7291132
                     Sanghar |   1.780057    .142646    12.48   0.000     1.500325    2.059789
                             |
                        _cons |   1.461539     .11265    12.97   0.000      1.24063    1.682448
------------------------------------------------------------------------------------------------

. bys s1q5: reg normal_score_eng normal_father_perception_eng i.discode if attempted == 1 &
parent
> _perception !=0

------------------------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     36.62
       Model |  878.813963         3  292.937988   Prob > F        =    0.0000
    Residual |  11071.3676     1,384  7.99954309   R-squared       =    0.0735
```

```
-------------+----------------------------------   Adj R-squared   =    0.0715
       Total |  11950.1816     1,387   8.6158483   Root MSE        =    2.8283

------------------------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_father_perception_eng |   .2311435   .0834877     2.77   0.006     .0673673    .3949196
                             |
                      discode |
                     Mitiari  |   .5831367   .2065208     2.82   0.005      .178009    .9882644
                     Sanghar  |   1.663448   .1843531     9.02   0.000     1.301806    2.025089
                             |
                        _cons |    1.59547   .1437375    11.10   0.000     1.313503    1.877437
------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     39.80
       Model |  824.912219         3   274.97074   Prob > F        =    0.0000
    Residual |  5873.08991       850  6.90951754   R-squared       =    0.1232
-------------+----------------------------------   Adj R-squared   =    0.1201
       Total |  6698.00212       853  7.85228854   Root MSE        =    2.6286

------------------------------------------------------------------------------------------------
            normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_father_perception_eng |   .0984571   .0955391     1.03   0.303     -.089063    .2859773
                             |
                      discode |
                     Mitiari  |   .1689678   .2522359     0.67   0.503    -.3261104    .6640459
                     Sanghar  |   1.996578   .2236028     8.93   0.000       1.5577    2.435457
                             |
                        _cons |   1.221239   .1802326     6.78   0.000     .8674858    1.574992
------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations

.
. reg normal_score_math normal_parent_perception_math i.discode if attempted == 1 &
parent_percept
> ion !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =    154.70
       Model |  3135.69981         3  1045.23327   Prob > F        =    0.0000
    Residual |  15127.5852     2,239   6.7564025   R-squared       =    0.1717
-------------+----------------------------------   Adj R-squared   =    0.1706
       Total |   18263.285     2,242  8.14597904   Root MSE        =    2.5993

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
normal_parent_perception_math |   .2514995    .049312     5.10   0.000     .1547975    .3482014
                             |
                      discode |
                     Mitiari  |   .7533463   .1512742     4.98   0.000      .456694    1.049999
                     Sanghar  |   2.429194   .1357464    17.90   0.000     2.162993    2.695396
                             |
                        _cons |   .5068879   .1530002     3.31   0.001     .2068509    .8069249
------------------------------------------------------------------------------------------------

. bys s1q5: reg normal_score_math normal_parent_perception_math i.discode if attempted == 1 &
pare
> nt_perception !=0
```

```
-------------------------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     83.97
       Model |  1785.08454         3  595.028179   Prob > F        =    0.0000
    Residual |  9807.81429     1,384  7.08657102   R-squared       =    0.1540
-------------+----------------------------------   Adj R-squared   =    0.1521
       Total |  11592.8988     1,387  8.35825438   Root MSE        =    2.6621

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------------
normal_parent_perception_math |   .2671219   .0629195     4.25   0.000      .143694    .3905498
                              |
                      discode |
                      Mitiari |   1.004699   .1945934     5.16   0.000     .6229694    1.386429
                      Sanghar |   2.348428   .1761709    13.33   0.000     2.002837    2.694019
                              |
                        _cons |   .6014652   .1916171     3.14   0.002     .2255738    .9773566
------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     79.56
       Model |  1448.86312         3  482.954374   Prob > F        =    0.0000
    Residual |  5159.52102       850  6.07002473   R-squared       =    0.2192
-------------+----------------------------------   Adj R-squared   =    0.2165
       Total |  6608.38414       853  7.74722642   Root MSE        =    2.4637

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------------
normal_parent_perception_math |   .2337682   .0786159     2.97   0.003     .0794642    .3880722
                              |
                      discode |
                      Mitiari |   .3769303   .2379712     1.58   0.114    -.0901497    .8440102
                      Sanghar |   2.584269   .2100851    12.30   0.000     2.171923    2.996615
                              |
                        _cons |   .3136436   .2519626     1.24   0.214    -.1808983    .8081855
------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations

. reg normal_score_math normal_mother_perception_math i.discode if attempted == 1 &
parent_percept
> ion !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =    147.74
       Model |  3017.93308         3  1005.97769   Prob > F        =    0.0000
    Residual |  15245.3519     2,239  6.80900041   R-squared       =    0.1652
-------------+----------------------------------   Adj R-squared   =    0.1641
       Total |   18263.285     2,242  8.14597904   Root MSE        =    2.6094

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------------
normal_mother_perception_math |   .1833479   .0628322     2.92   0.004     .0601325    .3065633
                              |
                      discode |
                      Mitiari |   .7438444    .152297     4.88   0.000     .4451862    1.042502
                      Sanghar |   2.512169   .1350964    18.60   0.000     2.247241    2.777096
                              |
```

```
                       _cons |   1.100836   .1061721    10.37   0.000     .8926297    1.309042
------------------------------------------------------------------------------------------------

. bys s1q5: reg normal_score_math normal_mother_perception_math i.discode if attempted == 1 &
pare
> nt_perception !=0

------------------------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     77.96
       Model |  1675.91161         3  558.637203   Prob > F        =    0.0000
    Residual |  9916.98721     1,384  7.16545319   R-squared       =    0.1446
-------------+----------------------------------   Adj R-squared   =    0.1427
       Total |  11592.8988     1,387  8.35825438   Root MSE        =    2.6768

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------------
normal_mother_perception_math |   .1278985   .0794805     1.61   0.108    -.0280168    .2838139
                              |
                      discode |
                      Mitiari |   .9920961   .1961528     5.06   0.000     .6073071    1.376885
                      Sanghar |   2.476932   .1752256    14.14   0.000     2.133196    2.820669
                              |
                        _cons |   1.207502    .135749     8.90   0.000     .9412059    1.473798
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     79.43
       Model |  1447.01512         3  482.338372   Prob > F        =    0.0000
    Residual |  5161.36902       850  6.07219885   R-squared       =    0.2190
-------------+----------------------------------   Adj R-squared   =    0.2162
       Total |  6608.38414       853  7.74722642   Root MSE        =    2.4642

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------------
normal_mother_perception_math |   .2968144   .1016006     2.92   0.004      .097397    .4962318
                              |
                      discode |
                      Mitiari |   .3918488   .2387481     1.64   0.101    -.0767561    .8604537
                      Sanghar |   2.605377   .2090473    12.46   0.000     2.195068    3.015687
                              |
                        _cons |   .8938896   .1682237     5.31   0.000     .5637071    1.224072
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations

. reg normal_score_math normal_father_perception_math i.discode if attempted == 1 &
parent_percept
> ion !=0

      Source |       SS           df       MS      Number of obs   =     2,243
-------------+----------------------------------   F(3, 2239)      =    153.87
       Model |  3121.63996         3  1040.54665   Prob > F        =    0.0000
    Residual |   15141.645     2,239  6.76268202   R-squared       =    0.1709
-------------+----------------------------------   Adj R-squared   =    0.1698
       Total |   18263.285     2,242  8.14597904   Root MSE        =    2.6005

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
```

```
------------------------------+----------------------------------------------------------------
normal_father_perception_math |   .2898985   .0592883     4.89   0.000     .1736326    .4061643
                              |
                      discode |
                     Mitiari  |   .7062337   .1509563     4.68   0.000     .4102048    1.002263
                     Sanghar  |   2.473846    .134268    18.42   0.000     2.210543    2.737149
                              |
                        _cons |   1.118891   .1057978    10.58   0.000     .9114185    1.326363
------------------------------------------------------------------------------------------------

. bys s1q5: reg normal_score_math normal_father_perception_math i.discode if attempted == 1 &
pare
> nt_perception !=0

------------------------------------------------------------------------------------------------------------
-
-> s1q5 = Male

      Source |       SS           df       MS      Number of obs   =     1,388
-------------+----------------------------------   F(3, 1384)      =     86.68
       Model |  1833.71211         3  611.237369   Prob > F        =    0.0000
    Residual |  9759.18672     1,384  7.05143549   R-squared       =    0.1582
-------------+----------------------------------   Adj R-squared   =    0.1564
       Total |  11592.8988     1,387  8.35825438   Root MSE        =    2.6555

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------------
normal_father_perception_math |     .39167   .0783186     5.00   0.000      .238034     .545306
                              |
                      discode |
                     Mitiari  |     .95791    .193897     4.94   0.000     .5775461    1.338274
                     Sanghar  |   2.366198   .1735168    13.64   0.000     2.025813    2.706582
                              |
                        _cons |   1.264864   .1347898     9.38   0.000      1.00045    1.529278
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------------------
-
-> s1q5 = Female

      Source |       SS           df       MS      Number of obs   =       854
-------------+----------------------------------   F(3, 850)       =     77.02
       Model |  1412.40186         3   470.80062   Prob > F        =    0.0000
    Residual |  5195.98228       850  6.11292033   R-squared       =    0.2137
-------------+----------------------------------   Adj R-squared   =    0.2110
       Total |  6608.38414       853  7.74722642   Root MSE        =    2.4724

------------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------------
normal_father_perception_math |   .1493829     .08903     1.68   0.094    -.0253616    .3241274
                              |
                      discode |
                     Mitiari  |   .3109257   .2373585     1.31   0.191    -.1549517    .7768031
                     Sanghar  |   2.651931   .2090853    12.68   0.000     2.241547    3.062315
                              |
                        _cons |   .8815608   .1687158     5.23   0.000     .5504124    1.212709
------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------------------
-
-> s1q5 = .
insufficient observations


. reg normal_score_sindhi normal_parent_perception_sindhi i.discode if age_child != .
```

```
      Source |       SS           df       MS      Number of obs   =     5,169
-------------+----------------------------------   F(3, 5165)      =    138.10
       Model |  1926.21718         3  642.072393   Prob > F        =    0.0000
    Residual |   24013.585     5,165  4.64929041   R-squared       =    0.0743
-------------+----------------------------------   Adj R-squared   =    0.0737
       Total |  25939.8022     5,168  5.01931157   Root MSE        =    2.1562

------------------------------------------------------------------------------
             normal_score_sindhi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------------------------+--------------------------------------------------------------------
normal_parent_perception_sindhi |   .2041365   .0190193    10.73   0.000     .1668507    .2414223
                                 |
                         discode |
                        Mitiari  |   .9372357   .0832771    11.25   0.000     .7739773    1.100494
                        Sanghar  |   1.084117   .0678271    15.98   0.000      .951147    1.217087
                                 |
                           _cons |   .4958301   .0603687     8.21   0.000     .3774818    .6141783
------------------------------------------------------------------------------

. reg normal_score_eng normal_parent_perception_eng i.discode if age_child != .

      Source |       SS           df       MS      Number of obs   =     5,169
-------------+----------------------------------   F(3, 5165)      =    104.11
       Model |  1787.61159         3   595.87053   Prob > F        =    0.0000
    Residual |  29560.3156     5,165   5.7231976   R-squared       =    0.0570
-------------+----------------------------------   Adj R-squared   =    0.0565
       Total |  31347.9272     5,168  6.06577539   Root MSE        =    2.3923

------------------------------------------------------------------------------
             normal_score_eng |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------------
normal_parent_perception_eng |   .0494027   .0197253     2.50   0.012     .0107326    .0880727
                             |
                      discode |
                     Mitiari  |   .6887494   .0925567     7.44   0.000      .507299    .8701997
                     Sanghar  |   1.295652   .0752886    17.21   0.000     1.148054    1.443249
```

```
                           |
                     _cons |   .4195029   .0653035     6.42   0.000     .2914804    .5475254
------------------------------------------------------------------------------------------


. reg normal_score_math normal_parent_perception_math i.discode if age_child != .

      Source |       SS           df       MS      Number of obs   =     5,169
-------------+----------------------------------   F(3, 5165)      =    192.15
       Model |  3122.08884         3  1040.69628   Prob > F        =    0.0000
    Residual |  27973.9389     5,165  5.41605787   R-squared       =    0.1004
-------------+----------------------------------   Adj R-squared   =    0.0999
       Total |  31096.0277     5,168  6.01703323   Root MSE        =    2.3272

------------------------------------------------------------------------------------------
            normal_score_math |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------+-----------------------------------------------------------
normal_parent_perception_math |   .1190491   .0200722     5.93   0.000     .0796991    .1583991
                              |
                      discode |
                     Mitiari  |   .8315845   .0900389     9.24   0.000     .6550702    1.008099
                     Sanghar  |   1.654663    .073265    22.58   0.000     1.511033    1.798294
                              |
                        _cons |   .1214023   .0647605     1.87   0.061    -.0055557    .2483602
------------------------------------------------------------------------------------------
```

Appendix 3: Stata do file

```
* Renaming mermber ID variable to merge with hhid file *
use "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/child-LAT-hh.dta", clear

rename MID mid
keep hhid mid s* tested eng* math* sindhi*
```

```
save "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/child-LAT-hh_v2.dta", replace

* HHF file * MID present
use "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/HHF.dta", clear
set more off
describe
rename MID mid
save "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/HHF_v2.dta", replace

* HHH file
use "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/HHH-full.dta", clear
set more off
describe
rename MID mid
save "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/HHH_v2.dta", replace

* Merge hhid and child files *
clear
use "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/hhid_clean.dta", clear
merge 1:1 hhid mid using "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/child-LAT-hh_v2.dta"
tab relationship if _merge == 1, miss // 20,585 children in hhid
file, not in children's file
drop _merge

merge 1:1 hhid mid using "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/HHF_v2.dta"
drop _merge
merge 1:1 hhid mid using "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/HHH_v2.dta"
lookfor score
tab relationship s9fq3d_f if s9fq3d_f !=., miss
```

```
save "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/merge_hhid_child_hhf_hhh.dta", replace


use "/Users/reshmanargund/Google
Drive/Maryland_Academic/Spring_2017/Project Course/Stata
files/New_Files/merge_hhid_child_hhf_hhh.dta", clear
set more off

count if relationship == 3 // 3 is code for child
count if relationship == 3 & age > 9 & age < 12

generate eng1new = eng1
replace eng1new = "0" if (eng1new!="B")
replace eng1new = "1" if (eng1new=="B")
generate eng1attempted = eng1
replace eng1attempted = "1" if eng1=="A" | eng1=="B" | eng1=="C"
| eng1=="D" | eng1=="MR" | eng1=="UR" | eng1=="OO"
replace eng1attempted = "0" if eng1=="NA"


generate eng2new = eng2
replace eng2new = "0" if (eng2new!="B")
replace eng2new = "1" if (eng2new=="B")
generate eng2attempted = eng2
replace eng2attempted = "1" if eng2=="A" | eng2=="B" | eng2=="C"
| eng2=="D" | eng2=="MR" | eng2=="UR" | eng2=="OO"
replace eng2attempted = "0" if eng2=="NA"


generate eng3new = eng3
replace eng3new = "0" if (eng3new!="B")
replace eng3new = "1" if (eng3new=="B")
generate eng3attempted = eng3
replace eng3attempted = "1" if eng3=="A" | eng3=="B" | eng3=="C"
| eng3=="D" | eng3=="MR" | eng3=="UR" | eng3=="OO"
replace eng3attempted = "0" if eng3=="NA"


generate eng5new = eng5
replace eng5new = "0" if (eng5new!="B")
replace eng5new = "1" if (eng5new=="B")
generate eng5attempted = eng5
replace eng5attempted = "1" if eng5=="A" | eng5=="B" | eng5=="C"
| eng5=="D" | eng5=="MR" | eng5=="UR" | eng5=="OO"
```

```
replace eng5attempted = "0" if eng5=="NA"


generate eng10new = eng10
replace eng10new = "0" if (eng10new!="B")
replace eng10new = "1" if (eng10new=="B")
generate eng10attempted = eng10
replace eng10attempted = "1" if eng10=="A" | eng10=="B" |
eng10=="C" | eng10=="D" | eng10=="MR" | eng10=="UR" |
eng10=="OO"
replace eng10attempted = "0" if eng10=="NA"


generate eng15new = eng15
replace eng15new = "0" if (eng15new!="B")
replace eng15new = "1" if (eng15new=="B")
generate eng15attempted = eng15
replace eng15attempted = "1" if eng15=="A" | eng15=="B" |
eng15=="C" | eng15=="D" | eng15=="MR" | eng15=="UR" |
eng15=="OO"
replace eng15attempted = "0" if eng15=="NA"


generate eng22new = eng22
replace eng22new = "0" if (eng22new!="B")
replace eng22new = "1" if (eng22new=="B")
generate eng22attempted = eng22
replace eng22attempted = "1" if eng22=="A" | eng22=="B" |
eng22=="C" | eng22=="D" | eng22=="MR" | eng22=="UR" |
eng22=="OO"
replace eng22attempted = "0" if eng22=="NA"


generate eng25new = eng25
replace eng25new = "0" if (eng25new!="B")
replace eng25new = "1" if (eng25new=="B")
generate eng25attempted = eng25
replace eng25attempted = "1" if eng25=="A" | eng25=="B" |
eng25=="C" | eng25=="D" | eng25=="MR" | eng25=="UR" |
eng25=="OO"
replace eng25attempted = "0" if eng25=="NA"


generate eng4new = eng4
replace eng4new = "0" if (eng4new!="C")
replace eng4new = "1" if (eng4new=="C")
generate eng4attempted = eng4
```

```
replace eng4attempted = "1" if eng4=="A" | eng4=="B" | eng4=="C"
| eng4=="D" | eng4=="MR" | eng4=="UR" | eng4=="OO"
replace eng4attempted = "0" if eng4=="NA"


generate eng8new = eng8
replace eng8new = "0" if (eng8new!="C")
replace eng8new = "1" if (eng8new=="C")
generate eng8attempted = eng8
replace eng8attempted = "1" if eng8=="A" | eng8=="B" | eng8=="C"
| eng8=="D" | eng8=="MR" | eng8=="UR" | eng8=="OO"
replace eng8attempted = "0" if eng8=="NA"

generate eng13new = eng13
replace eng13new = "0" if (eng13new!="C")
replace eng13new = "1" if (eng13new=="C")
generate eng13attempted = eng13
replace eng13attempted = "1" if eng13=="A" | eng13=="B" |
eng13=="C" | eng13=="D" | eng13=="MR" | eng13=="UR" |
eng13=="OO"
replace eng13attempted = "0" if eng13=="NA"


generate eng20new = eng20
replace eng20new = "0" if (eng20new!="C")
replace eng20new = "1" if (eng20new=="C")
generate eng20attempted = eng20
replace eng20attempted = "1" if eng20=="A" | eng20=="B" |
eng20=="C" | eng20=="D" | eng20=="MR" | eng20=="UR" |
eng20=="OO"
replace eng20attempted = "0" if eng20=="NA"


generate eng21new = eng21
replace eng21new = "0" if (eng21new!="C")
replace eng21new = "1" if (eng21new=="C")
generate eng21attempted = eng21
replace eng21attempted = "1" if eng21=="A" | eng21=="B" |
eng21=="C" | eng21=="D" | eng21=="MR" | eng21=="UR" |
eng21=="OO"
replace eng21attempted = "0" if eng21=="NA"


generate eng7new = eng7
replace eng7new = "0" if (eng7new!="A")
replace eng7new = "1" if (eng7new=="A")
generate eng7attempted = eng7
```

```
replace eng7attempted = "1" if eng7=="A" | eng7=="B" | eng7=="C"
| eng7=="D" | eng7=="MR" | eng7=="UR" | eng7=="OO"
replace eng7attempted = "0" if eng7=="NA"


generate eng9new = eng9
replace eng9new = "0" if (eng9new!="A")
replace eng9new = "1" if (eng9new=="A")
generate eng9attempted = eng9
replace eng9attempted = "1" if eng9=="A" | eng9=="B" | eng9=="C"
| eng9=="D" | eng9=="MR" | eng9=="UR" | eng9=="OO"
replace eng9attempted = "0" if eng9=="NA"


generate eng11new = eng11
replace eng11new = "0" if (eng11new!="A")
replace eng11new = "1" if (eng11new=="A")
generate eng11attempted = eng11
replace eng11attempted = "1" if eng11=="A" | eng11=="B" |
eng11=="C" | eng11=="D" | eng11=="MR" | eng11=="UR" |
eng11=="OO"
replace eng11attempted = "0" if eng11=="NA"


generate eng14new = eng14
replace eng14new = "0" if (eng14new!="A")
replace eng14new = "1" if (eng14new=="A")
generate eng14attempted = eng14
replace eng14attempted = "1" if eng14=="A" | eng14=="B" |
eng14=="C" | eng14=="D" | eng14=="MR" | eng14=="UR" |
eng14=="OO"
replace eng14attempted = "0" if eng14=="NA"


generate eng17new = eng17
replace eng17new = "0" if (eng17new!="A")
replace eng17new = "1" if (eng17new=="A")
generate eng17attempted = eng17
replace eng17attempted = "1" if eng17=="A" | eng17=="B" |
eng17=="C" | eng17=="D" | eng17=="MR" | eng17=="UR" |
eng17=="OO"
replace eng17attempted = "0" if eng17=="NA"


generate eng18new = eng18
replace eng18new = "0" if (eng18new!="A")
replace eng18new = "1" if (eng18new=="A")
```

```
generate eng18attempted = eng18
replace eng18attempted = "1" if eng18=="A" | eng18=="B" |
eng18=="C" | eng18=="D" | eng18=="MR" | eng18=="UR" |
eng18=="OO"
replace eng18attempted = "0" if eng18=="NA"


generate eng23new = eng23
replace eng23new = "0" if (eng23new!="A")
replace eng23new = "1" if (eng23new=="A")
generate eng23attempted = eng23
replace eng23attempted = "1" if eng23=="A" | eng23=="B" |
eng23=="C" | eng23=="D" | eng23=="MR" | eng23=="UR" |
eng23=="OO"
replace eng23attempted = "0" if eng23=="NA"



generate eng12new = eng12
replace eng12new = "0" if (eng12new!="D")
replace eng12new = "1" if (eng12new=="D")
generate eng12attempted = eng12
replace eng12attempted = "1" if eng12=="A" | eng12=="B" |
eng12=="C" | eng12=="D" | eng12=="MR" | eng12=="UR" |
eng12=="OO"
replace eng12attempted = "0" if eng12=="NA"


generate eng16new = eng16
replace eng16new = "0" if (eng16new!="D")
replace eng16new = "1" if (eng16new=="D")
generate eng16attempted = eng16
replace eng16attempted = "1" if eng16=="A" | eng16=="B" |
eng16=="C" | eng16=="D" | eng16=="MR" | eng16=="UR" |
eng16=="OO"
replace eng16attempted = "0" if eng16=="NA"


generate eng24new = eng24
replace eng24new = "0" if (eng24new!="D")
replace eng24new = "1" if (eng24new=="D")
generate eng24attempted = eng24
replace eng24attempted = "1" if eng24=="A" | eng24=="B" |
eng24=="C" | eng24=="D" | eng24=="MR" | eng24=="UR" |
eng24=="OO"
replace eng24attempted = "0" if eng24=="NA"
```

```
destring eng*, replace // To convert string variables to numeric
variables

egen total_eng = rsum(eng1new eng2new eng3new eng4new eng5new
eng7new eng8new eng9new eng10new eng11new eng12new eng13new
eng14new eng15new eng16new eng17new eng18new eng20new eng21new
eng22new eng23new eng24new eng25new)
gen percent_eng = 100* total_eng/23
egen normal_score_eng = std(total_eng)
egen engattempted = rsum(eng1attempted eng2attempted
eng3attempted eng4attempted eng5attempted eng7attempted
eng8attempted eng9attempted eng10attempted eng11attempted
eng12attempted eng13attempted eng14attempted eng15attempted
eng16attempted eng17attempted eng18attempted eng20attempted
eng21attempted eng22attempted eng23attempted eng24attempted
eng25attempted) if eng24attempted != .


* Math: Test scores changed into 1= right answer; 0= wrong
answer; Math20 not used because of data it asks students to
inout time and its not possible to assign binary values; notes
to self - only one right answer is D; can it skew results? did
it skew results? evaluate Qd

generate math1new = math1
replace math1new = "0" if (math1new!="A")
replace math1new = "1" if (math1new=="A")
generate math1attempted = math1
replace math1attempted = "1" if math1=="A" | math1=="B" |
math1=="C" | math1=="D" | math1=="MR" | math1=="UR" |
math1=="OO"
replace math1attempted = "0" if math1=="NA"


generate math3new = math3
replace math3new = "0" if (math3new!="A")
replace math3new = "1" if (math3new=="A")
generate math3attempted = math3
replace math3attempted = "1" if math3=="A" | math3=="B" |
math3=="C" | math3=="D" | math3=="MR" | math3=="UR" |
math3=="OO"
replace math3attempted = "0" if math3=="NA"


generate math5new = math5
replace math5new = "0" if (math5new!="A")
```

```
replace math5new = "1" if (math5new=="A")
generate math5attempted = math5
replace math5attempted = "1" if math5=="A" | math5=="B" |
math5=="C" | math5=="D" | math5=="MR" | math5=="UR" |
math5=="OO"
replace math5attempted = "0" if math5=="NA"


generate math8new = math8
replace math8new = "0" if (math8new!="A")
replace math8new = "1" if (math8new=="A")
generate math8attempted = math8
replace math8attempted = "1" if math8=="A" | math8=="B" |
math8=="C" | math8=="D" | math8=="MR" | math8=="UR" |
math8=="OO"
replace math8attempted = "0" if math8=="NA"


generate math9new = math9
replace math9new = "0" if (math9new!="A")
replace math9new = "1" if (math9new=="A")
generate math9attempted = math9
replace math9attempted = "1" if math9=="A" | math9=="B" |
math9=="C" | math9=="D" | math9=="MR" | math9=="UR" |
math9=="OO"
replace math9attempted = "0" if math9=="NA"


generate math10new = math10
replace math10new = "0" if (math10new!="A")
replace math10new = "1" if (math10new=="A")
generate math10attempted = math10
replace math10attempted = "1" if math10=="A" | math10=="B" |
math10=="C" | math10=="D" | math10=="MR" | math10=="UR" |
math10=="OO"
replace math10attempted = "0" if math10=="NA"


generate math11new = math11
replace math11new = "0" if (math11new!="A")
replace math11new = "1" if (math11new=="A")
generate math11attempted = math11
replace math11attempted = "1" if math11=="A" | math11=="B" |
math11=="C" | math11=="D" | math11=="MR" | math11=="UR" |
math11=="OO"
replace math11attempted = "0" if math11=="NA"
```

```
generate math17new = math17
replace math17new = "0" if (math17new!="A")
replace math17new = "1" if (math17new=="A")
generate math17attempted = math17
replace math17attempted = "1" if math17=="A" | math17=="B" |
math17=="C" | math17=="D" | math17=="MR" | math17=="UR" |
math17=="OO"
replace math17attempted = "0" if math17=="NA"


generate math18new = math18
replace math18new = "0" if (math18new!="A")
replace math18new = "1" if (math18new=="A")
generate math18attempted = math18
replace math18attempted = "1" if math18=="A" | math18=="B" |
math18=="C" | math18=="D" | math18=="MR" | math18=="UR" |
math18=="OO"
replace math18attempted = "0" if math18=="NA"


generate math2new = math2
replace math2new = "0" if (math2new!="B")
replace math2new = "1" if (math2new=="B")
generate math2attempted = math2
replace math2attempted = "1" if math2=="A" | math2=="B" |
math2=="C" | math2=="D" | math2=="MR" | math2=="UR" |
math2=="OO"
replace math2attempted = "0" if math2=="NA"


generate math4new = math4
replace math4new = "0" if (math4new!="B")
replace math4new = "1" if (math4new=="B")
generate math4attempted = math4
replace math4attempted = "1" if math4=="A" | math4=="B" |
math4=="C" | math4=="D" | math4=="MR" | math4=="UR" |
math4=="OO"
replace math4attempted = "0" if math4=="NA"


generate math7new = math7
replace math7new = "0" if (math7new!="B")
replace math7new = "1" if (math7new=="B")
generate math7attempted = math7
```

```
replace math7attempted = "1" if math7=="A" | math7=="B" |
math7=="C" | math7=="D" | math7=="MR" | math7=="UR" |
math7=="OO"
replace math7attempted = "0" if math7=="NA"


generate math12new = math12
replace math12new = "0" if (math12new!="B")
replace math12new = "1" if (math12new=="B")
generate math12attempted = math12
replace math12attempted = "1" if math12=="A" | math12=="B" |
math12=="C" | math12=="D" | math12=="MR" | math12=="UR" |
math12=="OO"
replace math12attempted = "0" if math12=="NA"


generate math23new = math23
replace math23new = "0" if (math23new!="B")
replace math23new = "1" if (math23new=="B")
generate math23attempted = math23
replace math23attempted = "1" if math23=="A" | math23=="B" |
math23=="C" | math23=="D" | math23=="MR" | math23=="UR" |
math23=="OO"
replace math23attempted = "0" if math23=="NA"


generate math13new = math13
replace math13new = "0" if (math23new!="C")
replace math13new = "1" if (math23new=="C")
generate math13attempted = math13
replace math13attempted = "1" if math13=="A" | math13=="B" |
math13=="C" | math13=="D" | math13=="MR" | math13=="UR" |
math13=="OO"
replace math13attempted = "0" if math13=="NA"


generate math14new = math14
replace math14new = "0" if (math14new!="C")
replace math14new = "1" if (math14new=="C")
generate math14attempted = math14
replace math14attempted = "1" if math14=="A" | math14=="B" |
math14=="C" | math14=="D" | math14=="MR" | math14=="UR" |
math14=="OO"
replace math14attempted = "0" if math14=="NA"


generate math15new = math15
```

```
replace math15new = "0" if (math15new!="C")
replace math15new = "1" if (math15new=="C")
generate math15attempted = math15
replace math15attempted = "1" if math15=="A" | math15=="B" |
math15=="C" | math15=="D" | math15=="MR" | math15=="UR" |
math15=="OO"
replace math15attempted = "0" if math15=="NA"


generate math16new = math16
replace math16new = "0" if (math16new!="C")
replace math16new = "1" if (math16new=="C")
generate math16attempted = math16
replace math16attempted = "1" if math16=="A" | math16=="B" |
math16=="C" | math16=="D" | math16=="MR" | math16=="UR" |
math16=="OO"
replace math16attempted = "0" if math16=="NA"


generate math19new = math19
replace math19new = "0" if (math19new!="C")
replace math19new = "1" if (math19new=="C")
generate math19attempted = math19
replace math19attempted = "1" if math19=="A" | math19=="B" |
math19=="C" | math19=="D" | math19=="MR" | math19=="UR" |
math19=="OO"
replace math19attempted = "0" if math19=="NA"


generate math21new = math21
replace math21new = "0" if (math21new!="C")
replace math21new = "1" if (math21new=="C")
generate math21attempted = math21
replace math21attempted = "1" if math21=="A" | math21=="B" |
math21=="C" | math21=="D" | math21=="MR" | math21=="UR" |
math21=="OO"
replace math21attempted = "0" if math21=="NA"


generate math22new = math22
replace math22new = "0" if (math22new!="C")
replace math22new = "1" if (math22new=="C")
generate math22attempted = math22
replace math22attempted = "1" if math22=="A" | math22=="B" |
math22=="C" | math22=="D" | math22=="MR" | math22=="UR" |
math22=="OO"
replace math22attempted = "0" if math22=="NA"
```

```
generate math24new = math24
replace math24new = "0" if (math24new!="C")
replace math24new = "1" if (math24new=="C")
generate math24attempted = math24
replace math24attempted = "1" if math24=="A" | math24=="B" |
math24=="C" | math24=="D" | math24=="MR" | math24=="UR" |
math24=="OO"
replace math24attempted = "0" if math24=="NA"


generate math25new = math25
replace math25new = "0" if (math25new!="C")
replace math25new = "1" if (math25new=="C")
generate math25attempted = math25
replace math25attempted = "1" if math25=="A" | math25=="B" |
math25=="C" | math25=="D" | math25=="MR" | math25=="UR" |
math25=="OO"
replace math25attempted = "0" if math25=="NA"


generate math6new = math6
replace math6new = "0" if (math6new!="D")
replace math6new = "1" if (math6new=="D")
generate math6attempted = math6
replace math6attempted = "1" if math6=="A" | math6=="B" |
math6=="C" | math6=="D" | math6=="MR" | math6=="UR" |
math6=="OO"
replace math6attempted = "0" if math6=="NA"


destring math*, replace // To convert string variables to
numeric variables

egen total_math = rsum(math1new math2new math3new math4new
math5new math6new math7new math8new math9new math10new math11new
math12new math13new math14new math15new math16new math17new
math18new math19new math21new math22new math23new math24new
math25new)
gen percent_math = 100* total_math/24
egen normal_score_math = std (total_math)
egen mathattempted = rsum(math1attempted math2attempted
math3attempted math4attempted math5attempted math6attempted
math7attempted math8attempted math9attempted math10attempted
math11attempted math12attempted math13attempted math14attempted
math15attempted math16attempted math17attempted math18attempted
```

```
math19attempted math21attempted math22attempted math23attempted
math24attempted math25attempted) if math24attempted != .


* Sindhi: Test scores changed into 1= right answer; 0= wrong
answer;

generate sindhi2anew = sindhi2a
replace sindhi2anew = "0" if (sindhi2anew!="B")
replace sindhi2anew = "1" if (sindhi2anew=="B")
generate sindhi2aattempted = sindhi2a
replace sindhi2aattempted = "1" if sindhi2a=="A" | sindhi2a=="B"
| sindhi2a=="C" | sindhi2a=="D" | sindhi2a=="MR" |
sindhi2a=="UR" | sindhi2a=="OO"
replace sindhi2aattempted = "0" if sindhi2a=="NA"


generate sindhi2bnew = sindhi2b
replace sindhi2bnew = "0" if (sindhi2bnew!="B")
replace sindhi2bnew = "1" if (sindhi2bnew=="B")
generate sindhi2battempted = sindhi2b
replace sindhi2battempted = "1" if sindhi2b=="A" | sindhi2b=="B"
| sindhi2b=="C" | sindhi2b=="D" | sindhi2b=="MR" |
sindhi2b=="UR" | sindhi2b=="OO"
replace sindhi2battempted = "0" if sindhi2b=="NA"


generate sindhi2cnew = sindhi2c
replace sindhi2cnew = "0" if (sindhi2cnew!="B")
replace sindhi2cnew = "1" if (sindhi2cnew=="B")
generate sindhi2cattempted = sindhi2c
replace sindhi2cattempted = "1" if sindhi2c=="A" | sindhi2c=="B"
| sindhi2c=="C" | sindhi2c=="D" | sindhi2c=="MR" |
sindhi2c=="UR" | sindhi2c=="OO"
replace sindhi2cattempted = "0" if sindhi2c=="NA"


generate sindhi3bnew = sindhi3b
replace sindhi3bnew = "0" if (sindhi3bnew!="B")
replace sindhi3bnew = "1" if (sindhi3bnew=="B")
generate sindhi3battempted = sindhi3b
replace sindhi3battempted = "1" if sindhi3b=="A" | sindhi3b=="B"
| sindhi3b=="C" | sindhi3b=="D" | sindhi3b=="MR" |
sindhi3b=="UR" | sindhi3b=="OO"
replace sindhi3battempted = "0" if sindhi3b=="NA"
```

```
generate sindhi4anew = sindhi4a
replace sindhi4anew = "0" if (sindhi4anew!="B")
replace sindhi4anew = "1" if (sindhi4anew=="B")
generate sindhi4aattempted = sindhi4a
replace sindhi4aattempted = "1" if sindhi4a=="A" | sindhi4a=="B"
| sindhi4a=="C" | sindhi4a=="D" | sindhi4a=="MR" |
sindhi4a=="UR" | sindhi4a=="OO"
replace sindhi4aattempted = "0" if sindhi4a=="NA"


generate sindhi4bnew = sindhi4b
replace sindhi4bnew = "0" if (sindhi4bnew!="B")
replace sindhi4bnew = "1" if (sindhi4bnew=="B")
generate sindhi4battempted = sindhi4b
replace sindhi4battempted = "1" if sindhi4b=="A" | sindhi4b=="B"
| sindhi4b=="C" | sindhi4b=="D" | sindhi4b=="MR" |
sindhi4b=="UR" | sindhi4b=="OO"
replace sindhi4battempted = "0" if sindhi4b=="NA"


generate sindhi5bnew = sindhi5b
replace sindhi5bnew = "0" if (sindhi5bnew!="B")
replace sindhi5bnew = "1" if (sindhi5bnew=="B")
generate sindhi5battempted = sindhi5b
replace sindhi5battempted = "1" if sindhi5b=="A" | sindhi5b=="B"
| sindhi5b=="C" | sindhi5b=="D" | sindhi5b=="MR" |
sindhi5b=="UR" | sindhi5b=="OO"
replace sindhi5battempted = "0" if sindhi5b=="NA"


generate sindhi5cnew = sindhi5c
replace sindhi5cnew = "0" if (sindhi5cnew!="B")
replace sindhi5cnew = "1" if (sindhi5cnew=="B")
generate sindhi5cattempted = sindhi5c
replace sindhi5cattempted = "1" if sindhi5c=="A" | sindhi5c=="B"
| sindhi5c=="C" | sindhi5c=="D" | sindhi5c=="MR" |
sindhi5c=="UR" | sindhi5c=="OO"
replace sindhi5cattempted = "0" if sindhi5c=="NA"


generate sindhi8anew = sindhi8a
replace sindhi8anew = "0" if (sindhi8anew!="B")
replace sindhi8anew = "1" if (sindhi8anew=="B")
generate sindhi8aattempted = sindhi8a
replace sindhi8aattempted = "1" if sindhi8a=="A" | sindhi8a=="B"
| sindhi8a=="C" | sindhi8a=="D" | sindhi8a=="MR" |
sindhi8a=="UR" | sindhi8a=="OO"
```

```
replace sindhi8aattempted = "0" if sindhi8a=="NA"


generate sindhi8bnew = sindhi8b
replace sindhi8bnew = "0" if (sindhi8bnew!="B")
replace sindhi8bnew = "1" if (sindhi8bnew=="B")
generate sindhi8battempted = sindhi8b
replace sindhi8battempted = "1" if sindhi8b=="A" | sindhi8b=="B"
| sindhi8b=="C" | sindhi8b=="D" | sindhi8b=="MR" |
sindhi8b=="UR" | sindhi8b=="OO"
replace sindhi8battempted = "0" if sindhi8b=="NA"


generate sindhi9anew = sindhi9a
replace sindhi9anew = "0" if (sindhi9anew!="B")
replace sindhi9anew = "1" if (sindhi9anew=="B")
generate sindhi9aattempted = sindhi9a
replace sindhi9aattempted = "1" if sindhi9a=="A" | sindhi9a=="B"
| sindhi9a=="C" | sindhi9a=="D" | sindhi9a=="MR" |
sindhi9a=="UR" | sindhi9a=="OO"
replace sindhi9aattempted = "0" if sindhi9a=="NA"



generate sindhi10cnew = sindhi10c
replace sindhi10cnew = "0" if (sindhi10cnew!="B")
replace sindhi10cnew = "1" if (sindhi10cnew=="B")
generate sindhi10cattempted = sindhi10c
replace sindhi10cattempted = "1" if sindhi10c=="A" |
sindhi10c=="B" | sindhi10c=="C" | sindhi10c=="D" |
sindhi10c=="MR" | sindhi10c=="UR" | sindhi10c=="OO"
replace sindhi10cattempted = "0" if sindhi10c=="NA"


generate sindhi11anew = sindhi11a
replace sindhi11anew = "0" if (sindhi11anew!="B")
replace sindhi11anew = "1" if (sindhi11anew=="B")
generate sindhi11aattempted = sindhi11a
replace sindhi11aattempted = "1" if sindhi11a=="A" |
sindhi11a=="B" | sindhi11a=="C" | sindhi11a=="D" |
sindhi11a=="MR" | sindhi11a=="UR" | sindhi11a=="OO"
replace sindhi11aattempted = "0" if sindhi11a=="NA"


generate sindhi3anew = sindhi3a
replace sindhi3anew = "0" if (sindhi3anew!="A")
replace sindhi3anew = "1" if (sindhi3anew=="A")
```

```
generate sindhi3aattempted = sindhi3a
replace sindhi3aattempted = "1" if sindhi3a=="A" | sindhi3a=="B"
| sindhi3a=="C" | sindhi3a=="D" | sindhi3a=="MR" |
sindhi3a=="UR" | sindhi3a=="OO"
replace sindhi3aattempted = "0" if sindhi3a=="NA"


generate sindhi6anew = sindhi6a
replace sindhi6anew = "0" if (sindhi6anew!="A")
replace sindhi6anew = "1" if (sindhi6anew=="A")
generate sindhi6aattempted = sindhi6a
replace sindhi6aattempted = "1" if sindhi6a=="A" | sindhi6a=="B"
| sindhi6a=="C" | sindhi6a=="D" | sindhi6a=="MR" |
sindhi6a=="UR" | sindhi6a=="OO"
replace sindhi6aattempted = "0" if sindhi6a=="NA"


generate sindhi6bnew = sindhi6b
replace sindhi6bnew = "0" if (sindhi6bnew!="A")
replace sindhi6bnew = "1" if (sindhi6bnew=="A")
generate sindhi6battempted = sindhi6b
replace sindhi6battempted = "1" if sindhi6b=="A" | sindhi6b=="B"
| sindhi6b=="C" | sindhi6b=="D" | sindhi6b=="MR" |
sindhi6b=="UR" | sindhi6b=="OO"
replace sindhi6battempted = "0" if sindhi6b=="NA"


generate sindhi6cnew = sindhi6c
replace sindhi6cnew = "0" if (sindhi6cnew!="A")
replace sindhi6cnew = "1" if (sindhi6cnew=="A")
generate sindhi6cattempted = sindhi6c
replace sindhi6cattempted = "1" if sindhi6c=="A" | sindhi6c=="B"
| sindhi6c=="C" | sindhi6c=="D" | sindhi6c=="MR" |
sindhi6c=="UR" | sindhi6c=="OO"
replace sindhi6cattempted = "0" if sindhi6c=="NA"


generate sindhi9bnew = sindhi9b
replace sindhi9bnew = "0" if (sindhi9bnew!="A")
replace sindhi9bnew = "1" if (sindhi9bnew=="A")
generate sindhi9battempted = sindhi9b
replace sindhi9battempted = "1" if sindhi9b=="A" | sindhi9b=="B"
| sindhi9b=="C" | sindhi9b=="D" | sindhi9b=="MR" |
sindhi9b=="UR" | sindhi9b=="OO"
replace sindhi9battempted = "0" if sindhi9b=="NA"
```

```
generate sindhi10dnew = sindhi10d
replace sindhi10dnew = "0" if (sindhi10dnew!="A")
replace sindhi10dnew = "1" if (sindhi10dnew=="A")
generate sindhi10dattempted = sindhi10d
replace sindhi10dattempted = "1" if sindhi10d=="A" |
sindhi10d=="B" | sindhi10d=="C" | sindhi10d=="D" |
sindhi10d=="MR" | sindhi10d=="UR" | sindhi10d=="OO"
replace sindhi10dattempted = "0" if sindhi10d=="NA"


generate sindhi11bnew = sindhi11b
replace sindhi11bnew = "0" if (sindhi11bnew!="A")
replace sindhi11bnew = "1" if (sindhi11bnew=="A")
generate sindhi11battempted = sindhi11b
replace sindhi11battempted = "1" if sindhi11b=="A" |
sindhi11b=="B" | sindhi11b=="C" | sindhi11b=="D" |
sindhi11b=="MR" | sindhi11b=="UR" | sindhi11b=="OO"
replace sindhi11battempted = "0" if sindhi11b=="NA"


generate sindhi13new = sindhi13
replace sindhi13new = "0" if (sindhi13new!="A")
replace sindhi13new = "1" if (sindhi13new=="A")
generate sindhi13attempted = sindhi13
replace sindhi13attempted = "1" if sindhi13=="A" | sindhi13=="B"
| sindhi13=="C" | sindhi13=="D" | sindhi13=="MR" |
sindhi13=="UR" | sindhi13=="OO"
replace sindhi13attempted = "0" if sindhi13=="NA"


generate sindhi15new = sindhi15
replace sindhi15new = "0" if (sindhi15new!="A")
replace sindhi15new = "1" if (sindhi15new=="A")
generate sindhi15attempted = sindhi15
replace sindhi15attempted = "1" if sindhi15=="A" | sindhi15=="B"
| sindhi15=="C" | sindhi15=="D" | sindhi15=="MR" |
sindhi15=="UR" | sindhi15=="OO"
replace sindhi15attempted = "0" if sindhi15=="NA"


generate sindhi4cnew = sindhi4c
replace sindhi4cnew = "0" if (sindhi4cnew!="C")
replace sindhi4cnew = "1" if (sindhi4cnew=="C")
generate sindhi4cattempted = sindhi4c
replace sindhi4cattempted = "1" if sindhi4c=="A" | sindhi4c=="B"
| sindhi4c=="C" | sindhi4c=="D" | sindhi4c=="MR" |
sindhi4c=="UR" | sindhi4c=="OO"
```

```
replace sindhi4cattempted = "0" if sindhi4c=="NA"


generate sindhi4dnew = sindhi4d
replace sindhi4dnew = "0" if (sindhi4dnew!="C")
replace sindhi4dnew = "1" if (sindhi4dnew=="C")
generate sindhi4dattempted = sindhi4d
replace sindhi4dattempted = "1" if sindhi4d=="A" | sindhi4d=="B"
| sindhi4d=="C" | sindhi4d=="D" | sindhi4d=="MR" |
sindhi4d=="UR" | sindhi4d=="OO"
replace sindhi4dattempted = "0" if sindhi4d=="NA"


generate sindhi5anew = sindhi5a
replace sindhi5anew = "0" if (sindhi5anew!="C")
replace sindhi5anew = "1" if (sindhi5anew=="C")
generate sindhi5aattempted = sindhi5a
replace sindhi5aattempted = "1" if sindhi5a=="A" | sindhi5a=="B"
| sindhi5a=="C" | sindhi5a=="D" | sindhi5a=="MR" |
sindhi5a=="UR" | sindhi5a=="OO"
replace sindhi5aattempted = "0" if sindhi5a=="NA"


generate sindhi5dnew = sindhi5d
replace sindhi5dnew = "0" if (sindhi5dnew!="C")
replace sindhi5dnew = "1" if (sindhi5dnew=="C")
generate sindhi5dattempted = sindhi5d
replace sindhi5dattempted = "1" if sindhi5d=="A" | sindhi5d=="B"
| sindhi5d=="C" | sindhi5d=="D" | sindhi5d=="MR" |
sindhi5d=="UR" | sindhi5d=="OO"
replace sindhi5dattempted = "0" if sindhi5d=="NA"


generate sindhi10bnew = sindhi10b
replace sindhi10bnew = "0" if (sindhi10bnew!="C")
replace sindhi10bnew = "1" if (sindhi10bnew=="C")
generate sindhi10battempted = sindhi10b
replace sindhi10battempted = "1" if sindhi10b=="A" |
sindhi10b=="B" | sindhi10b=="C" | sindhi10b=="D" |
sindhi10b=="MR" | sindhi10b=="UR" | sindhi10b=="OO"
replace sindhi10battempted = "0" if sindhi10b=="NA"


generate sindhi16new = sindhi16
replace sindhi16new = "0" if (sindhi16new!="C")
replace sindhi16new = "1" if (sindhi16new=="C")
generate sindhi16attempted = sindhi16
```

```
replace sindhi16attempted = "1" if sindhi16=="A" | sindhi16=="B"
| sindhi16=="C" | sindhi16=="D" | sindhi16=="MR" |
sindhi16=="UR" | sindhi16=="OO"
replace sindhi16attempted = "0" if sindhi16=="NA"


generate sindhi10anew = sindhi10a
replace sindhi10anew = "0" if (sindhi10anew!="D")
replace sindhi10anew = "1" if (sindhi10anew=="D")
generate sindhi10aattempted = sindhi10a
replace sindhi10aattempted = "1" if sindhi10a=="A" |
sindhi10a=="B" | sindhi10a=="C" | sindhi10a=="D" |
sindhi10a=="MR" | sindhi10a=="UR" | sindhi10a=="OO"
replace sindhi10aattempted = "0" if sindhi10a=="NA"


generate sindhi14new = sindhi14
replace sindhi14new = "0" if (sindhi14new!="D")
replace sindhi14new = "1" if (sindhi14new=="D")
generate sindhi14attempted = sindhi14
replace sindhi14attempted = "1" if sindhi14=="A" | sindhi14=="B"
| sindhi14=="C" | sindhi14=="D" | sindhi14=="MR" |
sindhi14=="UR" | sindhi14=="OO"
replace sindhi14attempted = "0" if sindhi14=="NA"



destring sindhi*, replace

egen total_sindhi = rsum(sindhi2anew sindhi2bnew sindhi2cnew
sindhi3anew sindhi3bnew sindhi4anew sindhi4bnew sindhi4cnew
sindhi4dnew sindhi5anew sindhi5bnew sindhi5cnew sindhi5dnew
sindhi6anew sindhi6bnew sindhi6cnew sindhi8anew sindhi8bnew
sindhi9anew sindhi9bnew sindhi10anew sindhi10bnew sindhi10cnew
sindhi10dnew sindhi11anew sindhi11bnew sindhi13new sindhi14new
sindhi15new sindhi16new)
gen percent_sindhi = 100* total_sindhi/30
egen normal_score_sindhi = std (total_sindhi)
egen sindhiattempted = rsum(sindhi2aattempted sindhi2battempted
sindhi2cattempted sindhi3aattempted sindhi3battempted
sindhi4aattempted sindhi4battempted sindhi4cattempted
sindhi4dattempted sindhi5aattempted sindhi5battempted
sindhi5cattempted sindhi5dattempted sindhi6aattempted
sindhi6battempted sindhi6cattempted sindhi8aattempted
sindhi8battempted sindhi9aattempted sindhi9battempted
sindhi10aattempted sindhi10battempted sindhi10cattempted
sindhi10dattempted sindhi11aattempted sindhi11battempted
```

```
sindhi13attempted sindhi14attempted sindhi15attempted
sindhi16attempted) if sindhi6aattempted != .

egen normal_mother_perception_math = std (s9fq3c_f)
egen normal_father_perception_math = std (s10fq3c_m)
egen parent_perception_math = rsum (s9fq3c_f s10fq3c_m)
egen normal_parent_perception_math = std
(parent_perception_math)

egen normal_mother_perception_eng = std (s9fq4c_f)
egen normal_father_perception_eng = std (s10fq4c_m)
egen parent_perception_eng = rsum (s9fq4c_f s10fq4c_m)
egen normal_parent_perception_eng = std (parent_perception_eng)

egen normal_mother_perception_sindhi = std (s9fq5c_f)
egen normal_father_perception_sindhi = std (s10fq5c_m)
egen parent_perception_sindhi = rsum (s9fq5c_f s10fq5c_m)
egen normal_parent_perception_sindhi = std
(parent_perception_sindhi)



egen total_score = rsum(total_sindhi total_eng total_math)
egen normal_total_score = std (total_score)
egen parent_perception = rsum(parent_perception_math
parent_perception_eng parent_perception_sindhi)
egen normal_parent_perception = std (parent_perception)


gen attempted = 1 if sindhiattempted > 0 | engattempted > 0 |
mathattempted > 0
replace attempted = 0 if sindhiattempted == 0 & engattempted ==
0 & mathattempted == 0
replace attempted = . if sindhiattempted == .
tab attempted


gen edu_father= s1q7_m if (relationship==1 | relationship==2) &
gender==1
gen edu_mother= s1q7_m if (relationship==1 | relationship==2) &
gender==2
gen age_father= age if (relationship==1 | relationship==2) &
gender==1
gen age_mother= age  if (relationship==1 | relationship==2) &
gender==2
```

```
foreach var in edu_father edu_mother age_father age_mother{
sort hhid mid
bysort hhid: replace `var'=`var'[_n+1] if `var'==.
bysort hhid: replace `var'=`var'[_n-1] if `var'==.
gsort hhid - mid
bysort hhid: replace `var'=`var'[_n+1] if `var'==.
bysort hhid: replace `var'=`var'[_n-1] if `var'==.
}


reg normal_total_score normal_parent_perception i.discode if
attempted == 1
reg normal_total_score normal_parent_perception i.discode if
attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_sindhi
normal_parent_perception_sindhi i.discode if attempted == 1

scatter normal_total_score normal_parent_perception if attempted
== 1 & parent_perception !=0
scatter normal_total_score normal_parent_perception if attempted
== 1
tab normal_parent_perception
reg normal_score_sindhi normal_parent_perception_sindhi
i.discode if attempted == 1
bys s1q5: reg normal_score_sindhi
normal_parent_perception_sindhi i.discode if attempted == 1
reg normal_score_sindhi normal_mother_perception_sindhi
i.discode if attempted == 1
bys s1q5: reg normal_score_sindhi
normal_mother_perception_sindhi i.discode if attempted == 1
reg normal_score_sindhi normal_father_perception_sindhi
i.discode if attempted == 1
bys s1q5: reg normal_score_sindhi
normal_father_perception_sindhi i.discode if attempted == 1

reg normal_score_eng normal_parent_perception_eng i.discode if
attempted == 1
bys s1q5: reg normal_score_eng normal_parent_perception_eng
i.discode if attempted == 1
reg normal_score_eng normal_mother_perception_eng i.discode if
attempted == 1
bys s1q5: reg normal_score_eng normal_mother_perception_eng
i.discode if attempted == 1
reg normal_score_eng normal_father_perception_eng i.discode if
attempted == 1
bys s1q5: reg normal_score_eng normal_father_perception_eng
i.discode if attempted == 1
```

```
reg normal_score_math normal_parent_perception_math i.discode if
attempted == 1
bys s1q5: reg normal_score_math normal_parent_perception_math
i.discode if attempted == 1
reg normal_score_math normal_mother_perception_math i.discode if
attempted == 1
bys s1q5: reg normal_score_math normal_mother_perception_math
i.discode if attempted == 1
reg normal_score_math normal_father_perception_math i.discode if
attempted == 1
bys s1q5: reg normal_score_math normal_father_perception_math
i.discode if attempted == 1

set more off
reg normal_score_sindhi normal_parent_perception_sindhi
i.discode if attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_sindhi
normal_parent_perception_sindhi i.discode if attempted == 1 &
parent_perception !=0
reg normal_score_sindhi normal_mother_perception_sindhi
i.discode if attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_sindhi
normal_mother_perception_sindhi i.discode if attempted == 1 &
parent_perception !=0
reg normal_score_sindhi normal_father_perception_sindhi
i.discode if attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_sindhi
normal_father_perception_sindhi i.discode if attempted == 1 &
parent_perception !=0

reg normal_score_eng normal_parent_perception_eng i.discode if
attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_eng normal_parent_perception_eng
i.discode if attempted == 1 & parent_perception !=0
reg normal_score_eng normal_mother_perception_eng i.discode if
attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_eng normal_mother_perception_eng
i.discode if attempted == 1 & parent_perception !=0
reg normal_score_eng normal_father_perception_eng i.discode if
attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_eng normal_father_perception_eng
i.discode if attempted == 1 & parent_perception !=0

reg normal_score_math normal_parent_perception_math i.discode if
attempted == 1 & parent_perception !=0
```

```
bys s1q5: reg normal_score_math normal_parent_perception_math
i.discode if attempted == 1 & parent_perception !=0
reg normal_score_math normal_mother_perception_math i.discode if
attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_math normal_mother_perception_math
i.discode if attempted == 1 & parent_perception !=0
reg normal_score_math normal_father_perception_math i.discode if
attempted == 1 & parent_perception !=0
bys s1q5: reg normal_score_math normal_father_perception_math
i.discode if attempted == 1 & parent_perception !=0
reg normal_total_score normal_parent_perception if attempted ==
1
generate age_child = s1q4
generate native_language  = s0q5a_f
generate religion = s0q3a_m // low variation dropped
generate grade_repeated = s2q13_m // low variation dropped
generate currently_enrolled = s2q14_m // dropped
generate grade = s2q16_m
replace grade = 0 if s2q16_m == 22
replace grade = 0 if currently_enrolled == 2

generate teacher_qualification = s2q25_m
replace teacher_qualification = 0 if s2q25_m == 0 |s2q25_m ==
1|s2q25_m == 2|s2q25_m == 3|s2q25_m == 4
replace teacher_qualification = 1 if s2q25_m == 5 |s2q25_m == 6
generate teacher_regularity = s2q27_m
generate teacher_skills = s2q28_m
replace teacher_skills = 0 if s2q28_m == 1
replace teacher_skills = 1 if s2q28_m == 2 | s2q28_m == 3
generate highest_grade_expectedofChild = s1q13a // drop
generate parent_education = s1q7_m
replace parent_education = 0 if s1q7_m == 22
generate parent_percepchildability = s2q8_m
replace parent_percepchildability = 0 if s2q8_m == . & attempted
== 1
generate parent_percepchilddedication = s2q9_m
replace parent_percepchilddedication = 0 if s2q9_m == . &
attempted == 1
generate child_motivation = s1q13a
generate child_motivation_high_school = s1q13a
generate child_motivation_pre_graduation = s1q13a
generate child_motivation_higher_edu = s1q13a

replace child_motivation_high_school = 1 if  s1q13a == 0| s1q13a
== 1| s1q13a == 2 | s1q13a == 3 | s1q13a == 4| s1q13a == 5 |
s1q13a == 6 | s1q13a == 7| s1q13a == 8 | s1q13a == 9 | s1q13a ==
10
```

```
replace child_motivation_pre_graduation = 2 if s1q13a == 11|
s1q13a == 12
replace child_motivation_higher_edu = 3 if s1q13a > 12

reg normal_total_score normal_parent_perception edu_father
edu_mother age_father age_mother child_motivation_high_school
child_motivation_pre_graduation child_motivation_higher_edu
age_child gender grade teacher_qualification teacher_skills
i.discode if attempted == 1 & parent_perception != 0

reg normal_score_eng normal_parent_perception_eng
child_motivation_high_school age_child
child_motivation_pre_graduation child_motivation_higher_edu
gender grade teacher_qualification teacher_skills i.discode if
attempted == 1 & parent_perception !=0

reg normal_score_sindhi normal_parent_perception_sindhi
child_motivation age_child gender grade teacher_qualification
teacher_skills i.discode if attempted == 1 & parent_perception
!=0

reg normal_score_math normal_parent_perception_math
child_motivation age_child gender grade teacher_qualification
teacher_skills i.discode if attempted == 1 & parent_perception
!=0
```