

How Socio-Emotional Support Affects Post-Compulsory Education Decisions in Rural China

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This study develops a sequential mixed model of Delphi-Propensity Score Matching to discuss how an NGO's socio-emotional support affects the decisions of dropout, work, and two types of upper secondary schooling in rural China. Data were collected from 6,298 students in 2012 after a subgroup of them were treated. The analysis shows that socio-emotional support affects education decisions by boosting educational aspiration, though the impact fades gradually if there is no follow-up service. It also confirms that educational aspiration beats more traditional or intuitive factors like wealth and academic performance in the decision process. Further data exploration points out that such an impact may result from the students' attempts at copying the tracks of service providers, who are mostly college or graduate students, once trust has been built.

Introduction

Since 2008, both statistics and literature have suggested that traditional policy incentives are lacking momentum in influencing education in rural China. People have started to look at socio-emotional supports, such as the promotion of self-discipline and positive emotions. However, existing literature provides very limited information on the topic. Given this context, this study applies a sequential method of Delphi-Propensity Score Matching to identify how socio-emotional support conducted by a non-governmental organization affects education decisions in rural China.

The study makes three major contributions to the existing literature. It tests a socio-emotional intervention, while previous literature about China only tests the impact of socio-emotional status. It also suggests the value of, or at least the required improvement towards, China's educational grassroots nongovernmental organizations (GNGOs), which are young and remain confined by regulations. Finally, it is a showcase of how to use qualitative-quantitative sequential design to enable an exploratory analysis.

This paper firstly explains the context and the research problem with an introduction of the treatment. It then briefly reviews literature connecting socio-emotional support and rural education decisions in Section Two, followed by the introduction of methodology and data in Sections Three and Four. Section Five presents the empirical findings, and Section Six explores the causal mechanism. The paper concludes with a summary of key findings and corresponding policy implications.

Context and Statement of the Problem

In 2014, China had 138 million students enrolled in its nine-year compulsory education system, with nearly half living in rural regions.¹ Most of these students need to make decisions based on four alternatives when approaching the end of their compulsory schooling. These can be called “post-compulsory education decisions” (PCEDs).

They are:

- A. Drop out before compulsory schooling is finished (Dropout);
- B. Work right after finishing compulsory education (Work);
- C. Further their education in academic high schools (AHS);
- D. Further their education in vocational high schools (VHS).

Thanks to strong policies that lower the economic burdens of further education, the proportion of children choosing AHS or VHS has grown for many years. Figure 1 shows that the PCED distribution changed at an accelerated rate from 2006 to 2008 as an increasing percentage of students chose high schools. Two major catalysts of this include the 2005 policy of the Promotion of Vocational Education, which subsidizes VHS attendance (China, The State Council, 2005), and the 2006 Amendment of Compulsory Education Law, which made compulsory education free of tuition and fees (China, The Standing Committee of the National People's Congress, 2006). Both policies place emphasis on the rural population.

However, the change stagnated and somewhat reversed after 2008, with the percentage of dropouts² increasing and the percentage of VHS attendance shrinking back. While there is no official statistics about how the rural population contributes to this new trend, it is known that both VHS and dropout prevention policies have targeted the rural group. For AHS, although its share has increased slightly after 2008, absolute enrolment was about

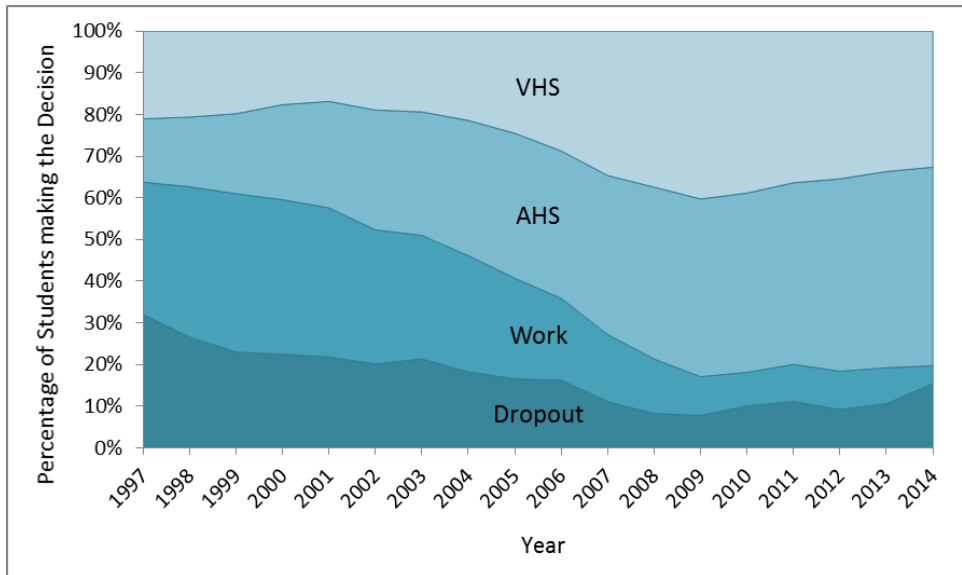
¹ All data presented in Section 1 are calculated from the Educational Statistics Yearbook of China, 1998-2015.

² Statistically, this group also includes students who entered primary school in the mainland, but transferred outside of the mainland before finishing their nine-year schooling. However, the number of this group is too small to change the trend.

95% of the 2008 level. In other words, the education system has the capacity of extra AHS supply, but the students are not taking them.

If both economic supports and additional provisions lose momentum in affecting rural PCED, one possible measure to regain the pre-2008 trend is to look at those less traditional supports targeting socio-emotional factors, such as attitude, self-discipline, self-affirmation, and educational aspiration. Such an idea is not ungrounded as it is hinted in existing surveys. For example, in a 2003 survey covering nine Chinese provinces, 53% of rural households selected “school-weary” as the main reason for their children’s dropout, while only 29% selected “tuition and fees” (Jiang & Dai, 2005). In another example, a 2004 survey held by the China Youth & Children Research Center uncovered that “only bad students go there” is one of the top reasons hampering the VHS decision.³ Moreover, the fact that middle school students are old enough to make their own decisions implies the importance of a closer look at their inner world.

Figure 1. Post-Compulsory Education Decisions in China (1997-2014).



Source: China Educational Statistics Yearbooks, 1998-2015.

Notes: I assume the four alternatives to be the only PCEDs, although there are other alternatives, such as studying abroad and getting married. VHS enrolment is the sum of new enrolment in specialized secondary, vocational, and skilled workers’ schools. AHS enrolment was obtained directly. The number for work was obtained by subtracting the new enrolment in VHSs/AHSs from the number of lower-secondary graduates. The number for dropout was calculated by subtracting the new enrolment in elementary schools nine years ago from the present number of lower-secondary graduates. Data does not allow for rural-urban disaggregation.

³ Source: http://news.xinhuanet.com/edu/2005-11/07/content_3742896.htm

Currently, it is the GNGOs that are taking the lead in socio-emotional intervention, but GNGOs are still a weak sector in China. Many GNGOs fail to register with the Civil Affairs Bureau due to harsh governmental regulations, and of those registered, the majority have managerial problems, such as unstable personnel and budget deficits (Xie, 2004). GNGOs may have a role in affecting PCED, but there has not yet been a rigorous evaluation of this role.

Accordingly, this study examines how an NGO's socio-emotional support affects PCEDs in rural China. More specifically, it evaluates the intervention conducted by the Lighthouse Project (Lighthouse), which is one of the longest surviving rural education GNGOs in China. It was established in 2001 in Guangdong, the southern province with a large rural-urban gap. Each year, Lighthouse trains and sends college volunteers to six to eight rural schools for a one-month summer camp for current or soon-to-be lower secondary students. Each volunteer team is given a standard operation procedure from the organization plus a school-specific brochure written by former volunteers of the same site. The program cost is extremely low as the volunteers live at school for free, and local consumption level is much lower when compared to the cities'. Participation in the program is voluntary. Schools assist in the publicity right before summer, and in some cases, the volunteers go straight to local communities for recruitment. Activities in the Lighthouse program include, but are not limited to, the following: informal courses, psychological counselling, household visits, team building, the cultivation of local student organizations, and specific projects such as "Model Mayor Election" and "Life Auction." Most Lighthouse activities aim to change student attitudes towards life, such as making them more confident, ambitious, social, and optimistic (Lighthouse, 2009). Appendix A gives an example of a typical Lighthouse operation.

The Lighthouse program can be considered as a socio-emotional support that may alter certain kinds of personality or perception, namely the subjective factor. And the subjective factor is a potential PCED determinant that remains under-researched. The following section briefly reviews the concepts of and relationships between socio-emotional support, the subjective factor, and PCED.

Literature Review

A socio-emotional process consists of variations that occur in an individual's personality, emotions, and relationships with others during his or her lifetime (Santrock, 2007). Among the social-emotional elements, personality has received more attention in the economics-of-education literature. It is defined as the relatively enduring patterns of thoughts, feelings, and behaviors that reflect the tendency to respond in certain ways

under certain circumstances (Roberts, 2009). Almlund, Duckworth, Heckman, & Kautz (2011) concluded that conscientiousness (e.g. self-discipline and ambition) best predicts overall attainment and achievement in education, followed by emotional stability (e.g. depression levels and confidence).

In the case of rural China, the evidence is less straightforward. Some evaluations have been done on the links between personality and education. Wang, He, & Qiu (1999) found that most personalities affect academic performance, however, these tests were conducted mainly with urban students. In another study, Lee and Park (2010) found that a father's migration was linked with externalizing problems such as destructive behavior, impulsivity, aggression, and over-activity, but not with internalizing problems such as anxiety, depression, and withdrawal. Since the authors also found a negative correlation between a father's migration and children's enrollment, the adjusted personality traits serve as potential mediators. It is also notable that socio-emotional interventions can alter personality traits and can have a lasting effect on education (Almlund et al., 2011; Yeager & Walton, 2011), however; so far no quantitative study has focused on China's rural students.

Other than personality, perceptions such as how capable a child is or how rewarding a school degree is might also affect PCED. Since it is impossible to have a purely rational decision based on an accurate estimate of future return, an education decision relies not only on calculations but also on belief, which can be reinforced by socio-emotional support. In the case of rural China, there have been studies connecting the decision of additional education (Hannum & Adams, 2007, 2008; Hannum & Park, 2007; Hannum, Kong, & Zhang, 2009; Jiang & Dai, 2005; Wang, 2005) or the high school track (Dong & Shen, 1997; Fang, 2007; Zhang, 2009) with students', parents', or teachers' perceptions of certain PCEDs' future benefits. Like personality, perception can be very subjective and does not rely on rational calculation of benefit and cost. So far, no discussion has been made in the field of rural education on how perceptions can be altered by socio-emotional support. This study will be the first impact evaluation of a specific intervention.

Methodology

The hypothesis held by this study is that socio-emotional support, i.e. the Lighthouse program, can affect PCEDs through altering subjective factors like personality and perceptions. It is, however, difficult to evaluate Lighthouse's intervention. Firstly, its impact(s) are not as explicit as that of material support; neither can it be easily predicted by a neoclassical framework in family economics. Secondly, recalling that participation with Lighthouse is voluntary, it is hard to tell whether the obtained effect comes from its

support or just from characteristics determining the attendance of that support; i.e., that there is a possibility of selection bias.

Accordingly, this study employs a sequential mixed model of “Delphi-Propensity Score Matching (PSM).” The qualitative part of Delphi helps figure out what are the possible Lighthouse impacts and what can be the determinants of Lighthouse participation, and then the quantitative part of PSM measures those impacts and confirms if they can affect PCED.

Delphi is an iterative process used to collect and distil the judgments of experts using a series of questionnaires interspersed with feedback (Skulmoski, Hartman, & Krahn, 2007). I gathered a panel of 17 members on the research topic. They lived in 14 cities of three countries (China, the UK, and the USA), with diverse backgrounds regarding career, knowledge structure, and PCED preference.⁴ From July to September 2011, the panel members had been surveyed over email three times. The survey started from opening questions like, “What are the top five contributions of Lighthouse intervention?” in the first round, to more structured questions like, “From 1 to 10, please rate the realization of each Lighthouse impact raised by other panel members in the previous round.”

The Delphi process identifies 25 potential impacts, which are displayed in Figure 2 with the x-axis for the rating on importance, the y-axis for the level of realization, and the size of bubbles for the divergence of the rating among panel members. Personality-related characteristics such as confidence and courage are uniformly believed to be important and well realized in the programs (being small circles in the upper right of the diagram). The Delphi process also suggests characteristics of program participants, including academic performance, distance to the schools, attitudes towards/burdens of housework, and so forth.

While Delphi suggests what may lead to treatment and what could be the impacts, PSM measures those suggested impacts by comparing the treated and untreated units that have similar propensities of treatment participation (D_i). By doing this, the researcher can largely control for selection bias without facing the limitation of matching many observed variables. Supposing the conditional independence assumption holds, then:

⁴ The Delphi members were asked to rate their familiarity with the relevant social issues, knowledge by academic field, identity, and PCED preference. Overall, the panel members tend to identify themselves as NGO activists or rural educators knowing about rural education/PCED.

$$p(X_i) = E[D_i | X_i] = p[D_i = 1 | X_i]$$

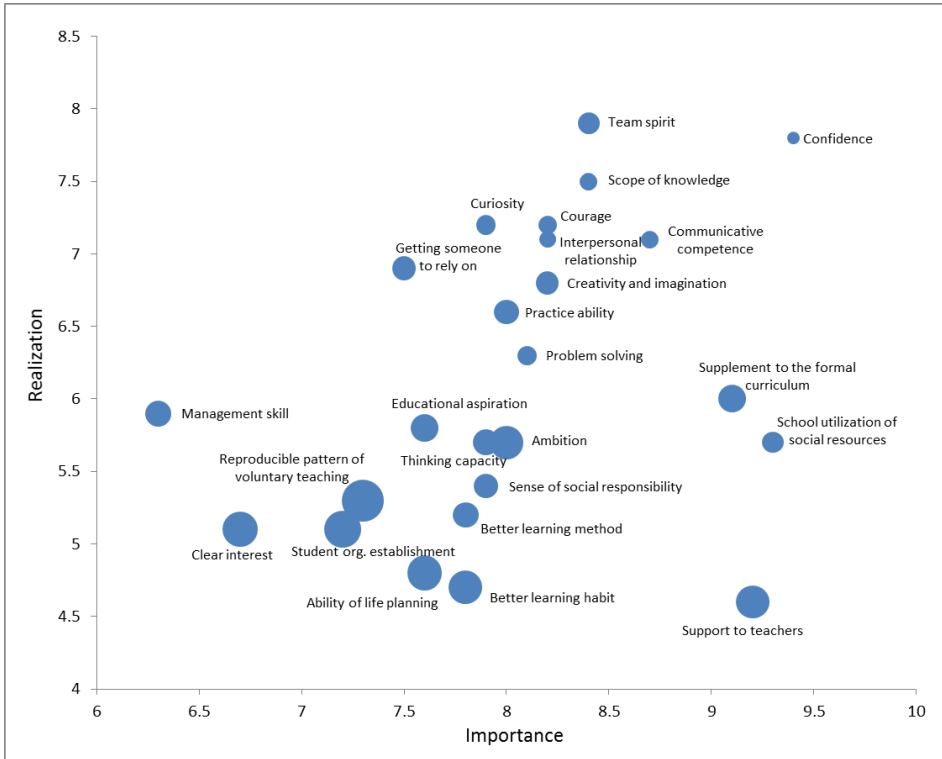
The application of PSM runs as follows: To begin with, run a probit regression using a dummy variable for participation (1 = participation, 0 = otherwise) as a dependent variable, and potential participation determinants as independent variables (X_i). For the selection of these determinants, I started with a conservative method — combining both potential PCED determinants and participation determinants. A long list of possible PCED determinants has been documented in the literature about education decisions in rural China (Sun, 2004). This includes basic personal characteristics (gender/age/ethnicity), parental background, number of siblings and birth order, peer/school/community factors, household economic status and credit constraint, subjective factors (e.g. personalities and perceptions towards different PCEDs), health status, etc. Information has been collected through field surveys. I then substituted the value of each variable for each student to the obtained equation. The result is the propensity score measuring an individual's propensity of participation. The impacts selected for evaluation include categorized indexes of confidence, ambition, courage, curiosity, extraversion, affiliation need, career ambition, and educational aspiration, as displayed in Figure 2.

There are various ways to use the propensity score, and this study practices the three matchings of Nearest Neighborhood (NN), Kernel, and Radius. For the most common NN matching, a student in the control group (non-Lighthouse student) is matched to a treated student (Lighthouse student) based on the closest propensity score. More specifically, I apply the single NN with replacement, in which a control case can be matched to multiple treated cases as long as it has the nearest propensity score. Kernel Matching uses the weighted averages of all students in the control group to estimate counterfactual outcomes (Heckman, Ichimura, & Todd, 1998). The weight is calculated by the propensity score distance between a treatment case and all control cases. I use a narrow bandwidth of .03 for Epanechnikov Kernel matching. Smaller bandwidth gives smaller bias but larger variance, and vice versa. Finally, radius matching allows a tolerance level in the maximum propensity score distance, the caliper, and matches all the individuals in the control group within that caliper (Cochran & Rubin, 1973). In this study, I use a caliper of .08.

To confirm the hypothesis of how Lighthouse's socio-emotional support affects educational decisions, I also conduct multinomial logit (MNL) using PCED as a dependent variable, with the selection of AHS as base-outcome. PCED determinants that were suggested by either the Delphi survey or the literature serve as the independent

variables. If one finds subjective factors not only influential on PECED but also impacted by the intervention, the hypothesis is proved.

Figure 2. Suggested Impacts of the Lighthouse Program.



Source: Author's compilation.

Notes: Data is calculated from the Delphi ratings made by 10 panel members (out of 17) who considered themselves knowledgeable in Lighthouse's operations. The bounds for the x and y-axes are adjusted to better disperse the bubbles. For both importance and realization, the ratings range from 1 to 10 for "totally disagree" to "totally agree." Bubble diameter indicates the divergence of views, which is calculated as the mean of the coefficients of variation for importance and realization. Smaller bubbles means better consensus.

It is worth mentioning that, by applying MNL, this study does not treat PCED with an "order." It is debatable to claim that more education must be better for all students, especially when it comes to the comparison between AHS and VHS tracks. AHS is usually one year longer than VHS, and it is easier to be connected to a college education, but it may not be a reasonable option for those needing to work earlier to feed their family or those not interested in academy. Recognizing the reality that not all students knew their PCED by the time of being surveyed, the students were also given an option of "undecided" in addition to the four options when answering the PCED question.

Data Collection

Questionnaire Design Based on literature and the Delphi results, this research produces separate questionnaires for students, teachers, principals, and student households (presumably parents or guardians). There were also questionnaires for the Lighthouse volunteers when they were approaching the end of the 2012 summer program.

The majority of data collected were PCED determinants. Gansu Survey of Children and Families (GSCF) and Zhang's dissertation on the determinants of National College Entrance Exam performance in China (Zhang, 2011) were the major references for questionnaire design. GSCF is the most frequently cited project in rural PCED studies (e.g. Hannum & Adams, 2007; Hannum et al., 2009; Park & Hannum, 2002; etc.).⁵ And Zhang's study has a data collection process similar to that of this study. Since the questionnaires from these two sources do not touch on the topic of schooling tracks, i.e., AHS vs. VHS, I also refer to track-related questionnaires used in existing Chinese studies, including Fang (2007), Zhang (2009), and Zhu (2006).

The biggest challenge for questionnaire design involves the subjective factors, especially those related to personality. Literature has recommended the Big Five personality traits and Duckworth's Grit Scale for measurement (Muller, 2015), but with the tension between accuracy and answering time, I adopted the questions on the psycho-social state from GSCF. They measure the student's mental health such as confidence, courage, and gregariousness. The similar questionnaire has proven reliability and validity after tests on over 20000 Chinese middle school students (Wang, Li, & He, 1997). It is neither too long nor too short, and much more localized and rural-specific than other available tests. As suggested by the Delphi result (Figure 2), the Lighthouse impacts that are consistently considered important and well realized are mostly socio-emotional, and therefore the change in some subjective factors could be attributed to Lighthouse participation. This study covers only eight of the 25 suggested impacts, as some are for the long term, and some are difficult to measure. More importantly, it was necessary to limit the time required to answer, to ensure answer quality.

Finally, in schools with Lighthouse interventions, there was also a questionnaire for volunteers asking about their engagement with, and perceptions of, the program. The questionnaire was designed with suggestions from the Delphi panel.

⁵ For details, please refer to <http://china.pop.upenn.edu/>

Data The major data collection took place at middle schools in six towns of Zhaoqing City and two towns of Qingyuan City in September 2012, which is one month after the Lighthouse intervention. This area's Gross Domestic Product per-capita was only one-third of the provincial level (Sheng & Yan, 2012). The full valid sample size is 6,298 students⁶ from eight surveyed schools (each town has only one middle school), among which the treated sample size is 678 for Lighthouse students from six schools. The school names, which are exactly the same as the town names, are kept anonymous as requested by the local official. In both the full sample (Lighthouse and non-Lighthouse combined) and the Lighthouse sample, more than one third of students chose VHS as PCED; similar numbers of children chose Work, AHS or Undecided; and only 2% chose dropout (the survey were held in school so it did not covered those already dropped out). Among the 678 Lighthouse students, 211 attended the Lighthouse program right before the data collection in summer 2012.

Since the Lighthouse treatment was not randomized, numerous questions were asked to ensure enough variables (see Appendix B) could be generated to proxy the randomization. As a result, missing data is inevitable. Most variables have a missing data rate smaller than 10%.⁷ Multiple imputations by chained equations are used to deal with missing data. The number of imputations to add is five, a classic number that can guarantee the efficiency of estimates (Rubin, 1987).⁸

Multicollinearity is another problem that could result from the large number of variables. For the sample built for this study, paired correlations that barely exceed 0.1, the mean variance inflation factors of 1.68, and the no-intercept condition index of 6.5 all suggest that the collinearity is within an acceptable manner. Furthermore, the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) have been calculated for all regressions to make sure that the model specifications yield lower AIC/BIC, or, in other words, do not bear over-fitting.

⁶ Given the length of the student questionnaire, it is quite likely that some students lost their patience and provided random answers, generating systematic missing data that cannot be solved statistically. My solution to this kind of missing data is to insert a question asking how much they lost their patience in about 4/5 of the student questionnaire. If that question was left blank, the student is assumed to be totally impatient, and the whole observation will be removed before the imputation. This operation removes 1693 students (860 boys, 833 girls). By checking the answers given by this group, it co

⁷ There are three Lighthouse-related variables with a 20% missing data rate. They are the level of engagement with other activities such as household chores, farm work, city visits, and summer jobs; the household rating on their support of the child's participation in summer camp or their respect of the children's own preference in PCED; and student performance. The missing data cases are concentrated in two schools

⁸ I also tried a larger number of imputations, but little difference was found in the results. An important reason to keep the number small is to maintain conciseness when reporting PSM results.

In addition to the quantitative data set, there are 50 pages of anonymous opinions and debates generated from the Delphi process, plus interview records and student diaries obtained from the fields. This document will be used to assist causal interpretation after the PSM.

Empirical Results

The empirical findings confirm a Lighthouse impact on PCED, which is concentrated in the boost of educational aspiration, but not in many other subjective factors suggested by Delphi results. By-group summary statistics suggests that Lighthouse students are different from the general population. More specifically, at a significance level of 0.05, Lighthouse participants are more likely to be girls⁹; have parents that are communist league or party members; live with more siblings; grow in a less-educated community of more access to migrant worker opportunities; be taught by teachers of lower pay; live closer to the school; come from a household of higher income; rank high in terms of educational aspiration, emotional attachment to school and curiosity; be taught by teachers of stronger preference for AHS/VHS when compared to Dropout/Work; have better health; score higher in exams; know more about vocational training and urban life; have more classmates who were Lighthouse participants; and to have household members who support summer camp or respect the students' own choices.¹⁰ All of these comparisons justify the need for applying careful research design to identify the real Lighthouse impact. Given the enormous amount of variables generated for this study, the detailed descriptive analysis is omitted, but is available upon request. Even with the most rigorous specification using all available variables for propensity score calculations, the Lighthouse and non-Lighthouse students still have a common overlap of propensity scores. It is however a little disappointing that, while the Delphi suggests various program impacts, the PSM confirms only the boost of educational aspiration.

For the rest of the outcome variables, there is no impact on confidence, ambition, or courage even when the propensities are unmatched. There are statistically significant impacts on curiosity, extraversion, affiliation need, and career ambition, but those impacts become statistically insignificant after the matching. It is noticeable that confidence was considered as the number one outcome by Delphi. This reveals the risk of being over-subjective when purely relying on qualitative investigation. All t-scores for the average

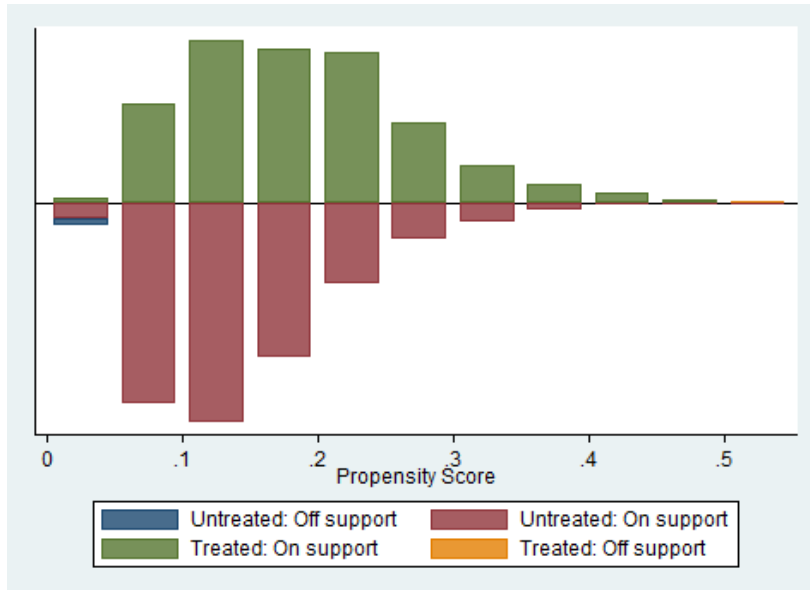
⁹ There are 61% of girls in the full sample and 66% of girls in the Lighthouse sample. It had been mentioned several times by the Delphi panel members that there are more girls during the semester. Comparing to boys, girls are less likely to live in cities with their migrant parents. There are even larger share of girls in town during the summer because girls are also less likely to visit their parents in cities during the vacation.

¹⁰ The two non-Lighthouse schools are excluded from this comparison.

treatment effect on the treated (ATT) in NN are presented in Table 1. In most cases, the t-scores for matched comparisons are much smaller, indicating a large selection bias in Lighthouse participation.

As the only expected outcome that survives the PSM, educational aspiration is a categorical variable ranging from 1 = dropout to 5 = graduate school. Figure 3 shows more targeting propensity scores calculated from variables correlated to educational aspiration ($p < 0.05$) and not totally unrelated to participation ($p < 0.6$), plus school and grade dummies.¹¹ There is a satisfactory overlap of the treatment propensities between Lighthouse and non-Lighthouse students.

Figure 3. Overlap of Propensity Scores, by Lighthouse participation.



Notes: The y-axis is proportional by group – the treated and untreated are not necessarily on the same scale. This is from one of the imputations with an adjusted list of treatment determinants (see Appendix B). Graphs made from all five imputations are almost identical. “Treated group” refers to those participating in any of the Lighthouse programs in the past three years.

¹¹ This follows the rule set by Brookhart et al. (2006). This adjusted specification makes a small difference from those based on the more conservative specification including all available variables.

Table 1. Nearest Neighborhood Matching Results (t-Scores)

	Most Recent Participation									
	Imputation_1		Imputation_2		Imputation_3		Imputation_4		Imputation_5	
	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched
Confidence	0.55	-0.05	0.53	-0.24	0.54	0.42	0.56	0.18	0.55	2.3
Courage	1.23	0.03	1.2	-0.7	1.2	0.29	1.22	0.18	1.22	0.9
Curiosity	2.2	0.46	2.23	0.72	2.22	2.46	2.2	1.14	2.18	0.93
Ambition	-0.17	-0.16	-0.18	-0.59	-0.15	-0.72	-0.15	-0.26	-0.15	0.45
Extraversion	1.83	0.14	1.82	-1.18	1.83	-0.05	1.83	-0.42	1.83	0.7
Affiliation need	2	1.88	2.2	1.06	1.97	0.68	1.96	0.89	1.95	1.76
Educational aspiration	4.81	3.01	4.81	2.19	4.45	2.56	4.78	1.09	4.7	2.35
Expect normal career	-2.21	-1.66	-1.4	-0.24	-1.3	-1.01	-1.46	-0.33	-0.57	0
On support _Untreated #	4,085		4,200		4,160		4,180		3,992	
On support _Treated #	205		204		208		208		209	
	Any Participation									
	Imputation_1		Imputation_2		Imputation_3		Imputation_4		Imputation_5	
	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched
Confidence	2.13	1.72	2.09	1.63	2.1	1.15	2.2	1.34	2.14	1.23
Courage	0.55	0.48	0.55	1.88	0.57	1.84	0.6	0.72	0.57	1.06
Curiosity	2.58	0.56	2.64	0.87	2.61	0.69	2.57	0.29	2.54	0.54
Ambition	0.31	-0.29	0.26	1.01	0.33	-0.19	0.29	-0.33	0.32	0.19
Extraversion	-0.27	0.04	-0.28	1.36	-0.27	0.81	-0.27	-0.07	-0.27	0.82
Affiliation need	0.82	0.44	0.88	0.24	0.78	-0.38	0.77	-0.25	0.8	0.25
Educational aspiration	5.12	3.02	4.05	2.13	4.14	0.72	3.79	2.98	3.82	1.51
Expect normal career	-0.43	-0.77	-0.13	-0.83	0.22	0.89	0	-0.41	0.31	-0.41
On support _Untreated #	3,743		3,747		3,742		3,742		3,748	
On support _Treated #	678		678		677		677		678	

Notes: The calculation is based on the list of t-scores for the average treatment effect on the treated (ATT). The two non-Lighthouse schools are excluded from this comparison. A detailed explanation of the expected outcome variables can be found in Appendix B, where affiliation need is shortened as “*affiliationneed*,” educational aspiration as “*stueduaspiration*” and expect normal career as “*expect norm*.”

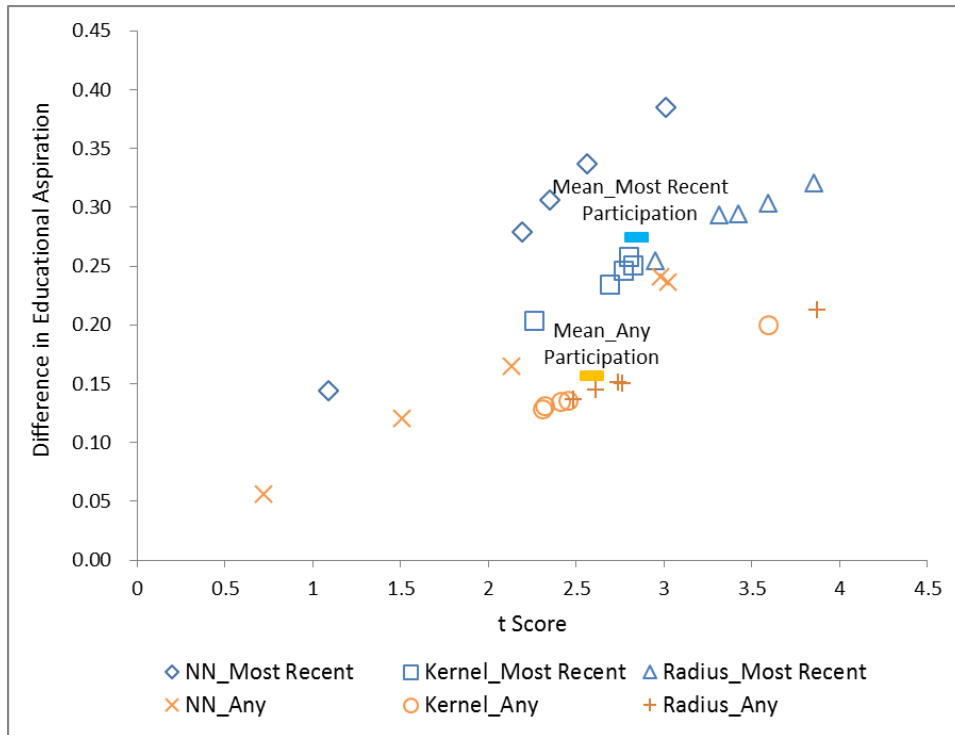
Figure 4 presents the matching results as a scatter graph, in which the y-axis is the effect size and the x-axis is the corresponding t-scores. Because five imputations were conducted, for each specification there are five results. The balancing property for PSM is not perfectly kept. On average, each imputation has three variables diagnosed as unbalanced, which is a small proportion. These variables are unbalanced in either the first or the last score block, where the treatment sample tends to be too small to secure statistical power. Particularly in the last block, the sample sizes range from 13 to 21 in the five imputations. Thus, despite an imperfect balance, it is acceptable to process the PSM without extra adjustment on specification (Stuart, 2010).¹²

The most important discovery from pooled matching results is the diminishing Lighthouse impact. The blue symbols (rhombus, square, and triangle) for the most recent summer 2012 participation are generally closer to the upper right than the orange symbols (cross symbols and circle) for any participation. The mean of blue symbols shows an average ATT almost double the mean of the orange symbols with a higher t-score. In other words, Lighthouse's short-term impact on educational aspiration is stronger in both magnitude and statistical significance when compared to its longer-term impact. Lighthouse does have follow-up services such as one-week revisits, student organization creation, and communication by letter. These seem to be insufficient for sustaining the impact, and it is possible that those follow-ups mainly benefit active students who have maintained a better connection with the volunteers.

Two types of data exploration are applied to disaggregate the aspiration boost. By-background analyses show that such an aspiration increase applies mainly to students with higher academic performance with the impact significant for both children of any participation and children with the summer 2012 participation, which is encouraging since it is reasonable for high-performance students to pursue more schooling. The aspiration increase may also be more evident among male students—boost acquired from the most recent participation is marginally significant at the 10% level. Finally, by-wealth matching gives a clear message that the increase in educational aspiration does not vary between the poor and the rich.

¹² Stuart (2010) also suggested Mahalanobis Matching under a minor imbalance. I have practiced it. For all imputations, both ATTs and corresponding t scores appear to be much larger with Mahalanobis Matching. This study proceeds with the more stringent results of NN, Kernel, and Radius.

Figure 4. Propensity Score Matching Results for Educational Aspiration.



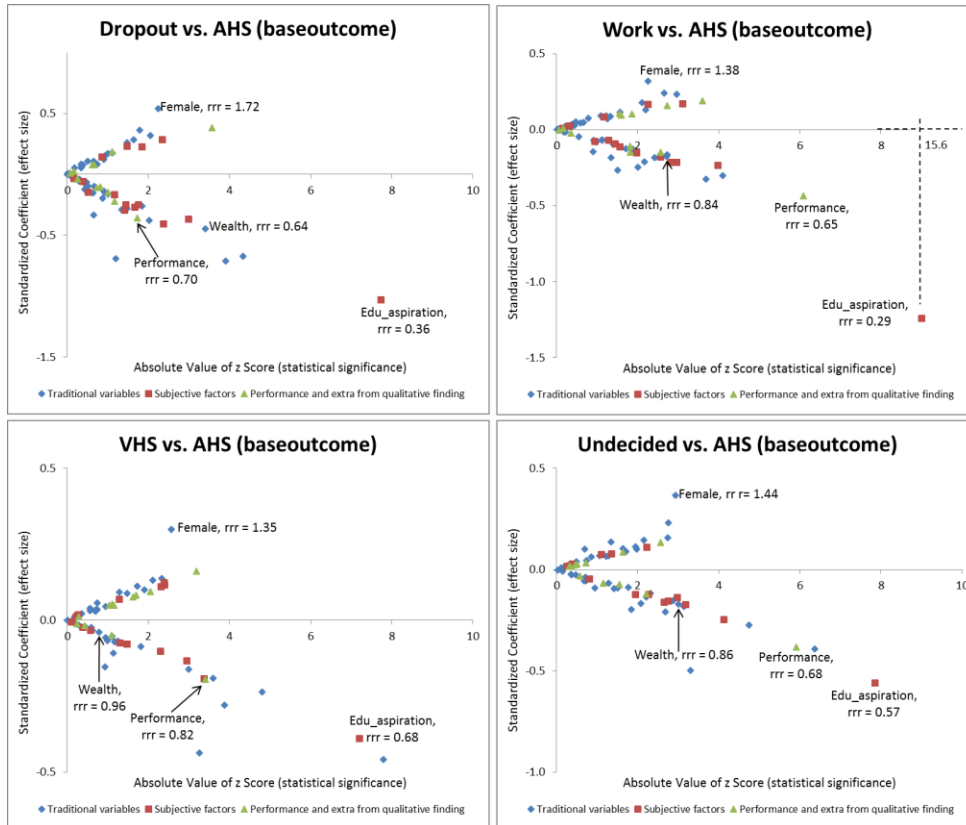
Notes: There are five data points for different groups because there are five imputations. Variables used to estimate the propensity scores for these PSMs are those correlated to educational aspiration ($p < .05$) and not totally unrelated to participation ($p < .6$), plus school and grade dummies.

In addition to background analyses, by-site analyses provide possible explanations of why some sites perform better. Three typical sites of different Lighthouse engagements are selected for comparison. School A had paused their Lighthouse program and then restarted it in 2012 (31 most recent participation, 83 any participation out of 805 students surveyed); School B was a first-year Lighthouse school, although it also had some transferred former Lighthouse students (75 latest, 94 any out of 479); and School C had been a long-time Lighthouse school (56 latest, 225 any out of 1,600). It turns out the boost does not apply to the long-engagement School C. The novelty for local people may help in greater program effect since newer Lighthouse schools (Schools A and B) see a larger aspiration boost. Also, according to the volunteer survey, volunteers in School C rate lower in terms of passion, confidence, and acceptance of Lighthouse training content when compared to Schools A and B. Thus, it is possible volunteer quality also explains part of the variance in aspiration boost.

Though the Delphi-PSM approach confirms only the aspiration boost as Lighthouse impact, the good news is the following MNL suggests educational aspiration as a crucial PCED determinant, holding numerous other factors constant. The four panels of Figure 5

report standardized coefficients and the absolute values of t-scores from the MNL. Dots in the upper or lower right of each panel stand for PECD determinants that are both influential and statistically significant—educational aspiration apparently beats more traditional or intuitive determinants like wealth and academic performance, especially when it comes to the decisions of dropout or work, where the children holding higher educational aspiration have a relative-risk ratio (rrr) that is less than half of the rrr for children of richer families or better test performance. The results also show children with higher education aspiration are less likely to choose VHS or remain undecided, with standardized effect sizes that are larger than the ones for wealth or performance. In the regression, wealth is categorized from 1 to 4 based on the availability of a cement house,¹³ computer/internet/car, and motorcycle; performance refers to the quantiles of the student’s test ranking at their school.

Figure 5. Standardized Effect Size and Statistical Significance of PCED Determinants.



Notes: rrr = relative risk ratio. The labels for other variables and the full table of regression results are omitted but available upon request. The MNL passes the seemingly unrelated estimation (SUE)-based Hausman test for the independence of irrelevant alternatives (IIA) assumption. Collinearity is acceptable according to the tests of paired correlations, variance inflation factors, and the no-intercept condition index.

¹³ A cement house is not a traditional component of the wealth index, but it was highly recommended by one of the Delphi panel members who used to live in the surveyed area.

Connecting the results for PSM and MNL, the hypothesis held by this study is confirmed – socio-emotional support (here the Lighthouse) does affect PCED through altering the subjective factor (here educational aspiration). Some may question that the PCEDs in this study are just what the students wish to do, while in the end it will be their High School Entrance Exam (HSEE) score deciding where they go. I managed to collect HSEE scores and final PCEDs of 140 graduating students in two of the surveyed schools. Interestingly, although it is true that children of higher test scores are more likely to register in AHS, there is no real HSEE cut-off, as there are many students who scored at the bottom but entered AHS. It is also noticeable that China's population of lower secondary graduates has declined since 2005,¹⁴ which means less competition of post-compulsory opportunities. In other words, PCED today is more about the children's willingness than the restriction of test performance or the availability of opportunities.

Why Socio-Emotional Support Boosts (Only) Educational Aspiration It is true that educational aspiration itself can be altered by many factors, but these are mostly controlled, like the wealth and performance factors or the level of other subjective factors in the MNL (e.g. confidence and curiosity). Delphi findings, on-site interviews, and student diaries jointly suggest the model effect to be a source of increasing aspiration, as these volunteers are mostly college or graduate school students. The true causal mechanism could be much more complicated than just a model effect, but it is the one hard to be challenged.

Based on the opinions collected from the Delphi panel, if there is an impact on educational aspiration, then it is mainly attributable to "the power of role models." When a student develops trust in a volunteer, he or she will subconsciously start to copy the volunteer's behavior, including the schooling decisions of that volunteer. One panel member provided a more specific theory of direct and indirect effect. Directly, once a student participates in Lighthouse, they forgo the chance of summer migrant work, receive the opportunity of talking to volunteers about education decisions, and thus have a higher possibility of returning to school after the vacation. Indirectly, it is admitted that Lighthouse volunteers who finish the training and go to the sites have more optimistic attitudes and social responsibility than their peers, which gives local students a positive picture of college life, making them want to be part of this group in the future. In addition, there have been increasing reports of former Lighthouse students applying to be Lighthouse volunteers, another form of the model effect.

¹⁴ Calculated from the Educational Statistics Yearbook of China, 1998-2015.

The Delphi responses also touch on educational aspiration from two other angles. Firstly, while Lighthouse has clear instructions that the volunteers should not impose on the students their perceptions regarding what to do after finishing the compulsory education, the organization opposes dropout in its standard operation procedure, and its follow-up activities includes channels to financially support those at risk of dropout. Students are also willing to talk to the volunteers about their decisions. Secondly, some panel members have suggested that the Lighthouse program may affect a household's perception of college, but they are not confident about how strong this effect could be. After all, many parents are either busy with farm work or still working in cities during the summer.

My research team stayed with and talked to volunteers, teachers, students, and households. We obtained approval for scanning 99 diaries from eight Lighthouse students. These messages could be subjective, and the students willing to offer their diaries might have been active students who had a very positive view of Lighthouse. Nevertheless, interviews and diaries are better than Delphi documents in terms of giving detailed examples. We found interesting examples of how the volunteers and students got closer to each other. One case in point is a discussion about Jay Chou, an iconic pop singer from Taiwan. One student said he did not like Jay Chou, so a volunteer began to tell him stories of how Jay Chou grew to be a famous singer by overcoming many challenges. That volunteer was the first person from a different generation to talk with the student about such a non-school topic in an inspiring way. There are several records describing the students' gratitude for home visits, as many of these students live in remote villages. They felt they were being cared for. Such examples share one feature: the students and volunteers build strong connections outside the class.

Since the PSM already uncovered that the Lighthouse impact is concentrated only on educational aspiration, there must be some negative effects to offset the other anticipated outcomes. One member of my research team was assigned to collect negative views, which can be categorized into four groups. First, some students came to Lighthouse just because they wanted to accompany their friends, or because their parents needed someone to "babysit" their children during the summer. While some said they did enjoy the time, some said the participation was just a boring task. Second, some students felt isolated by other students. In one activity, the research assistant saw a student crying because the student had been ignored by other students. Third, some students thought the program was not intellectual. This is particularly evident for higher-grade students, as they sometimes took courses with younger students on subjects that were too easy for them. And lastly, some students felt they did not get enough attention from the volunteers. Not all volunteers are capable of treating every student equally. Introverted students

found it hard to get as much attention as outgoing students, yet these introverted students probably needed more help. The coexistence of positive and negative experiences could be a reason why quantitative results reject many anticipated Lighthouse impacts.

Conclusion and Discussion

Socio-emotional support, or at least the Lighthouse program, does affect PCED in rural China. The Delphi-PSM results suggest educational aspiration is the only measurable outcome that is statistically significant, and PCED can be altered with boosted aspiration. Affiliation need, confidence, curiosity, and extraversion are treatment determinants that could be misrecognized as impacts if matching is not conducted. Courage, ambition, and career expectation turn out to be neither treatment effects nor determinants.

The aspiration boost can however decrease over time, suggesting that more follow-ups are needed to maintain the impact. Such an aspiration boost applies mainly to students with higher academic performance, which is encouraging since it is absolutely right for these students to pursue more schooling. In Lighthouse sites that are relatively new, the novelty for local people may help in greater program effect. The passion, confidence, and acceptance of training content by volunteer teams can also be important to program quality.

One likely explanation of aspiration boost is that students tried to copy the volunteers' schooling decisions after trust was built. Trust can be easily built through personal interaction that is common in Lighthouse-type interventions, but rare in formal schooling. On the other hand, individual cases show a mixed picture of how the students reacted to the program for personal reasons or the capacity of volunteers. This helps explain why only one effect survives the matching. A relevant recommendation of this study is the promotion of Lighthouse-like socio-emotional support programs. As a typical rural GNGO program that operates at very low cost, an impact on a key PCED determinant is sufficient to justify its contribution.

This study also implies three possible improvements for Lighthouse-like socio-emotional support. To begin with, since increased aspiration affects mainly students with higher academic performance, it is advisable to encourage high-performers' participation. On the other hand, the matching result also implies that volunteers should pay more attention to low-performance students to ensure equity in outcome. Secondly, a more structural procedure for follow-up services should be established. There should be minimum standards for all sites to follow in order to avoid diminishing impact. And thirdly, the volunteers should be encouraged to spend time on informal interactions like home visits

and letter communications, which appear to work well in building the emotional attachment between the students and volunteers.

Methodologically speaking, this study is a unique showcase of how sequential mixed-methods perform better than pure quantitative or qualitative methods for exploratory analyses. PSM is popular in impact evaluation, but it is quantitatively impossible to persuade people what variables to consider for the estimation of propensity or what impacts to measure. Delphi resolves these problems. However, recalling the case of non-impact on confidence, it is the quantitative method's strength to reveal "counter-intuitive" facts that can hardly be captured by qualitative methods. The sequential combination of Delphi and PSM complement each other to provide more convincing findings.

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Appendix

A1. Recruitment/Training/Evaluation Schedule for New Volunteers, circa 2012

March

- Recruitment
- Application screening

April

- Interviews and admission. Usually 1 in 6 ~ 1 in 8 accepted.
- Introduction of Lighthouse (operation, idea, developmental strategy, etc.).

May

- First round of team building. This is a 3-day intensive session. The volunteers will be together for more than 12 hours per day.
- Teaching Training – education ideas
- Teaching Training – teaching skills and informal instruction
- Teaching Training – trial lecture

June

- Teaching Training – student affairs
- Optional trainings. In 2011, ten courses were provided by former Lighthouse volunteers, professional trainers, or other NGO trainers, including: applied drama, social gender, picture book education, creative music, photographing, outdoor living skill, state of rural education, Getting-Things-Done (GTD), connected to community, inquiry learning, and communication.

July

- Volunteer disciplines and first-aid treatment
- Second round of team building
- Specific training held by former volunteers from the same Lighthouse location

July-August

- Summer Camp starts, accompanied with simultaneous monitoring and evaluation by former volunteers and Lighthouse staff

September

- Workshops for each volunteer team
- Summative meeting

October

- Revisit during the National Day holiday

Table A2. Sample of the One-Month Lighthouse Activities in a School^a

<i>Week One</i>		<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	
		Arrival	Enrollment	Enrollment	Team building	Team building & class assignment	
<i>Long-distance household visit during weekend</i>							
<i>Week Two</i>		<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	
8:00-8:10		Morning reading(English pronunciation, news broadcast, story share)					
8:10-8:50	1	Class meeting	Local product ^b 1	Local product 4	Local product 7	Local product 10	
9:00-9:40	2	Team game	Local product 2	Local product 5	Local product 8	Local product 11	
9:40-10:00		Class-break exercise					
10:00-10:40	3	Silent music	Local product 3	Local product 6	Local product 9	Local product 12	
2:00-2:40	4	Basic marketing	Physical experiments	Optional courses ^c	Sales	Local products exhibition	
2:50-3:30	5	Small story, big idea			Handcraft		
3:40-4:20	6	Gymnastic	Gymnastic				
<i>Long-distance household visit during weekend</i>							
<i>Week Three</i>		<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	
8:00-8:10		Morning reading(English pronunciation, news broadcast, story share)					
8:10-8:50	1	Class meeting	Funny math	English speaking	Performing life	History (Three Kingdoms)	
9:00-9:40	2	Drawing	Story of a boat	Communication		About teamwork	
9:40-10:00		Class-break exercise					
10:00-10:40	3	Outdoor drawing	Fruit life	Logo design	Making a mask	Gender and society 1	
2:00-2:40	4	Making a water rocket	Communication	Optional courses	Language and expression	Treasure-hunt	
2:50-3:30	5	Discovery your community	Outdoor sketch		The world of voice	Class meeting	
3:40-4:20	6						
<i>Long-distance household visit during weekend</i>							
<i>Week Four</i>		<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	
8:00-8:10		Morning reading(English pronunciation, news broadcast, story share)					
8:10-8:50	1	Class meeting	Funny math	Funny English	Life Auction	Art festival	
9:00-9:40	2	Learn to reject	Bird's moving				
9:40-10:00		Class-break exercise					
10:00-10:40	3	Ads design	Geography	Cartoon drawing	Gender and society 3		
2:00-2:40	4	Marketing	Gender and society 2	Learn to reject	Art festival drill		
2:50-3:30	5	Marketing practice	Water purifier	Sales			
3:40-4:20	6			Class meeting		Commencement	

Notes:

- The detailed activities vary among Lighthouse schools, but the design follows the Lighthouse standard operation procedure.
- Local Product is a series of inquiry learning promoting the students care of local development.
- Optional courses include Taekwondo, dance, drawing, and singing for this sample. They vary across Lighthouse schools depending on volunteers' skill sets.

Table A3. Variable Construction

Category	Variable	Description	Used for Propensity Score Calculation
PCED and Treatment	pced	1 to 5 for Dropout/Work/VHS/AHS/Undecided	
	treated	Participated in either the latest or earlier Lighthouse program(s); 1/0=Yes/No	
Gender, Age and Ethnicity	participation	Participated in the latest Lighthouse; 1/0=Yes/No	
	female	Female student; 1/0=Yes/No	
	f_income	Female from a relatively high income household (log of income belongs to upper half); 1/0=Yes/No	
	f_performance	Female with relatively high performance (test score/ranking belong to upper half in school); 1/0=Yes/No	√
	f_cost	Female from a household that perceives relatively high cost of further education; 1 to 6 from low to high	
	age	Older than the mode of age within the grade; 1/0=Yes/No	
	minority	Minority; 1/0=Yes/No	
Parental Background	single_p	With single parent; 1/0=Yes/No	
	migrant_p	With migrant parent; 1/0=Yes/No	
	no_p	Both parents dead or at home for less than 1 month in the past year; 1/0=Yes/No	
	medu	Mother's education level; 1 to 6 for no schooling to some upper secondary education or above	
	fedu	Father's education level; 1 to 6 for no schooling to some upper secondary education or above	√
	peasant	Parents being peasant; 1/0=Yes/No	
	politicalc	Political capital; 1 to 3 for either parent is other/Communist League member/Communist Party member	
Number of	parent_leader	Father or mother are cadres; 1/0=Yes/No	
	parentbadhealth	Father or mother's health does not allow for normal life or work; 1/0=Yes/No	
	sibship	Number of siblings (including the student); 1 to 6 in which 6 means 6 or more siblings	√

Siblings and Birth Order	witheldersister	Has an elder sister; 1/0=Yes/No	√
	eldercohort	Being the older siblings; 1/0=Yes/No	
Peer	mignetwork	Perceive prevailing trend of going out as young migrant worker; 1/0=Yes/No	√
	peerpedu	Average parental education level in class; 1 to 3 for primary unfinished/primary/lower secondary unfinished	
Teacher	tch_origin	Homeroom teacher's origin; 1 to 4 for local town/other town in county/other place in province/other province	√
	tch_edu	Homeroom teacher's level of education; 1/0 for college/non-college	
	tch_admin	Homeroom teacher holds other administrative position in the school; 1/0=Yes/No	
	tch_exp	Homeroom teacher's experience as fulltime teacher; 1 to 4 for 2 years or less/3 or 4 years/5~10 years/over 10 years	
	tch_mthgain	Homeroom teacher's monthly income; divided into 6 quantiles	
	tch_paydelayed	Homeroom teacher experienced pay delayed in the past 6 month; 1/0=Yes/No	
	subtch_origin	Key subject (Chinese/math/English) teacher origin; take means and divide into 4 quantiles	√
	subtch_edu	Key subject (Chinese/math/English) teacher level of education; take means and divide into 4 quantiles	
	subtch_exp	Sum of key subject teacher's experience as fulltime teacher; take means and divide into 4 quantiles	
School	classsize	Classsize; divided into 4 quantiles	
	distance	Traveling time to school; divided into 6 quantiles	√
	survival	School has relatively high retention rate (>66%)	√
	school dummies	Dummy variables identifying which school the student was attending (there are eight schools)	√
Household Economic Status and Credit Constraints	wealth	Wealth status; 1 to 4 based on the availability of cement house, computer/internet/car, and motor cycle	
	housesize	Household size; divided into 4 quantiles	
	income	Log of household income; divided into 6 quantiles	
	credit_financiali	Log of available credit from bank or credit cooperative; divided into 6 quantiles	

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Subjective Factors	credit_relative	Log of available credit from relative; divided into 6 quantiles	
	stu_eduaspiration	Expected highest level of education, 1 to 5 for lower secondary/vocational high/academic high/college/graduate school	
	expect_norm	Expect agriculture or manufacturing as future career; 1/0=Yes/No	
	expect_advanced	Expect science, technology, or government as future career; 1/0=Yes/No	
	percep_schquality	Perception of school quality; take mean of the ratings to related items and divide into 6 quantiles	
	percep_schaffiliation	Emotional attachment to school; take mean of the ratings to related items and divide into 6 quantiles	
	percep_schvalue	Perceived value of schooling; take mean of the ratings to related items and divide into 4 quantiles	√
	percep_scheffort	Willingness to study; take mean of the ratings to related items and divide into 4 quantiles	
	confidence	Level of confidence; take mean of the ratings to related items and divide into 6 quantiles	
	courage	Level of courage; take mean of the ratings to related items and divide into 6 quantiles	
	curiosity	Level of curiosity; take mean of the ratings to related items and divide into 6 quantiles	
	ambition	Level of ambition; take mean of the ratings to related items and divide into 6 quantiles	
	familyonstudy	Level the family cares about their study and PCED, perceived by the student; take mean of the ratings to related items and divide into 6 quantiles (end up only category 1 to 5 available)	
	familyonemo	Level the family cares about their emotional status and respects their opinion, perceived by the student; take mean of the ratings to related items and divide into 6 quantiles	
tchr_contvsstop	Homeroom teacher's preference of continuing education over stopping education; take ratio of the ratings and divide into 4 quantiles		
tchr_genvsvoc	Homeroom teacher's preference for academic high school over vocational high school; take ratio of the ratings and divide into 4 quantiles		
Health	sick	Suffers disease(s); 1/0=Yes/No	√
	sick_class	Suffers health issues that directly affect study, namely feeling hungry/dizzy during class and having eyesight problem; 1/0=Yes/No	√

Perceived Cost/ Reward of the PCED	cost_vocvsjunior	Cost of VHS relative to cost for middle school, perceived by the household; take ratio of the amounts and divide into 6 quantiles	
	cost_genvsvoc	Cost of AHS relative to cost for VHS, perceived by the household; take ratio of the amounts and divide into 6 quantiles	
	cost_colvsgen	Cost of college relative to cost for AHS, perceived by the household; take ratio of the amounts and divide into 6 quantiles	√
	earn_workvsdrop	Expected relative earnings in 35 if work-after-graduation instead of dropout, perceived by both the household and the student; take ratio of the amounts and divide into 6 quantiles	√
	earn_vocvswork	Expected relative earnings in 35 if continue to VHS instead of work, perceived by both the household and the student; take ratio of the amounts and divide into 6 quantiles	√
	earn_genvsvoc	Expected relative earnings in 35 if continue to AHS instead of VHS, perceived by both the household and the student; take ratio of the amounts and divide into 6 quantiles	√
	earn_colvsgen	Expected relative earnings in 35 if continue to college instead of AHS, perceived by both the household and the student; take ratio of the amounts and divide into 6 quantiles	√
Academic Performance and Possible PCED Determinants	knowvoc	Student and their family's knowledge of vocational education policies; 1 to 4 for No to Very Much	
	performance	Academic performance; take mean of both ranking and score and then divide into 4 quantiles within school	√
	business	Has family business to inherit; 1/0=Yes/No	
	interpersonal	Situation of interpersonal relationships in school; take mean of the ratings to related items and divide into 6 quantiles	√
	urbanlife	Used to stay in nearby cities for over 1 month; 1/0=Yes/No	√
	outreach_voc	Perceived frequent outreach from vocational schools; 1/0=Yes/No	
	outreach_fac	Perceived frequent outreach from factories; 1/0=Yes/No	
local_negative	Holds very negative view of local development; 1/0=Yes/No		

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	local_entertain	Perceived prevalence of entertainment industries (KTV, gambling or illegal lottery, internet bar) in the neighborhood; 1/0=Yes/No	
	gambling	Has been involved with gambling or illegal lottery; 1/0=Yes/No	
	schatmos	School has relatively good study atmosphere (level of violence, cheating, class discipline); 1/0=Yes(> mean value)/No	
	chore	Time spent on housechore; divided into 4 quantiles	√
	love	Was or is in love with someone; 1/0=Yes/No. Considering the sensitivity of this topic for teenagers, this question was asked with 6 options from strongly disagree to strongly agree, so student can answer “basically agree” if they feel shy about confirming the relationship	√
	grade dummies	Dummy variables identifying which grade the student was attending (there are three grades)	√
Additional Variables for Treatment Outcomes or Determinants	extraversion	Level of extraversion; take mean of the ratings to related items and divide into 6 quantiles	
	affiliationneed	Level of need of affiliation; take mean of the ratings to related items and divide into 6 quantiles	
	atti_chore_farm	Attitude towards housechore/farm works; 1 to 6 for hate to love	√
	other_act	Level of other activities (housechore/farm works/city visit or job), according to the household; take mean of the ratings to related items and divide into 6 quantiles	
	peertreated	Popularity of Lighthouse participation among classmates (Lighthouse participants as % to the class); divided into 4 quantiles	
	attoncamp	How supportive the household is of participating in summer camp or how much they respect the student’s own preference; take mean of the ratings and divide into 6 quantiles	√

Notes: Detailed questionnaires and data for the graphs are available upon request. The last column informs a final list of variables that are used to estimate the propensity scores after education aspiration was confirmed as the outcome of interest. Following the rule set by Brookhart et al., 2006, this specification is generated to include variables correlated to educational aspiration ($p < 0.05$) and not totally unrelated to participation ($p < 0.6$), plus school and grade dummies.