Gender differences on sexual behaviour and school inputs: Evidence from Bogota

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Abstract

This thesis explores the correlation between school factors and the differentiated results on sexual behaviour between boys and girls in Bogota. A school stratified propensity score matching was performed to match each boy of the sample with the most similar girls in individual, household and school characteristics. A regression analysis was performed to estimate the correlation between the five school factors evaluated with four main outcomes: have had sexual intercourse, condom use in the last sexual intercourse, incidence of teenage childbearing and age at first intercourse. Boys - in relation to girls - begin earlier their sexual life, more of them reported have used condom in their last sexual intercourse and have a lower incidence of teenage childbearing. These differences are correlated with have reported the school as main source of knowledge about reproductive health and contraceptive methods, a larger proportion of teachers with a graduate or postgraduate degree, a larger proportion of teachers with a related pedagogy degree and to the average age of teachers in the school. The results suggest that the content of the message about sex that is delivered to girls at school is not complete or accurate and that the competences of the school teachers in charge of this task should be improved to reach equally boys and girls.

1   Introduction

Gender differences have been extensively studied over multiple and different outcomes and recent studies show that many of the gaps that existed in the 20th century have closed, especially in education. The participation of girls and women in all education levels have been growing such that gaps in primary enrollment have closed and for secondary and tertiary enrollment the gap is in advantage to girls (World Bank, 2011). A number of studies have found evidence suggesting that being in school does reduce sexual risk-taking behaviour and this pattern appears robust across various contexts (Hallett et al., 2007; de Walque, 2007; Filmer, 2002; Zellner, 2003). In a multitude of developing countries around the world, as the percentage of girls completing elementary school has increased over time the teen birth rates have decreased (Miller, 2010). For Africa, Gregson et al. (2001); Michelo et al. (2006) and World Food Programme (2006) show that increased education is associated with a lower risk of HIV/AIDS. For Colombia, Profamilia (2007) finds that an additional year of education reduces in 2% the probability of having a child before 20 years old. The same pattern has been documented on the developed world. In particular, Lammers et al. (2000) and Ohannesian and Crockett (1993)

have found that more highly-educated american women are less likely to engage in riskier sex-related behaviours such as unprotected sex.

Nonetheless, the positive correlation between education and safer sexual behaviour seems not affect boys and girls equally. This idea is supported by some studies that have shown that there is a gender gap in sexual behaviour and in most cases is in advantage to boys which means that, compared to girls, they have more secure sexual intercourses. For US, Cawley and Ruhm (2012) and Biswas and Vaughn (2011) found that girls reported higher likelihood of diagnosis with sexually transmitted diseases than boys; Christiansson (2006) findings suggest that males use condoms more often than females. With samples of unmarried adolescents in three Asian cities, Zuo et al. (2012) show that half of sexually active youth girls rarely or never used condoms and boys were more permissive about premarital sex. For Colombia, Atencio et al. (2013) find evidence indicating that schooled boys and girls differ in sexual behaviour outcomes, being girls who exhibit a riskier sexual behaviour[1].

In spite of the demonstrated correlation between education and sexual behaviour which differ for boys and girls, research on the factors behind both, the relationship between education and safer sex-related behaviours and on gender differences with respect to risky sexual behaviour is limited. Given this, the objective of this thesis is to identify school factors, related to sex education and teachers' characteristics, that could be correlated to sexual behaviour differences between boys and girls aged 14 to 19 years old. In particular, five school factors will be tested: school reported as main source of knowledge about reproductive health and contraceptive methods, male teachers per female teacher, average age of teachers, proportion of teachers with a graduate or postgraduate degree and proportion of teachers with a related pedagogy degree.

Many medical studies address the health consequences of risky sexual behaviour in adolescents and some of them explore the family structure and the socio-economic level as determinants to this problem (Brent, 2002; Jordahl and Lohman, 2009; Han and Waldfogel, 2007). However, to the best of my knowledge no study has explored the gender differences in sexual behaviour and the school factors correlated with these differences.

The concern for adolescents' sexual behaviour is not only important in relation to the multiple individual effects but also related to broader implications at the national level. An empirical work conducted by the World Bank on Latin American and Caribbean countries estimates the social cost of risky youth behaviour - which includes adolescent pregnancy - equal to 2 percent of GDP annually (Cunningham et al. 2008). Maynard (1995), Moore (1978) and Eloundou-Enyegue and Stokes (2004) show that teenage childbearing may impose costs on the society since these parents spend more time on welfare programs. Flórez et al. (2004) and Barrera and Jaramillo (2004) show that Colombia presents a negative relation between teenage childbearing and human capital of mothers. This result is also supported by Miller (2010) who shows that access to modern family planning methods at young ages implied increasing investments in human capital and substantial socio-economic gains.

According to Chaaban and Cunningham (2011) the problem of risky youth sexual behaviour is more serious if we consider that all the studies underestimate the cost of teenage pregnancy and childbearing by not taking into account costs or consequences beyond the mothers lost productivity in the labor market, which could have implications for the children's future productivity[2], health expenditures on the mother and the social costs of single adolescent mothers. Therefore, the social inclusion of adolescent girls that keeps them on a path to achieving their maximum human potential

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[1]The data used to conduct the studies mentioned in this paragraph corresponds to countries that do not present a gender gap in school attendance according to the World Development Report 2011.

[2]As indicated by studies that show that children of adolescent mothers have lower school attainment rates.

will result in significant economic growth according to this author.

United Nations Population Fund (2012) shows that Colombia presents high levels of teenage pregnancy rates compared to other Latin American countries. According to the 2010 DHS survey[3], 20% of the Colombian girls aged 15 to 19 years old have been pregnant, while in other Latin American countries as Peru and Bolivia this proportion amounts to 14% and 18%, respectively. Chile and Brazil present the lowest rate of teenage pregnancy of the region with an average rate of 6% (UNPF, 2012). In developed countries this proportion is even lower amounting to 3% on average. The Colombian situation is more worrisome since 93% of women between 14 and 23 years old have received sex education at school while only half of them report to use condom at the first intercourse.

Many policies have been implemented to promote desirable sexual behaviour. These are mainly focused on reducing teenage childbearing and increasing the use of contraceptive methods. It is widely accepted that sex education is crucial for these tasks. Nevertheless, Atencio et al. (2013) find some evidence that suggests that girls and boys differ in sexual education achievement, girls know less about sex topics and present riskier sexual behaviour. The efficacy of interventions designed to reduce unintended pregnancy and sexually transmitted diseases among adolescents may be increased by identifying what is correlated with these gender differences.

To assess the correlation between school factors and girls' and boys' sexual behaviour outcomes a school stratified matching is performed in order to guarantee the comparability between boys and girls in the sample. Then, a weighted regression analysis is done showing that, in effect, the school factors evaluated are correlated with boys' and girls' sex behaviour and that these correlations differ between these two groups in disadvantage to girls in most of the cases, i.e., none or negative correlations with condom use and with teenage childbearing, and positive(negative) correlations with age at first sexual intercourse (have had sexual intercourse).

The next section presents more literature related with the studied topic that explains the choice of the outcomes and the school factors evaluated in this thesis. Section 3 explains the empirical strategy used to achieve the objective. Section 4 presents the sources of the data employed and some descriptive statistics of the sample followed by the results and the conclusion.

2   School factors and sex behaviour

Education is related with safer sexual behaviour. The Colombian net secondary enrollment rate for girls was 77.2% in 2010, while for boys the same indicator was 71.7%[4] meaning that schools are an excellent place to promote practices to improve sexual and reproductive health since most of the adolescent population is enrolled. Colombia has achieved gender equality in education and still a gender gap in sexual behaviour between girls and boys is observed meaning that the positive correlation between education an safer sexual behaviour, documented by the literature mentioned in the previous section, is not the same for these two groups. It is interesting to know which school factors are correlated with the differences in sex-related outcomes between boys and girls to improve the positive correlation between education and safer sexual behaviour in both groups, since failing to reach one of these favors the prevalence of the consequences associated with risky sexual behaviour.

When talking about the relation between sex-related outcomes and school factors, the first

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[3]DHS stands for *Demographic and Health Survey* (National Survey of Demography and Health). Survey administered by the Colombian NGO Profamilia.

[4]World Development Indicators database.

factor that comes to mind is *sex education at school* since this is the most direct form to influence the sexual behaviour in students and recent studies have shown that comprehensive sex education have positive implications on the sexual behaviour of adolescents, including both delaying initiation of sex and increasing condom and contraceptive use (Santelli et al., 2006; Kirby, 2008; Kohler et al., 2008; Isley et al., 2010; Duberstein and Maddow-Zimet, 2012). Therefore, this factor is evaluated in this thesis and is captured by a dummy variable which takes the value 1 if the student reported school as the main source of knowledge about sexual health and contraceptive methods and 0 otherwise. Given the Colombian context, my hypothesis behind this variable is that sex education at schools is being sexist, influenced by the old perception of the roles that each gender must assume regarding sexuality and focused on biological aspects, leading to a gender gap in sexual behaviour in advantage to boys. This depends largely on the characteristics of people responsible for providing sex education, teachers. Therefore, the other school factors evaluated correspond to teachers' features.

Student-teacher relationships may buffer adolescents from engaging in risky behaviour. It could be that students who feel connected to significant others have a sense of belonging that protects them from reaching out to other sources of comfort that may involve negative behaviour (Moritz et al., 2010). In this sense, two factors that are related with the quality of the teacher-student relationship are assessed: *male teachers per female teachers* ratio and *average age of teachers* in the school.

On one hand one could think that the younger the teacher the better relationship with the students, leading to a smaller gender gap in sexual behaviour. However, an aged teacher could recognize better the importance of teaching and talking about sex with the students and therefore he/she takes this task more seriously. I evaluated which of these effects predominates.

On the other hand, the gender gap in sexual behaviours could be correlated with a large proportion of male teachers per female teacher through a low quality female student-male teacher relationship that increases the differences between boys and girls in sex-related outcomes.

Another important characteristic of the teachers in the school that could be related with sex-related outcomes in their students is their level and kind of human capital. A greater human capital can lead to recognize the importance of a comprehensive education and hence encourage students to continue on the path to achieve their maximum human potential and stay away of risky behaviours, or simply more educated teachers teach better sex education. This factor is evaluated with the *proportion of teachers with a graduate or postgraduate degree* at each school.

Regarding the "kind" of human capital accumulated by the teachers, it is important to recognize that teaching about sex and contraceptive methods to influence sexual behaviours not only requires knowledge about the topic but awareness of the wider contexts within these issues occur. It also requires that teachers challenge traditional teaching and learning practices, which impede both critical thinking and change (Smith et.al, 2007). Therefore, the *proportion of teachers with a related pedagogy degree* in the school is evaluated as a school factor since a person that has been educated to teach is presumably more prepared to face the challenges that this implies: affect the lesson material, class discussions, teaching and learning methods in new and different ways and the ability to design methods that facilitate learning for both boys and girls through the recognition of the context in which they are. Knowledge of different learning styles may help to avoid that the message not be received by some group (Dunn and Griggs, 1995; Lovelace and Kiely, 2005).

The main sex behaviour outcomes on which this study relies are some of the traditional indicators of the reproductive and sexual health status and sexual practices that could favor this: have had sexual intercourse, condom use, teenage childbearing and age at first sexual intercourse.

An early onset of sexual activity increases the risk of negative adolescent health outcomes and theoretically, abstinence is the only way of being fully protected against Sexually Transmitted Diseases (STD). For this reason, these two outcomes are widely used by the literature to measure the effectiveness of sex education and they are indicators of sexual and reproductive health (Santelli et al., 2006; Kohler et al., 2008; Duberstein and Maddow-Zimet, 2012; Zuo, 2012; Vargas et al., 2013). Therefore, *age at first sexual intercourse* and *have had sexual intercourse* are included as outcomes of this study and they are captured by a categorical variable that can take values from 11 to 17 indicating the interviewed age at first sexual intercourse, and by a dichotomous variable that takes the value 1 if the interviewed has had sexual intercourse and 0 otherwise, respectively.

The use of modern contraceptive methods is a sexual practice that helps to avoid non-desirable consequences on the reproductive and sexual health status of an individual. Among the contraceptive methods, the condom is the one that receives the most attention as an indicator of risky sexual behaviour in the existing literature since this method allows the prevention of two situations: pregnancy and acquiring a STD, while the other contraceptive methods just prevent the first. Therefore, the correlation for boys and girls between the aforementioned school factors and *condom use in the last intercourse* was estimated in this study. This outcome is a binary variable that takes the value 1 if the interviewed student[5] indicated that used a condom in the last intercourse and 0 otherwise. No correlation between a given school factor and *condom use in the last intercourse* for some group (girls or boys) could be found and in that case one would be interested in knowing if there is a substitution effect between condom and other more sophisticated contraceptive methods given that the factors evaluated are related to education. To capture this, two secondary outcomes are included: *modern methods* and *pill*, both variables are dichotomous, the first one takes the value 1 if the interviewed student indicated that he/she used at least one of the following contraceptive methods in the last intercourse: contraceptive pill, injectable method, implant or intrauterine device; and the second one, takes the value 1 if the interviewed student indicated that he/she used a contraceptive pill as contraceptive method in the last intercourse and 0 otherwise.

Teenage childbearing is a main indicator of reproductive and sexual health and it is related with the fifth Millennium Development Goal[6]. Teenage childbearing is one of the most studied variables in the literature related to consequences of a risky sexual behaviour since, as was mentioned, has important implications at the individual and national level (Moore, 1978; Maynard, 1995; Flórez et al.,2004; Barrera and Jaramillo, 2004; Cunningham et al. 2008; Fletcher and Wolfe, 2009; UNPF, 2012). For Colombia, this indicator is considered very important since teenage pregnancy has always been perceived as a negative phenomenon that should be reduced or eliminated and with this objective was born the mandatory sex education in schools, objective that was maintained for a long time and it was not satisfactorily accomplished (Góngora, 2013). Given the importance of *teenage childbearing*, it is included as a main outcome that takes the value 1 if the interviewed student or his couple is pregnant or has a child at the moment of the survey and 0 otherwise.

The literature about sexual behaviour is highly concentrated on the outcomes described above slightly leaving aside the perception that the knowledge about reproductive health and contraceptive methods could be correlated with safer sexual behaviour. Using Colombian data, Vargas et al. (2013) find that the probability of have reported sexual practices directed to improve reproductive and sexual health is greater in women with more knowledge about reproductive health and contraceptive methods.

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[5]In the questionnaire the information about the use of contraceptive methods is collected through the following question: The last time you had sexual intercourse, what method you or your couple used to prevent pregnancy?

[6]The fifth MDG is improve maternal health

Given this and the fact that school factors are being evaluated, *knowledge* is included as a secondary outcome captured by a binary variable that takes the value 1 if the student answer correctly all the questions related to sexual and reproductive health and contraceptive methods in the questionnaire.

3   Empirical strategy

Both, a non-parametric and a parametric approach were used in the analysis.

3.1   Ensuring the comparability of the sample

The girls and boys compared must be as similar as possible in key characteristics different from gender that could affect the outcomes. This allows to estimate the gender gap in sex-related outcomes that are not explained by differences in individual, household or school variables.

To find the girls that are comparable to boys in the sample, a school stratified mahalanobis propensity score matching was used, meaning that 252 matchings were estimated, one for each school. The procedure has two steps. First, each boy ($B_i = 1$) in a given school is matched to the girls ($G_i = 1$) in the same school with the closest propensity score. The unmatched girls and boys are discarded. Then, the total average difference across gender (TAD) is calculated as the weighted sum of the difference in means of the outcome between boys and girls within schools. As weights, the proportion of boys in each school was used (see Dehejia and Wahba 1999, 2002). Formally,

$$TAD = \sum_{s=1}^{252} \frac{b_s}{b} \left\{ [E(Y_{b,s}) - E(Y_{g,s})] \right\}$$

$$E(Y_{b,s}) - E(Y_{g,s}) = \frac{1}{\#(b_s \in CS_s)} \sum_{b,g \in CS_s} \{Y_{b,s} - Y_{g,s}\}$$

$$Y_{g,s} = \sum_{g \in C^0(X_b)} W_{bg} Y_g$$

where b_s is the number of boys in the school s and b is the number of boys in the sample[7]. $Y_{b,s}$ and $Y_{g,s}$ is the sex behaviour outcome (see Table 1) of the boy b or the girl g, respectively, in the school s. CS_s is the common support of the school s - the girls and boys matched -. $C^0(X_b)$ is the set of girls that were matched to the boy b. W_{bg} is the based mahalanobis distance weight on the girl g in forming a comparison with the boy b.

Using a school stratified matching has important advantages. Variation between and within schools is taken into account, possible unobservable school and family variables that could affect the outcomes are considered - as the importance given to the education of children at home and the teachers' endeavor in their labor - and according to Dehejia and Wahba (1999) the result obtained is very similar to that obtained from a randomized sample.

In the first part of the matching described above, individual and household characteristics such as age, grade, time of exposure (experience from now on), live with the father, live with the mother, number of children of the mother, age of the mother when she had her first child and socio-economic

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[7]When assessing heterogeneous effects between public and private schools, this parameter corresponds to the total number of boys in the sub-sample evaluated, i.e., the total number of boys in public schools or the total number of boys in private schools

level[8] were used as covariates. The inclusion of these covariates is supported by the literature on the risk and protective factors associated with risky and sex related outcomes in adolescents and young adults (Miller, 2002; Jordahl and Lohman, 2009; Flórez and Soto, 2013).

It is important to stand out that the matching method was used only with the purpose of guaranteeing the comparability of the sample, i.e, find the girls that are as similar as possible to the boys with respect to household, individual and school characteristics. The matching approach has already been used to study gender gaps in other outcomes as wages (Ñopo et al., 2008, 2009, 2010). However, the methodology proposed for this thesis differs from those used by Ñopo et al. (2009, 2010) - one to one matching - since this thesis seeks to study the average sexual behaviour difference across gender and do not intends to recover all the distribution of it. The objective of this paper is to identify what school factors could be correlated with differentiated sex behaviour between boys and girls.

3.2   Exploring the school factors

To identify the correlation between the school factors evaluated and the selected outcomes for boys and girls, a weighted regression analysis was conducted with the resulting sample from the former step. Again, the weight for each observation is the product between the school weight provided by the matching and the proportion of boys in the school. By doing this, differences between schools are taken into account and it allows for intra school variation as well. The equation to estimate is:

$$Y_{is} = G_{is} + B_{is} + (\delta X_{is} + \theta_0 F_s) \times G_{is} + (\beta X_{is} + \theta_1 F_s) \times B_{is} + \mu_{is}$$

where Y_{is} is a sex behaviour outcome of the individual i in the school s. As mentioned, four main outcomes were evaluated, - have had sexual intercourse, the use of condom in the last intercourse, teenage childbearing and age at first intercourse - as well as three secondary outcomes. B_{is} is a dummy that takes the value one if the unit i is a boy and zero if is a girl; G_{is} takes the value one if the unit i is a girl and zero if is a boy, as mentioned. F_s is the factor of school s evaluated (see Table 1). X_{is} is the vector of covariates. The parameters of interest are θ_0 and θ_1 which indicates the correlation between the school factor evaluated and the outcomes for girls and boys, respectively.

Heterogeneous effects between public and private schools are considered since private schools have certain manoeuvre margin which includes sex education.

3.3   Challenges

The empirical strategy described in this section has two main challenges. First, for the analysis of some of the outcomes the sample is naturally restricted to those that have already had their first sexual intercourse, and taking this decision could be related with unobservable variables in which the compared individuals could differ generating a selection bias. Second, school reported as the main source of knowledge about reproductive health and contraceptive methods could be an endogenous variable since schools with riskier adolescents could decide to provide better sex education, this generates biased estimators of the correlation between this factor and the outcomes studied.

The first challenge arises if we assume that the cost of initiate sexual life differs between boys and girls being higher for the girls since they face the risk of getting pregnant. Therefore, one could think that the girls that have had their first sexual intercourse are less risk averse than the boys in the

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[8]Measured by an index that includes: house flooring, people in the household, number of rooms in the house, domestic waste-water treatment, parent's education attainment and household's toilet exclusivity.

same situation and this may be correlated with girls' riskier sexual behaviour generating a difference in the studied outcomes which in principle the econometric exercise is not controlling for.

Related to this aspect, it is worth to mention that Bogota has the policy named *"Por la calidad de la vida de niños, niñas y adolescentes"*. This program seeks to improve well-being of boys, girls and adolescents, as its name indicates, and teenage pregnancy is seen as one of the conditions that reduces the well-being of this population group. When an adolescent is pregnant this program provides her medical care, general information about pregnancy and baby care, food subsidy once the baby is born, and the school must monitor her health condition and family environment and send this information to the District Education Secretary (SED).

Bogota also has a District Decree (482 of 2006) establishing that technical education must be ensured to vulnerable adolescents and young adults, group in which are included adolescent mothers. Besides, at the national level to exclude or to discriminate a pregnant adolescent from the educational system is against four fundamental rights, this has been record in several sentences related to this topic[9].

This institutional framework shows us that the pregnant adolescents and adolescent mothers are protected, especially in Bogota. This protection reduces the cost of getting pregnant allowing that more risk averse girls initiate their sexual lives reducing or even vanishing the possible gap in risk aversion between boys and girls that already had have a sexual intercourse in the sample used for this thesis. Moreover, if there were a gender gap in risk aversion, it should be in advantage to girls since several studies have shown that female individuals are less risk-taking that their male counterpart.

Byrnes et al. (1999) made a meta-analysis of 150 studies showing that the average effects for 14 out of 16 types of risk-taking were significantly larger for male participants than for female participants and that in certain topics, as intellectual risk-taking and physical skills, these differences are higher. The authors also show that the gender gap in risk aversion change significantly when comparing different age groups. The experimental economic literature has also robustly found that men are more risk-taking than women in the vast majority of environments, some of the studies in this field find that the gender gap in risk-taking is reduced by experience and profession (Charness, 2012; Croson, 2008). Cárdenas et al. (2012) find the same result for children aged 9-12 in Colombia and Sweden, boys in both countries are more risk taking than girls, with a smaller gender gap in Sweden. These findings on gender gap in risk behaviour suggest that when measuring gender gaps in outcomes that are related with risk-taking without controlling for it, this gap is going to be biased, boys are going to exhibit riskier behaviour than girls. For this study, this means that the differences observed in the data could be a lower bound of the real situation, boys are more risk-taking according to the literature and still they present a safer sexual behaviour.

Empirically, this issue is tackled in two different forms: the first one is controlling by characteristics that the literature has recognized to be highly correlated with an individual risk aversion. The second one is performing a Heckman model which corrects selection problems, model that will be intuitively explained in Section 5.1. Let me mention some of the literature referred above. Using cross-section data Cohn et al. (1975) find a strong pattern of decreasing relative risk aversion, result that have been extensively reinforced by empirical and theoretical studies, and for non-wealth variables such as age, marital status, and family size, they show that inclusion or exclusion of these variables does not alter the pattern of decreasing relative risk aversion. Friend and Blume (1975) show that when human capital is incorporated into net worth, moderate increasing risk aversion is found.

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[9]Sentence T-420 of 1992, Sentence T-393 of 1997, Sentence T-656 of 1998, among others jurisprudential resources.

Roger and Fernandez (1983) also found evidence supporting decreasing relative risk aversion and they show that risk aversion increases uniformly with age. Hence, for this study it is crucial to control by experience, socio-economic level, education and age.

The second challenge is tackled by trying to understand the direction of the possible bias in the estimators of the correlation between have had reported the school as main source of knowledge and the outcomes studied. This is done by comparing the adolescents that reported the school as the main source of knowledge about reproductive health and contraceptive methods and the ones that did not in the sample used for the econometric exercises described in section 3.2. This comparison is done conditioning and not conditioning on have had sexual intercourse and controlling by the school at which the student attend. In this point, it is important to mention that sex education in schools is mandatory since 1994 and there is a established guideline of what should be taught and the methodologies to do it. This was done through the Resolution No. 3353 of 1993 of the Ministry of Education. The Resolution became effective in 1994, year in which its guidelines are included in the General Law of Education. It is important to know this because through the inclusion of sex education in a law, it became a State policy that goes beyond the presidential periods and it appeared thanks to a judicial act and not a legislative act.

4 Data and descriptive statistics

To construct the database to carry out the study, three different sources of information were used: the ECSAE[10], the C600 survey, and the R166 record. The institution and headquarter code assigned to each school by the National Administrative Department of Statistics (DANE) was used to merge the data.

The C600 is an annual statistical census addressed to all schools in Colombia that offer all the school levels (pre-school, elementary, middle and high school). This database is administered by the DANE and it contains general information about the school, its teachers and its students.

The R166 is a record administered by the Ministry of Education and also contains general information about the schools and detailed information about its teachers.

The ECSAE survey was designed and implemented by a team from the Universidad del Rosario with funds from PEP-BID-GRADE on the Teenage Childbearing Initiative in Latin America and the Caribbean and contains information about 38904 adolescents between 14th to 19th years old enrolled in 277 public and private schools in Bogota at the 9th, 10th and 11th grades[11]. The survey is representative at the locality[12] and city level and it includes information about socio-economic conditions, household structure and environment, sexual behaviour, pregnancy, childbearing and knowledge/use of contraceptive methods of the interviewed students. The ECSAE survey is crucial for this study because it allows to compare sexual behaviour across gender, feature that to the best of my knowledge no other survey of a developing country contains.

Given the objective of this thesis, its empirical strategy and the sample design of the ECSAE survey[13], the information used corresponds to girls and boys that are enrolled in mixed schools. Hence,

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[10]ECSAE stands for *Encuesta sobre el Comportamiento Sexual de Adolescentes Escolarizados en Bogotá* (Survey About Sexual Behavior of Schooled Adolescents in Bogotá).

[11]In Colombia these are the final grades for completing school

[12]Bogota is divided geographically and administratively in 20 localities. Each locality has several neighbourhoods and its own government which is subject to the main city government.

[13]The sample only has female and mixed schools.

the database that was used for the econometric analysis has information about 32525 schooled adolescents enrolled in 252 public and private schools in Bogota.

Table 1 shows the source of the outcomes and school factors evaluated.

Table 1: Variables and sources

	Variable	Source
Control	Household and individual characteristics	
Outcome	Have had sexual intercourse Condom use in the last intercourse Teenage childbearing Age of first sexual intercourse Knowledge Modern methods Pill	ECSAE
School factor	Sex education at school	
	Male teachers per Female teacher Proportion of teachers with a graduate or postgraduate degree Proportion of teachers with a related pedagogy degree	C600
	Average age of teachers	R166

4.1 Descriptive statistics

Table 2 reports the gender distribution in the sample, before and after matching, by age. Before matching the 52.47% of the sample corresponds to girls; and approximately, one third of the sample is 15 years old. In the matched sample, 59.02% of the observations are girls and 34.5% of the adolescents is 15 years old. Given the empirical strategy employed it is important to mention that in average, 47.93% of the adolescents in each school are boys.

Table 2: Gender distribution in the sample

Age		Full Sample			Matched Sample		
		Girls	Boys	Total	Girls	Boys	Total
14	N	3934	3215	7149	960	1346	2306
	%	55.03	44.97	100	41.63	58.37	100
15	N	5684	4888	10572	1604	2175	3779
	%	53.76	46.24	100	42.45	57.55	100
16	N	4810	4406	9216	1376	1909	3285
	%	52.19	47.81	100	41.89	58.11	100
17	N	1918	2143	4061	431	776	1207
	%	47.23	52.77	100	35.71	64.29	100
18	N	599	662	1261	103	219	322
	%	47.50	52.50	100	31.99	68.01	100
19	N	121	145	266	10	33	43
	%	45.49	54.51	100	23.26	76.74	100
Total	N	17066	15459	32525	4484	6458	10942
	%	47.53	52.47	100	40.98	59.02	100

Table 3 reports the means and standard deviations of the main outcomes, have had sexual intercourse, condom use in the last intercourse, teenage childbearing and age of first intercourse , and

the difference of these between boys and girls in the full sample, which for the last two outcomes mentioned is naturally restricted to those that have initiated their sexual lives. The gender gap in sexual behaviour is evident, compared to girls, a greater proportion of boys reported have had sexual intercourse but also a greater proportion of boys reported have used condom in the last intercourse. Boys begin their sexual life approximately 9 months earlier than girls but these have a greater incidence of teenage childbearing, in fact, this number almost fourfold the same figure for boys. All the differences mentioned are statistically significant.

When looking these differences for public and private schools separately, we can see that the pattern is the same for both, however, in private schools the differences are smaller but still significant.

Regarding teenage childbearing, it is worth mentioning that using data from the DHS 2010, in Bogota, 16,47% of the enrolled girls aged 14-19 that had have sexual intercourse were pregnant at the moment of the interview or already had a child. The difference between this number and the same obtained from the ECSAE 2010 could be the result of differences in the sampling design. For example, the information provided by the ECSAE is collected at schools while the DHS collects the information in households.

Table 3: Descriptive statistics: Outcomes

Outcome	School		Full Sample		
			Girls	Boys	Difference
Have had sexual intercourse	All	Mean	0.315	0.461	0.146***
		Std. Dev	0.465	0.498	
		Obs.	16753	15117	
	Public	Mean	0.329	0.479	0.149***
		Std. Dev	0.470	0.500	
		Obs.	13661	11976	
	Private	Mean	0.253	0.394	0.141***
		Std. Dev	0.435	0.489	
		Obs.	3092	3141	
Age at first sexual intercourse	All	Mean	14.648	13.815	−0.833***
		Std. Dev	1.246	1.476	
		Obs.	5282	6970	
	Public	Mean	14.669	13.808	−0.860***
		Std. Dev	1.242	1.494	
		Obs.	4500	5734	
	Private	Mean	14.527	13.845	−0.682***
		Std. Dev	1.263	1.387	
		Obs.	782	1236	
Condom use	All	Mean	0.478	0.551	0.072***
		Std. Dev	0.500	0.497	
		Obs.	5282	6970	
	Public	Mean	0.467	0.541	0.073***
		Std. Dev	0.499	0.498	
		Obs.	4500	5734	
	Private	Mean	0.542	0.597	0.055**
		Std. Dev	0.499	0.491	
		Obs.	782	1236	
Teenage childbearing	All	Mean	0.096	0.025	−0.071***
		Std. Dev	0.294	0.155	
		Obs.	5282	6970	
	Public	Mean	0.102	0.026	−0.076***
		Std. Dev	0.303	0.160	
		Obs.	4500	5734	
	Private	Mean	0.056	0.017	−0.039***
		Std. Dev	0.231	0.129	
		Obs.	782	1236	

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4: Descriptive statistics: Covariates

Covariate	School		Full Sample			Matched Sample		
			Girls	Boys	Difference	Girls	Boys	Difference
Age	All	Mean	15.410	15.520		15.333	15.443	
		Std. Dev	1.106	1.146	0.111***	0.973	1.076	0.110
		Obs.	17066	15459		4484	6458	
	Public	Mean	15.446	15.570		15.372	15.480	
		Std. Dev	1.118	1.158	0.124***	0.990	1.088	0.108
		Obs.	13927	12247		3581	5110	
	Private	Mean	15.248	15.331		15.185	15.306	
		Std. Dev	1.035	1.077	0.082*	0.891	1.015	0.121
		Obs.	3139	3212		903	1348	
Mother	All	Mean	0.906	0.915		0.938	0.933	
		Std. Dev	0.291	0.280	0.008*	0.241	0.250	−0.005
		Obs.	17066	15459		4484	6458	
	Public	Mean	0.901	0.911		0.935	0.930	
		Std. Dev	0.298	0.285	0.009*	0.247	0.255	−0.005
		Obs.	13927	12247		3581	5110	
	Private	Mean	0.930	0.930		0.951	0.945	
		Std. Dev	0.256	0.256	0.000	0.217	0.227	−0.006
		Obs.	3139	3212		903	1348	
Father	All	Mean	0.606	0.652		0.640	0.636	
		Std. Dev	0.489	0.476	0.046***	0.480	0.481	−0.004
		Obs.	17066	15459		4484	6458	
	Public	Mean	0.592	0.640		0.631	0.626	
		Std. Dev	0.491	0.480	0.048***	0.483	0.484	−0.005
		Obs.	13927	12247		3581	5110	
	Private	Mean	0.667	0.696		0.676	0.672	
		Std. Dev	0.471	0.460	0.028**	0.468	0.470	−0.004
		Obs.	3139	3212		903	1348	
Mother's children	All	Mean	3.200	3.088		2.903	2.969	
		Std. Dev	1.300	1.229	−0.112***	0.950	1.125	0.066
		Obs.	17066	15459		4484	6458	
	Public	Mean	3.273	3.158		2.968	3.027	
		Std. Dev	1.327	1.259	−0.115***	0.969	1.158	0.059
		Obs.	13927	12247		3581	5110	
	Private	Mean	2.878	2.822		2.658	2.751	
		Std. Dev	1.115	1.067	−0.056**	0.827	0.960	0.093
		Obs.	3139	3212		903	1348	
Mother's age when had first child	All	Mean	20.426	20.946		20.668	20.930	
		Std. Dev	4.067	4.398	0.520***	3.600	4.204	0.262
		Obs.	11750	8005		4484	6458	
	Public	Mean	20.260	20.782		20.473	20.759	
		Std. Dev	4.005	4.356	0.522***	3.543	4.168	0.286
		Obs.	9565	6327		3581	5110	
	Private	Mean	21.150	21.561		21.398	21.568	
		Std. Dev	4.253	4.503	0.412*	3.717	4.278	0.170
		Obs.	2185	1678		903	1348	
Socioeconomic Index	All	Mean	22.419	23.011		23.297	23.295	
		Std. Dev	4.147	4.147	0.592***	3.561	3.994	−0.002
		Obs.	16946	15417		4484	6458	
	Public	Mean	21.996	22.527		22.830	22.828	
		Std. Dev	3.982	3.976	0.531***	3.368	3.846	−0.002
		Obs.	13811	12215		3581	5110	
	Private	Mean	24.284	24.856		25.041	25.042	
		Std. Dev	4.341	4.265	0.572***	3.721	4.051	0.001
		Obs.	3135	3202		903	1348	
Grade	All	Mean	10.103	10.066		10.138	10.129	
		Std. Dev	0.780	0.777	−0.036***	0.750	0.767	−0.009
		Obs.	17066	15459		4484	6458	
	Public	Mean	10.107	10.068		10.142	10.125	
		Std. Dev	0.782	0.780	−0.039***	0.758	0.771	−0.017
		Obs.	13927	12247		3581	5110	
	Private	Mean	10.082	10.058		10.123	10.145	
		Std. Dev	0.767	0.765	−0.024	0.719	0.753	0.022
		Obs.	3139	3212		903	1348	
Experience	All	Mean	0.448	0.980		0.466	0.702	
		Std. Dev	0.893	1.471	0.532***	0.864	1.113	0.236
		Obs.	16642	14830		4484	6458	
	Public	Mean	0.472	1.044		0.498	0.747	
		Std. Dev	0.914	1.516	0.572***	0.886	1.148	0.249
		Obs.	13565	11734		3581	5110	
	Private	Mean	0.342	0.737		0.348	0.534	
		Std. Dev	0.787	1.255	0.396***	0.765	0.956	0.186
		Obs.	3077	3096		903	1348	

*** p<0.01, ** p<0.05, * p<0.1

In the annex, table A1 shows descriptive statistics for have had sexual intercourse, condom use and teenage childbearing discriminated by age. It is interesting that at the only age at which the pattern shown by table 3 does not hold is 14 years old, at this age more girls reported have used condom in their last sexual intercourse than boys and this difference is statistically significant. Hence, one may think that experience plays an important role in sexual behaviour through some kind of learning process that seems to be more important to boys. Table A2 shows that this is not the case, looking at the numbers we cannot easily identify a clear pattern between experience and condom use or teenage childbearing. Nonetheless, a graph could allow us to better identify the possible trend between experience and condom use, and figure A3 suggests that given the age, the more experience the less use of condom for boys, in girls this pattern is not as clear as for boys.

Regarding the differences between boys and girls in the covariates used in the matching exercises before and after these (table 4), the result is the expected for this kind of empirical strategy. Before matching boys and girls differ in all the individual and household characteristics shown in table 4 and after matching these differences are not longer statistically significant.

In the full sample, the boys are older and have initiated their sexual life a longer time ago than the girls; the girls come from poorer households in which the father/mother is less present than in the boys' households; boys' mothers were older when they had their first child and had less children than mothers of the girls in the full sample.

5 Results

To evaluate if the girls and boys in the sample are comparable after performing the matching exercises, it is necessary to check the balance property of the propensity score, if this property is fulfilled boys and girls units are observationally identical on average. The comparison of the estimated propensity scores across boys and girls provides a useful diagnostic tool to evaluate how similar are these in the matched sample, and therefore how reliable is the estimation strategy. In this sense, we expect that the density of propensity scores be the same for boys and girls, or very similar for both groups, and this is exactly what is shown in figure A2 and, in some way, in table 4.

Table 5: Naive regressions

	Have had sexual intercourse	Condom use	Teenage childbearing	Age at first sexual intercourse
All	−0.0131***	0.0661***	−0.0756***	−0.0207***
	(0.0051)	(0.0116)	(0.0056)	(0.0044)
Public	−0.0178***	0.0667***	−0.0828***	−0.0210***
	(0.0057)	(0.0128)	(0.0064)	(0.0048)
Private	0.0062	0.0632**	−0.0399***	−0.0210*
	(0.0109)	(0.0278)	(0.0109)	(0.0109)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 shows the gender gap in the sex behaviour outcomes evaluated without matching boys and girls but controlling by the same covariates used on these, i.e., the gender dummy coefficient of *naive regressions*. In relation to girls, less boys have had sexual intercourse, more of them (6.6% more) reported have used a condom in their last sexual relation, they begin their sexual life approximately three months earlier and they have a lower incidence on teenage childbearing. All the differences

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are statistically significant and the pattern holds when looking private and public schools separately, except for the sexual-life-initiation gap.

Table 6 shows the differences in sex behaviour outcomes between boys and girls after the matching exercise described in the empirical strategy section, i.e., the gender dummy coefficient of the weighted regressions. The pattern exhibited by the naive regressions holds and now the gaps are even greater, meaning that the differences in the covariates and school characteristics that are taken into account in the matching exercises are negative correlated with the gaps in sex behaviour outcomes, except for that observed in teenage childbearing.

In general, after controlling by individual, household and school characteristics, in comparison of girls, less boys initiate their sexual life and when they do their intercourses are more secure.

Table 6: After matching

	Have had sexual intercourse	Condom use	Teenage childbearing	Age at first sexual intercourse
All	−0.0159**	0.0777***	−0.0613***	−0.0304***
	(0.0074)	(0.0180)	(0.0081)	(0.0069)
Public	−0.0225***	0.0668***	−0.0662***	−0.0297***
	(0.0083)	(0.0197)	(0.0094)	(0.0075)
Private	0.0090	0.1240***	−0.0397***	−0.0382**
	(0.0160)	(0.0444)	(0.0147)	(0.0173)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7 and 8 report the correlation between each school factor and the outcomes evaluated for boys (θ_1) and girls (θ_0) separately.

For boys, *school as the main source of knowledge about sexual health and contraceptive methods* is positively correlated with condom use and negatively correlated with incidence of teenage childbearing and the probability of have initiated sexual life; while for girls, the same factor is only correlated with the probability of have had sexual intercourse, being this correlation negative and lower than that obtained for boys. Sex education at school is not correlated with age at first sexual intercourse neither for boys nor for girls when looking all the sample.

The message delivered by sex education at schools is only well received (delivered) by (for) boys, while for girls is only effective in reducing the probability of have initiated sexual life and still is less effective than for boys in this aspect. One could think that the results on condom use could be related to a substitution effect between the condom and other contraceptive methods among girls , if this were the case, sex education at school should have a positive correlation with *modern methods* or with *pill*. However, the fifth and seventh column of table 8 do not support this idea, sex education is not correlated with the use of other modern contraceptive methods for girls (nor for boys). Moreover, the fourth column of the same table shows us that sex education is positively correlated with boys' knowledge about sexual and reproductive health and contraceptive methods while there is no correlation for girls.

More *male teachers per female teacher* in the school is positively correlated with boys' age at first sexual intercourse while it does not have a statistically significant correlation with any of the girls' main outcomes, as expected; moreover, more male teachers per female teacher is negatively correlated with girls' knowledge about sexual health and contraceptive methods. Nonetheless, this factor is also correlated with the girls' use of modern contraceptive methods different from condom in a positive

way.

The *average age of teachers* in the school is negatively correlated with the girls' incidence in teenage childbearing and positively correlated with boys' and girls' age at first intercourse, being greater the correlation for boys (table 7). Regarding the secondary outcomes, this school factor is only correlated with girls' and boys' knowledge about sexual health and contraceptive methods; this correlation is greater for girls. This suggests that the effect that predominates is the second one mentioned for this factor in Section 2.2, an aged teacher may recognize better the importance of teaching and talking about sex with the students and apparently they know how to deliver the message to girls as well. They promote abstinence but also teach other sex-related topics.

The *proportion of teachers with a graduate or postgraduate degree* in the school does not have a statistically significant correlation with any of the outcomes evaluated and the *proportion of teachers with a related pedagogy degree* does not have a "desirable" correlation with the incidence of teenage childbearing in girls and it presents a negative correlation with boys' age at first sexual intercourse. These results do not support the idea that more educated teachers teach better sex education and certainly the knowledge of different learning styles is not helping to avoid that the message not be received by some group at the aggregated level.

When looking the results for public and private schools separately in order to assess possible heterogeneous effects some of the patterns described above change.

Public schools

For public schools, the correlation between sex education and have had sexual intercourse is slightly greater for girls than for boys, reinforcing the idea that the only message delivered effectively to girls is abstinence.

A greater proportion of teachers with a graduate or postgraduate degree has a positive correlation with the girls' incidence of teenage childbearing but also has a positive correlation with the girls' use of modern contraceptive methods, correlation that is even greater if we only see the use of contraceptive pills. These results suggest that there is a substitution effect between the condom and other modern methods but apparently the girls are only receiving the information about the existence of these methods and not about their correct use (no correlation with knowledge). This could explain the positive correlation between the factor in mention and the girls' incidence of teenage childbearing, since those modern methods require certain discipline in their use in order to be effective and if the girl does not know this the method is not going to work properly.

The proportion of teachers with a related pedagogy degree is negatively correlated with the boys' probability of have initiated their sexual life, it is no longer correlated with the incidence of teenage childbearing in girls and it is also negatively correlated with boys' age at first sexual intercourse. Although this factor does not have any correlation with the girls' main outcomes it does have a significant correlation with girls' use of modern contraceptive methods. For public schools, having more teachers with a related pedagogy degree seems to help to deliver a message beyond abstinence in girls, while in boys it only reduces the probability of have had sexual intercourse in some of them but in the ones that not, start their sexual life earlier. Again, the knowledge of different learning styles is not helping to avoid that the message not be received by some group, and in this case the disadvantage group is the male group.

All the other patterns remain equal than the observed at the aggregated level.

Table 7: School factors and main outcomes

		Have had sexual intercourse		Condom use		Teenage childbearing		Age at first sexual intercourse	
		Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Sex education	All	−0.0369**	−0.0497***	0.0370	0.0576**	0.0075	−0.0143***	0.0539	−0.0039
		(0.0167)	(0.0114)	(0.0371)	(0.0237)	(0.0102)	(0.0054)	(0.0702)	(0.0551)
	Public	−0.0483***	−0.0466***	0.0417	0.0617**	0.0007	−0.0176***	−0.0002	−0.0303
		(0.0182)	(0.0125)	(0.0401)	(0.0262)	(0.0108)	(0.0061)	(0.0746)	(0.0613)
	Private	0.0249	−0.0573**	−0.0060	0.0392	0.0394	−0.0013	0.3391*	0.0980
		(0.0402)	(0.0270)	(0.0959)	(0.0547)	(0.0279)	(0.0109)	(0.1984)	(0.1274)
Male teachers per female teacher	All	−0.0053	0.0038	0.0054	−0.0001	−0.0014	0.0020	−0.0074	0.0446**
		(0.0060)	(0.0044)	(0.0179)	(0.0114)	(0.0048)	(0.0020)	(0.0361)	(0.0186)
	Public	−0.0059	0.0023	0.0100	0.0022	0.0009	0.0028	−0.0024	0.0390**
		(0.0062)	(0.0045)	(0.0188)	(0.0119)	(0.0048)	(0.0021)	(0.0364)	(0.0190)
	Private	0.0067	0.0263	−0.0596	−0.0303	−0.0195	−0.0098	−0.0237	0.0996
		(0.0254)	(0.0182)	(0.0650)	(0.0397)	(0.0167)	(0.0068)	(0.1212)	(0.0899)
Average age of teachers	All	0.0012	−0.0001	0.0010	0.0017	−0.0027*	−0.0003	0.0209**	0.0250***
		(0.0022)	(0.0015)	(0.0047)	(0.0032)	(0.0014)	(0.0007)	(0.0099)	(0.0074)
	Public	0.0012	−0.0001	0.0012	0.0020	−0.0027*	−0.0003	0.0206**	0.0247***
		(0.0022)	(0.0015)	(0.0047)	(0.0032)	(0.0014)	(0.0007)	(0.0099)	(0.0074)
	Private	−0.0630**	−0.0486*	−0.0516***	0.0340***	0.0000***	0.0000***	0.0515***	−0.2601
		(0.0310)	(0.0274)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.6435)
Teachers with a post(graduate) degree	All	−0.0225	0.0306	−0.1429	−0.1976	−0.0088	−0.0138	−0.2689	−0.3322
		(0.0907)	(0.0590)	(0.2180)	(0.1381)	(0.0680)	(0.0331)	(0.4832)	(0.3075)
	Public	−0.1671	0.0261	−0.1195	0.2835	0.1072*	0.0195	−0.7021	−0.1149
		(0.1645)	(0.0993)	(0.3193)	(0.2319)	(0.0560)	(0.0233)	(0.5721)	(0.5115)
	Private	0.1482	0.1096	−0.1919	−0.3972*	−0.0211	−0.0394	1.2224	0.3227
		(0.1234)	(0.0980)	(0.3941)	(0.2368)	(0.0892)	(0.0765)	(0.8670)	(0.5202)
Teachers with a related pedagogy degree	All	−0.0007	−0.0820	−0.0007	0.0054	0.0784**	0.0195	0.1291	−0.5111*
		(0.0803)	(0.0563)	(0.1768)	(0.1151)	(0.0362)	(0.0131)	(0.4120)	(0.2717)
	Public	0.0554	−0.1529**	0.0391	0.2427	0.1005*	0.0240	0.1888	−0.6795*
		(0.0987)	(0.0723)	(0.2314)	(0.1480)	(0.0514)	(0.0163)	(0.4488)	(0.3602)
	Private	−0.0701	0.0184	−0.1811	−0.2394	0.0256	0.0232	−0.0124	0.0891
		(0.1311)	(0.0973)	(0.3015)	(0.1883)	(0.0530)	(0.0203)	(0.8388)	(0.4323)

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8: School factors and secondary outcomes

		Knowledge		Modern methods		Pill	
		Girls	Boys	Girls	Boys	Girls	Boys
Sex education	All	0.0290	0.0471***	−0.0019	0.0087	−0.0135	0.0099
		(0.0235)	(0.0165)	(0.0125)	(0.0075)	(0.0240)	(0.0139)
	Public	0.0327	0.0483***	−0.0061	0.0017	−0.0218	−0.0060
		(0.0258)	(0.0183)	(0.0135)	(0.0081)	(0.0239)	(0.0146)
	Private	0.0036	0.0477	0.0226	0.0403**	0.0299	0.0793**
		(0.0564)	(0.0387)	(0.0314)	(0.0184)	(0.0738)	(0.0377)
Male teachers per female teacher	All	−0.0112**	−0.0037	0.0123*	−0.0004	0.0113	−0.0046
		(0.0045)	(0.0029)	(0.0066)	(0.0018)	(0.0120)	(0.0037)
	Public	−0.0094**	−0.0032	0.0123*	−0.0001	0.0073	−0.0041
		(0.0046)	(0.0030)	(0.0069)	(0.0017)	(0.0121)	(0.0035)
	Private	−0.0456**	−0.0117	0.0137	−0.0068	0.0659	−0.0184
		(0.0206)	(0.0109)	(0.0207)	(0.0131)	(0.0529)	(0.0256)
Average age of teachers	All	0.0100***	0.0061***	0.0022	−0.0009	0.0029	−0.0010
		(0.0031)	(0.0022)	(0.0016)	(0.0011)	(0.0028)	(0.0018)
	Public	0.0098***	0.0059***	0.0022	−0.0010	0.0030	−0.0010
		(0.0031)	(0.0022)	(0.0016)	(0.0011)	(0.0028)	(0.0018)
	Private	0.0337	−0.0587*	−0.0181	−0.0334	−0.0373***	0.0600***
		(0.0730)	(0.0316)	(0.0211)	(0.0270)	(0.0000)	(0.0000)
Teachers with a (post)graduate degree	All	−0.0022	0.0163	0.0572	−0.0386	−0.0717	−0.0401
		(0.0840)	(0.0462)	(0.0650)	(0.0435)	(0.1698)	(0.0905)
	Public	−0.0143	0.1042	0.1955***	0.0427	0.3797***	0.2137*
		(0.1206)	(0.0697)	(0.0703)	(0.0748)	(0.1117)	(0.1210)
	Private	−0.0709	−0.0622	−0.0464	−0.0353	−0.4716	−0.0182
		(0.1361)	(0.0775)	(0.0929)	(0.0730)	(0.3037)	(0.1780)
Teachers with a related pedagogy degree	All	0.0506	−0.0160	0.0092	−0.0176	−0.0616	0.0442
		(0.0786)	(0.0463)	(0.0626)	(0.0352)	(0.1466)	(0.0587)
	Public	0.0164	0.0008	0.1301**	−0.0740	0.2402**	0.0068
		(0.0850)	(0.0545)	(0.0632)	(0.0486)	(0.1203)	(0.0730)
	Private	0.0814	−0.0757	−0.1365	0.1361**	−0.3861	0.2880***
		(0.1483)	(0.0850)	(0.0889)	(0.0560)	(0.2522)	(0.1089)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Private schools

Although the pattern of the correlations between have reported the school as the main source of knowledge about sexual health and contraceptive methods and all the outcomes evaluated is different from the described above, the conclusion is the same: the message delivered by sex education at schools is only well received (delivered) by (for) boys, but in this case for girls is only effective in increasing age at first sexual intercourse and for boys is effective in use of modern contraceptive methods. Only abstinence is promoted to girls.

Having more teachers per female teacher in a private school does not have any significant correlation with the outcomes evaluated except for girls' knowledge about contraceptive methods and reproductive health. Correlation that remains negative.

In private schools, aged teachers also have the skill to deliver sexual-related messages to girls too but it seems that they only promote abstinence to them. For girls, this school factor is correlated with a greater age at first sexual intercourse and a lower probability of have had sexual intercourse; it is

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also correlated with less use of condom and contraceptive pills. Aged teachers also promote abstinence in boys, which is reflected in the negative correlation between this factor and the probability of have had sexual intercourse. Nevertheless, for boys, this factor is also positively correlated with the use of condom and contraceptive pills (by their couple).

A greater proportion of teachers with a graduate or postgraduate degree is only correlated with boys' condom use and not in the "desirable" way. This negative correlation is not compensated with a positive correlation with other modern contraceptive methods. In private schools, more educated teachers do not teach better sex education or give more information about contraceptive methods as seems to happen in public schools.

A greater proportion of teachers with a related pedagogy degree is not correlated with any of the main outcomes but it is positively correlated with boys' use of modern contraceptive methods. It is interesting that for public schools, the same correlations were found with the secondary outcomes but for girls. In both cases, the message is not received by some group.

Sex education in Colombia has always had the objective of reduce or eliminate teenage childbearing but according to these results the way in which this goal wants to be accomplished is not being the best. Abstinence is a necessary part of sex education since it is the best way to be fully protected against pregnancy and Sexual Transmitted Diseases but it should not be provided to adolescents as a sole choice since the literature has documented the ineffectiveness of abstinence-only programs. Santelli et al., 2006; Kohler, 2008; Isley, 2010 , among others, have found that abstinence-only education did not reduce the likelihood of engaging in vaginal intercourse, it decreases reliable contraceptive method use, and it does not have a significant effect on teen pregnancy; while adolescents who received comprehensive sex education are significantly less likely to report teen pregnancy and present a marginally lower likelihood of reporting having engaged in vaginal intercourse.

The results found by this study suggest that it is necessary to improve the information provided about modern contraceptive methods in schools, not focus the message only on abstinence or delay the first sexual intercourse and improve the competences of the school teachers providing this kind of education in order to reach equally girls and boys, since the results show that most of the school factors evaluated are correlated with desirable outcomes in boys while there is no correlation or a non-desirable correlation for girls.

5.1 Robustness checks

Condom use and teenage childbearing can be considered as a two-part decision problem of first engaging in sexual activity and then deciding how safe are going to be the sexual intercourses in which the individual is going to be engaged. These decisions can depend on common factors such that after controlling for observed characteristics there is no correlation between the error in the equation determining initiate or not sexual activity and the error in the equation determining condom use. In this case, the analysis presented above is straightforward as selection is only based on observables which the exercise took into account. Let's assume that this is not the case and there is a selection bias due to the omission of the determinants of engaging in sexual activity as risk aversion. Therefore, a Heckman model should be performed to correct the selection bias.

Table 9: Heckman Model

		Benchmark	Heckman		Benchmark	Heckman
All	Condom use	0.0777*** (0.0180)	0.1157*** (0.0374)	Teenage childbearing	−0.0613*** (0.0081)	−0.0832*** (0.0178)
	λ		0.0255 (0.1405)			−0.0302 (0.0669)
Public	Condom use	0.0668*** (0.0197)	0.1197*** (0.0385)	Teenage childbearing	−0.0662*** (0.0094)	−0.0916*** (0.0190)
	λ		0.0313 (0.1478)			−0.0359 (0.0728)
Private	Condom use	0.1240*** (0.0444)	0.1245*** (0.0316)	Teenage childbearing	−0.0397*** (0.0147)	−0.0399*** (0.0120)
	λ		−0.0429 (0.4221)			−0.0160 (0.0213)

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The fourth and seventh column of table 9 present the difference in condom use and teenage childbearing between boys and girls and the λ coefficient obtained from the second step of the Heckman models performed, respectively. This second step regression includes as regressors the same variables included in the benchmarck exercise plus the fitted value of the inverse Mill ratio term (λ) which represents the estimated probability of have had sexual intercourse, probability obtained in the first step of this model. Therefore, the coefficient of this term is the correlation of interest - that between the error in the equation determining initiate or not sexual activity and the error in the equation determining condom use or teenage childbearing - to know if there is a bias due to the selection of the sample that in this case corresponds to those that have initiated their sexual life.

As we can see in table 9, the λ coefficient is statistically insignificant in all cases and low in magnitude implying that there is no selection bias in the benchmark exercise and even if there were the even rows of table 9 show us that the gender gap would be underestimated, hence, the results obtained would be a lower bound of the real problem.

It is important to mention that the probability of have had sexual intercourse, and hence of being selected, was estimated using as determinants individual and household characteristics[14], and the proportion of adolescents in the same grade of the individual that had initiated their sexual lives. These variables were chosen since there is a large literature that supports that sexual initiation is highly affected by the initiation of peers, and by family and socio-economic factors (Card and Giuliano, 2012; Richards, 2012; Jordahl and Lohman, 2009; Miller, 2002; Miller et al., 2001; Upchurch et al., 1999;Billy et al., 1994). Besides, some of the individual and the socio-economic characteristics included in this first step, according to the literature, are also correlated with risk aversion as mentioned in Section 3.3, and the omission of this particular characteristic was the main concern since this could lead to a positive bias assuming that initiated girls are less risk averse than initiated boys due to a higher "entrance cost" to sexual life.

Heckman results confirm the intuition explained in Section 3.3 about the differences in risk aversion between boys and girls that already had their first sexual intercourse in the sample used for the econometric exercises. The mentioned difference could be lower than the expected or even null

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[14]Variables: age, gender, grade, live with the father, live with the mother, number of children of the mother, age of the mother when she had her first child and a socio-economic index.

Table 10: Observables by gender and sex education at school conditioned on sexual activity

Covariate	School		Girls SE	Girls	Difference	Boys SE	Boys	Difference
			Matched Sample					
Age	All	Mean	15.838	15.824		15.843	15.802	
		Std. Dev	0.953	1.011	0.014	1.084	1.083	0.041
		Obs.	948	642		1619	1084	
	Public	Mean	15.888	15.849		15.903	15.819	
		Std. Dev	0.956	1.027	0.039	1.086	1.083	0.084
		Obs.	768	564		1308	915	
	Private	Mean	15.634	15.638		15.607	15.709	
		Std. Dev	0.916	0.872	−0.004	1.044	1.082	−0.102
		Obs.	180	78		311	169	
Mother	All	Mean	0.917	0.905		0.913	0.914	
		Std. Dev	0.276	0.294	0.012	0.282	0.281	−0.001
		Obs.	948	642		1619	1084	
	Public	Mean	0.919	0.903		0.912	0.907	
		Std. Dev	0.272	0.296	0.016	0.284	0.291	0.005
		Obs.	768	564		1308	915	
	Private	Mean	0.907	0.919		0.919	0.950	
		Std. Dev	0.291	0.275	−0.012	0.273	0.218	−0.031
		Obs.	180	78		311	169	
Father	All	Mean	0.589	0.565		0.598	0.588	
		Std. Dev	0.492	0.496	0.024	0.490	0.492	0.010
		Obs.	948	642		1619	1084	
	Public	Mean	0.581	0.563		0.593	0.583	
		Std. Dev	0.494	0.496	0.018	0.492	0.493	0.010
		Obs.	768	564		1308	915	
	Private	Mean	0.622	0.579		0.620	0.620	
		Std. Dev	0.486	0.497	0.043	0.486	0.487	0.000
		Obs.	180	78		311	169	
Mother's children	All	Mean	3.003	3.085		3.067	3.032	
		Std. Dev	0.998	1.055	−0.082	1.181	1.178	0.035
		Obs.	948	642		1619	1084	
	Public	Mean	3.052	3.133		3.119	3.070	
		Std. Dev	1.005	1.062	−0.081	1.196	1.193	0.049
		Obs.	768	564		1308	915	
	Private	Mean	2.804	2.733		2.863	2.819	
		Std. Dev	0.947	0.936	0.071	1.094	1.070	0.044
		Obs.	180	78		311	169	
Mother's age when had first child	All	Mean	20.134	19.839		20.434	20.050	
		Std. Dev	3.279	3.077	0.295	4.082	3.837	0.384
		Obs.	948	642		1619	1084	
	Public	Mean	19.945	19.802		20.274	19.924	
		Std. Dev	3.175	3.115	0.143	4.032	3.768	0.350
		Obs.	768	564		1308	915	
	Private	Mean	20.908	20.116		21.070	20.748	
		Std. Dev	3.581	2.790	0.792	4.223	4.140	0.322
		Obs.	180	78		311	169	
Socioeconomic Index	All	Mean	22.731	22.666		23.041	23.163	
		Std. Dev	3.650	3.585	0.065	3.952	4.022	−0.122
		Obs.	948	642		1619	1084	
	Public	Mean	22.289	22.424		22.603	22.844	
		Std. Dev	3.403	3.468	−0.135	3.775	3.979	−0.241
		Obs.	768	564		1308	915	
	Private	Mean	24.540	24.435		24.781	24.929	
		Std. Dev	4.055	3.938	0.105	4.160	3.805	−0.148
		Obs.	180	78		311	169	
Grade	All	Mean	10.365	10.298		10.293	10.199	
		Std. Dev	0.712	0.717	0.067	0.739	0.747	0.094
		Obs.	948	642		1619	1084	
	Public	Mean	10.369	10.303		10.305	10.184	
		Std. Dev	0.711	0.721	0.066	0.744	0.752	0.121
		Obs.	768	564		1308	915	
	Private	Mean	10.352	10.265		10.246	10.278	
		Std. Dev	0.716	0.694	0.087	0.721	0.713	−0.032
		Obs.	180	78		311	169	
Experience	All	Mean	1.320	1.383		1.704	1.695	
		Std. Dev	0.967	1.009	−0.063	1.121	1.174	0.009
		Obs.	948	642		1619	1084	
	Public	Mean	1.359	1.360		1.755	1.732	
		Std. Dev	0.974	1.001	−0.001	1.128	1.193	0.023
		Obs.	768	564		1308	915	
	Private	Mean	1.159	1.556		1.501	1.495	
		Std. Dev	0.927	1.059	−0.397	1.067	1.041	0.006
		Obs.	180	78		311	169	

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

if it is taken into account that (i) the girls and boys in this sample are equal in observables highly correlated with risk aversion, condition that was achieved performing the matching exercises; and that (ii) in Bogota the institutional context favors the adolescent mother providing her medical care, health information, nutritional subsides and incentives to continue studying in order to improve her agency[15] outcomes. This kind of policies combined with a legal framework that protects the right to study of the pregnant adolescents reduces the possible cost that the adolescent woman faces for starting her sexual life and even when she gets pregnant, allowing that girls with a higher risk aversion decide to initiate their sexual lives and this reduces or even vanishes the possible differences in this characteristic between initiated boys and girls.

The other concern about the validity of the results is related with one of the school factors evaluated: school reported as main source of knowledge about reproductive health and contraceptive methods. One could think that the school offers better sex education as a result of riskier sexual behaviour which is traduced in bad indicators in its students, e.g. high incidence of teenage pregnancy, and in this case we would have a problem of endogeneity that leads to biased estimators. If this were the case we would like to know the direction of this bias. Hence, table 10 shows the difference in observables between those adolescents that reported the school as main source of knowledge about reproductive health and contraceptive methods (fourth and seventh column) in the matched sample with the ones that did not (fifth and octave column), this conditioned on have had sexual intercourse; in the annex, the table A3 shows the same without conditioning on sexual activity. It is important to mention that the descriptive statistics reported in these tables (10 and A3) are weighted by the same weights used in the econometric exercises, therefore, they are controlled by the school in which studies each individual.

Both, table 10 and A3 show that there are no significant differences between those girls and boys that consider the school as main source of knowledge and those that do not, therefore these two sub-samples are comparable and it should not be a bias due to this, this is reinforced by the fact that to provide sex education in schools is mandatory and schools even have certain guidelines to do this, as explained.

Given the discussed in this subsection, the results presented are straightforward and in the worst of the cases are a lower bound of the real phenomenon.

6   Conclusion

This thesis explored the correlation between scholar factors and the differentiated results on sexual behaviour between boys and girls finding that the gender gap observed in have initiated sexual life, condom use, age at first sexual intercourse and teenage childbearing incidence - measured by the number of adolescent parents and the adolescents expecting children at the moment of the survey - is correlated with have reported the school as main source of knowledge about reproductive health and contraceptive methods, a larger proportion of teachers with a graduate or postgraduate degree, a larger proportion of teachers with a related pedagogy degree and to the average age of teachers in the school.

The methodology used to achieve the objective of this study includes both a non-parametric and a parametric approach. To ensure the comparability between the boys and girls compared, a school

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[15]Individual's or group's ability to make effective choices and to transform those choices into desired outcomes (World Bank, 2012)

stratified matching was performed using as covariates variables that the literature has identified to be correlated with sex-related outcomes and risk behaviour. Then, a weighted regression analysis was performed to identify the correlation between the scholar factors evaluated and sex-related outcomes for boys and girls. The weights used allow the econometric exercise to capture intra and inter school variation. Heterogeneous effects between private and public school were assessed.

From the results found can be derived the following recommendations: (i) improve the competences of the school teachers that provide sex education in order to reach boys and girls equally, otherwise the prevalence of the consequences associated with risky sexual behaviour will continue to increase; (ii) redesign the school sex education policy to not focus the message only on abstinence or delay the first sexual intercourse, and (iii) improve the information provided about modern contraceptive methods.

Finally, more research on the relation between school and sex behaviour in boys and girls is required in Colombia in order to understand better this phenomenon and contribute to design policies directed to reduce the consequences associated with risky sexual behaviours in a country that exhibits one of the highest rates of teenage childbearing in the region.

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8 Annex

Figure A1: Propensity score densities before weighting by the number of boys in each school
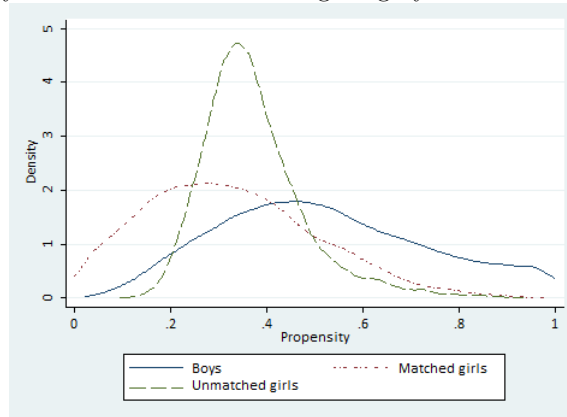
Figure A2: Propensity score densities after weighting by the number of boys in each school
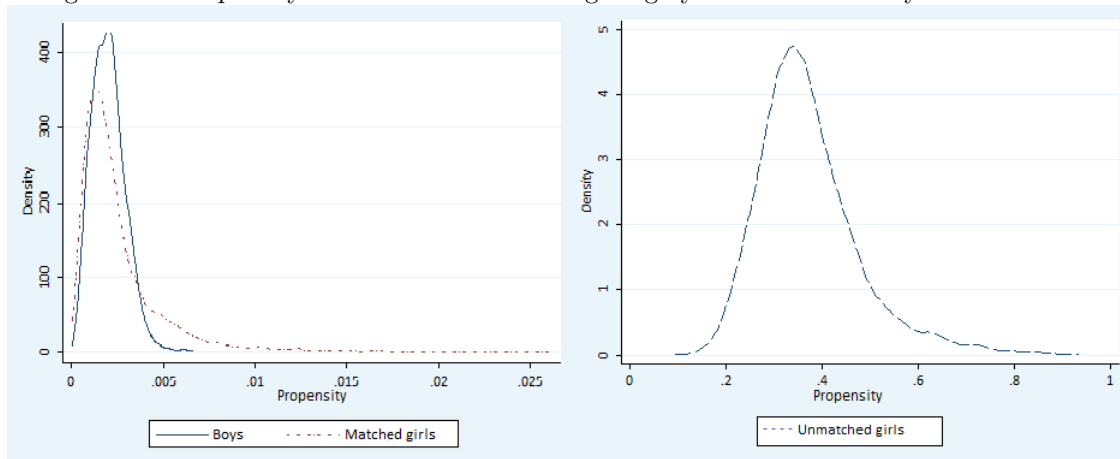
Figure A3: Condom use by age and time of exposure
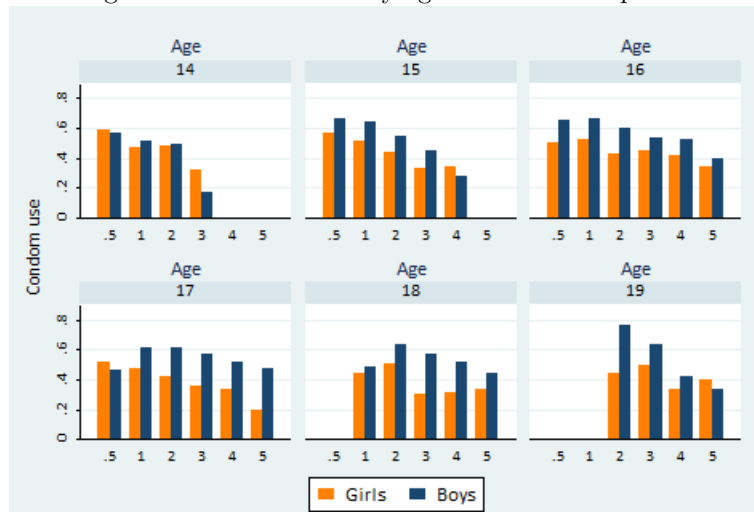
Table A1: Descriptive statistics: Main outcomes by gender and age

Age		Have had sexual intercourse			Condom use			Teenage childbearing		
		Girls	Boys	Dif	Girls	Boys	Dif	Girls	Boys	Dif
14	Mean	0.121	0.234		0.517	0.463		0.019	0.008	
	Std. Dev.	0.326	0.423	0.113*	0.500	0.499	−0.054***	0.138	0.090	−0.011***
	N	3844	3128		464	732		464	732	
15	Mean	0.255	0.389		0.515	0.556		0.061	0.017	
	Std. Dev.	0.436	0.488	0.134*	0.500	0.497	0.041**	0.239	0.128	−0.044*
	N	5575	4793		1419	1866		1419	1866	
16	Mean	0.388	0.538		0.490	0.588		0.081	0.022	
	Std. Dev.	0.487	0.499	0.150*	0.500	0.492	0.098*	0.272	0.148	−0.059*
	N	4733	4301		1835	2316		1835	2316	
17	Mean	0.568	0.690		0.430	0.549		0.134	0.036	
	Std. Dev.	0.496	0.463	0.122*	0.495	0.498	0.119*	0.341	0.186	−0.098*
	N	1894	2104		1075	1451		1075	1451	
18	Mean	0.682	0.765		0.401	0.506		0.213	0.038	
	Std. Dev.	0.466	0.424	0.083*	0.491	0.500	0.105*	0.410	0.192	−0.175*
	N	592	648		404	496		404	496	
19	Mean	0.739	0.762		0.388	0.495		0.376	0.101	
	Std. Dev.	0.441	0.427	0.023	0.490	0.502	0.107	0.487	0.303	−0.275*
	N	115	143		85	109		85	109	

Table A2: Descriptive statistics: Teenage childbearing and condom use by gender and experience

Experience	Age		Condom use			Teenage childbearing		
			Girls	Boys	Dif	Girls	Boys	Dif
< One year	14	Mean	0.592	0.574		0.014	0.000	
		Std. Dev.	0.493	0.496	−0.018	0.117	0.000	−0.014***
		N	218	190		218	190	
	15	Mean	0.568	0.667		0.034	0.006	
		Std. Dev.	0.496	0.472	0.099*	0.183	0.076	−0.028*
		N	551	342		551	342	
	16	Mean	0.508	0.656		0.039	0.022	
		Std. Dev.	0.501	0.476	0.148*	0.195	0.147	−0.017
		N	380	183		380	183	
	17	Mean	0.519	0.461		0.074	0.026	
		Std. Dev.	0.502	0.502	−0.058	0.263	0.161	−0.048
		N	135	76		135	76	
One year	14	Mean	0.470	0.510		0.024	0.000	
		Std. Dev.	0.501	0.501	0.040	0.153	0.000	−0.024**
		N	168	241		168	241	
	15	Mean	0.512	0.642		0.078	0.014	
		Std. Dev.	0.500	0.480	0.130*	0.268	0.120	−0.064*
		N	580	690		580	690	
	16	Mean	0.528	0.662		0.076	0.012	
		Std. Dev.	0.499	0.473	0.134*	0.265	0.108	−0.064*
		N	846	760		846	760	
	17	Mean	0.475	0.613		0.093	0.043	
		Std. Dev.	0.500	0.488	0.138*	0.291	0.203	−0.050**
		N	345	256		345	256	
	18	Mean	0.446	0.484		0.129	0.016	
		Std. Dev.	0.499	0.504	0.038	0.337	0.127	−0.113**
		N	139	62		139	62	
Two years	14	Mean	0.486	0.496		0.027	0.015	
		Std. Dev.	0.507	0.502	0.010	0.164	0.121	−0.012
		N	37	135		37	135	
	15	Mean	0.443	0.547		0.114	0.016	
		Std. Dev.	0.498	0.498	0.104**	0.318	0.126	−0.098*
		N	176	375		176	375	
	16	Mean	0.434	0.599		0.133	0.021	
		Std. Dev.	0.496	0.491	0.165*	0.340	0.145	−0.112*
		N	369	606		369	606	
	17	Mean	0.425	0.613		0.164	0.025	
		Std. Dev.	0.495	0.488	0.188*	0.371	0.158	−0.139*
		N	341	354		341	354	
	18	Mean	0.510	0.634		0.219	0.024	
		Std. Dev.	0.503	0.485	0.124***	0.416	0.155	−0.195*
		N	96	82		96	82	
	19	Mean	0.444	0.769		0.278	0.115	
		Std. Dev.	0.504	0.430	0.325*	0.454	0.326	−0.163
		N	36	26		36	26	
Three years	14	Mean	0.318	0.168		0.045	0.027	
		Std. Dev.	0.477	0.376	−0.150	0.213	0.161	−0.018
		N	22	113		22	113	
	15	Mean	0.333	0.453		0.020	0.012	
		Std. Dev.	0.476	0.499	0.120	0.140	0.111	−0.008
		N	51	161		51	161	
	16	Mean	0.445	0.541		0.126	0.040	
		Std. Dev.	0.499	0.499	0.096***	0.333	0.196	−0.086*
		N	119	327		119	327	
	17	Mean	0.355	0.573		0.188	0.039	
		Std. Dev.	0.480	0.495	0.218*	0.392	0.194	−0.149*
		N	138	309		138	309	
	18	Mean	0.302	0.569		0.302	0.010	
		Std. Dev.	0.462	0.498	0.267*	0.462	0.099	−0.292*
		N	96	102		96	102	
	19	Mean	0.500	0.636		0.417	0.182	
		Std. Dev.	0.522	0.505	0.136	0.515	0.405	−0.235
		N	12	11		12	11	
	15	Mean	0.346	0.275		0.038	0.025	
		Std. Dev.	0.485	0.447	−0.071	0.196	0.155	−0.013
		N	26	204		26	204	
Four years	16	Mean	0.422	0.530		0.067	0.030	
		Std. Dev.	0.499	0.500	0.108	0.252	0.171	−0.037
		N	45	200		45	200	
	17	Mean	0.340	0.517		0.208	0.017	
		Std. Dev.	0.478	0.501	0.177**	0.409	0.131	−0.191*
		N	53	174		53	174	
	18	Mean	0.310	0.520		0.310	0.041	
		Std. Dev.	0.468	0.502	0.210**	0.468	0.199	−0.269*
		N	42	98		42	98	
	19	Mean	0.333	0.421		0.542	0.053	
		Std. Dev.	0.482	0.507	0.088	0.509	0.229	−0.489*
		N	24	19		24	19	

*** p<0.01, ** p<0.05, * p<0.1

Table A3: Observables by gender and sex education at school unconditioned

Covariate	School		Matched Sample					
			Girls ES	Girls	Difference	Boys ES	Boys	Difference
Age	All	Mean	15.304	15.394		15.413	15.505	
		Std. Dev	0.953	1.012	−0.090	1.073	1.079	−0.092
		Obs.	3019	1465		4271	2187	
	Public	Mean	15.347	15.420		15.452	15.532	
		Std. Dev	0.973	1.019	−0.073	1.087	1.089	−0.080
		Obs.	2334	1247		3293	1817	
	Private	Mean	15.171	15.238		15.285	15.366	
		Std. Dev	0.873	0.955	−0.067	1.013	1.019	−0.081
		Obs.	685	218		978	370	
Mother	All	Mean	0.943	0.929		0.936	0.927	
		Std. Dev	0.233	0.257	0.014	0.244	0.260	0.009
		Obs.	3019	1465		4271	2187	
	Public	Mean	0.940	0.925		0.934	0.922	
		Std. Dev	0.237	0.264	0.015	0.248	0.269	0.012
		Obs.	2334	1247		3293	1817	
	Private	Mean	0.950	0.955		0.942	0.954	
		Std. Dev	0.219	0.209	−0.005	0.233	0.209	−0.012
		Obs.	685	218		978	370	
Father	All	Mean	0.658	0.602		0.646	0.616	
		Std. Dev	0.474	0.490	0.056	0.478	0.486	0.030
		Obs.	3019	1465		4271	2187	
	Public	Mean	0.647	0.599		0.634	0.611	
		Std. Dev	0.478	0.490	0.048	0.482	0.488	0.023
		Obs.	2334	1247		3293	1817	
	Private	Mean	0.691	0.621		0.684	0.639	
		Std. Dev	0.462	0.486	0.070	0.465	0.481	0.045
		Obs.	685	218		978	370	
Mother's children	All	Mean	2.871	2.971		2.969	2.967	
		Std. Dev	0.932	0.983	−0.100	1.119	1.136	0.002
		Obs.	3019	1465		4271	2187	
	Public	Mean	2.946	3.010		3.035	3.011	
		Std. Dev	0.955	0.995	−0.064	1.154	1.165	0.024
		Obs.	2334	1247		3293	1817	
	Private	Mean	2.637	2.734		2.753	2.744	
		Std. Dev	0.813	0.873	−0.097	0.965	0.946	0.009
		Obs.	685	218		978	370	
Mother's age when had first child	All	Mean	20.887	20.198		21.147	20.495	
		Std. Dev	3.656	3.430	0.689	4.283	4.006	0.652
		Obs.	3019	1465		4271	2187	
	Public	Mean	20.679	20.081		20.958	20.394	
		Std. Dev	3.602	3.395	0.598	4.249	3.990	0.564
		Obs.	2334	1247		3293	1817	
	Private	Mean	21.535	20.898		21.765	21.006	
		Std. Dev	3.750	3.560	0.637	4.338	4.054	0.759
		Obs.	685	218		978	370	
Socioeconomic Index	All	Mean	23.466	22.934		23.332	23.222	
		Std. Dev	3.585	3.483	0.532	3.969	4.042	0.110
		Obs.	3019	1465		4271	2187	
	Public	Mean	22.912	22.676		22.805	22.872	
		Std. Dev	3.360	3.379	0.236	3.771	3.983	−0.067
		Obs.	2334	1247		3293	1817	
	Private	Mean	25.195	24.481		25.058	24.996	
		Std. Dev	3.714	3.700	0.714	4.113	3.877	0.062
		Obs.	685	218		978	370	
Grade	All	Mean	10.145	10.122		10.136	10.114	
		Std. Dev	0.747	0.756	0.023	0.768	0.766	0.022
		Obs.	3019	1465		4271	2187	
	Public	Mean	10.152	10.122		10.136	10.104	
		Std. Dev	0.756	0.762	0.030	0.773	0.767	0.032
		Obs.	2334	1247		3293	1817	
	Private	Mean	10.123	10.126		10.139	10.164	
		Std. Dev	0.720	0.717	−0.003	0.752	0.757	−0.025
		Obs.	685	218		978	370	
Experience	All	Mean	0.403	0.603		0.638	0.832	
		Std. Dev	0.809	0.956	−0.200	1.072	1.181	−0.194
		Obs.	3019	1465		4271	2187	
	Public	Mean	0.440	0.608		0.685	0.861	
		Std. Dev	0.843	0.951	−0.168	1.109	1.207	−0.176
		Obs.	2334	1247		3293	1817	
	Private	Mean	0.286	0.572		0.482	0.682	
		Std. Dev	0.679	0.987	−0.286	0.926	1.024	−0.200
		Obs.	685	218		978	370	

*** $p<0.01$, ** $p<0.05$, * $p<0.1$