Narcissist or self-hatred?
Early self-esteem and adolescents' sexual onsets

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Abstract

Self-esteem has been conceptualized as "*social vaccine*". The belief is that high self-esteem can inoculate people, especially young people, against vulnerability to a wide range of social illnesses. This study gives a contribution in the understanding of causal relation between self-esteem and premature sexual debut and risky sexual behaviour among American adolescents.
I analyze the impact of different levels of early self-esteem on a wide set of risky sexual behaviours: premature sexual initiation, number of sexual partners, use of contraceptive methods and the risk to be diagnosed with sexual transmitted diseases. Additionally, I seek to understand whether and to what extent the relationship between self-esteem and sexual onsets varies across ethnic groups and gender.
I use data from the National Longitudinal Study of Adolescent Health (Add Health) specifically designed to study American adolescents' health and risk behaviours. I take in account of endogeneity and reverse causality issue using instrumental variable estimation methods and measuring self-esteem before sexual initiation.
The main findings of this study concern with the nonlinear effects of self-esteem on sexual outcomes and with the presence of strong gender and ethnic differences in the way that self-esteem conditioning sexual behaviour. I found that self-esteem has predominately a protective effect on female and Whites delaying first sexual intercourse and reducing the number of sexual partners. Moreover, self-confident girls more likely have protected sexual intercourses and that relation is particularly strong and relevant for Blacks.
These findings suggest that self-esteem may be use as an instrument to assist young people to make prudent decisions regarding their sexuality. Interventions enhancing self-esteem may indirectly reduce the effect of negative impulses coming from deprived or instable environment where the adolescent live in.

1. Introduction

The high number of unintended teen pregnancies and the relevance of sexually transmitted diseases (STDs) among American adolescents have results in a number of sexual health programs. Sexual initiation is considered a crucial step to adulthood because of the risky choices it can involve. Adolescents who have the first sexual intercourse before sixteen are less likely to use contraceptives and more likely to contract STDs and become teenage parents.

Demographic and socioeconomic studies found significant associations between early sexual activities and family's characteristics such as disadvantage socio-economic background, low parent's education, large family size and unstable family environment (Kahn et al., 1988; Miller and Moore, 1990; Pick and Palos, 1995).

The mechanism through which family characteristics and within-family relationships influence sexual decisions is not clear. It has been observed that scarce amount of family resources affect child's self-esteem in different ways: limiting family's access to particular resources which could enhance self-esteem, fuelling a sense of inferiority in the child or bringing a variety of stressor to the family (Amato and Chiltree, 1986; Alexander, 2001; McLoyd 1990; Caspi and Elder, 1988; Whitbeck et al., 1991).

This study suggests self-esteem as an important channel through which family background affects adolescent sexual behaviour. Self-esteem is at the same time considered an output of the growing-up process and an input in the adolescent's sexual socialization process. This approach is particularly relevant for policy implications. Self-esteem may be use as an instrument to assist young people to make prudent decisions regarding their sexuality. Interventions enhancing self-esteem may indirectly reduce the effect of negative impulses coming from deprived or instable environment where the adolescent live in..

In previous literature, the double nature of self-esteem as social product (consequences of social influences) and as a social force (a cause of social behaviour) has been conceptualized. Branden (1994) argues that "it (self-esteem) is directly affected by how we act. Causation flows in both directions. There is a continuous feedback loop between our actions in the world and our self-esteem. The level of our self-esteem influences how we act, and how we act influences the level of our self-esteem".

Although a consistent part of literature focused on self-esteem as an output, many investigations have explored the association between self-esteem and juvenile deviant behaviour. Even so, the influence of early self-esteem on adolescents' sexual onset has not received as much attention as it deserves. To the best of my knowledge except for a couple of studies, most researches document these associations using cross-sectional data and they are unable to test a causal relation between self-esteem and sexual outcomes. This paper takes the previous researches a stage further deepening our understanding of the role of self-esteem in adolescent's sexuality. It focuses on the self-esteem as input in the sexual initialization process by disentangling the reverse causality issue using longitudinal data and instrumental variable models.

The purpose of this investigation is to analyze the impact of different levels of early self-esteem on a set of risky sexual behaviours which I will call "sexual outcomes": premature sexual initiation, number of sexual partners during the adolescence, use of condom and birth control methods and the number sexual transmitted diseases diagnosed.

I expect the presence of non-linear relationship between self-esteem and sexual outcomes. The first hypothesis to be tested is that children with high self-esteem are healthy and more prudent adolescents in term of sexual attitude. In this sense, self-esteem acts as a protecting resource. The second hypothesis is that extremely high level or extremely low level of self-esteem may act as risk enhancing factors.

Additionally, I seek to understand whether and to what extent the relationship between self-esteem and sexual onsets varies across ethnic groups and gender. Empirical evidence suggests that black adolescents relatively to white coetaneous adopt a riskier sexual behaviour. Traditionally, it is attributed to the disadvantaged socio-economic position of black population in most of western societies. However, my hypothesis is that self-esteem partially contributes to generate this diversity once controlled for background characteristics.

The main findings of this study concern with the nonlinear effects of self-esteem on sexual outcomes and with the presence of strong gender and ethnic differences in the way that self-esteem conditioning sexual behaviour.

The longitudinal design of the research and the adoption of instrumental variable model to deal with endogeneity problem constitute two points of strength. The direction of the causal pathway explored, from early self-esteem to later sexual outcomes, and the study of ethnic-gender differences in a wide set of sexual outcomes considered are the innovative contributions of the present investigation.

This paper now proceeds as follows. The next section provides the general motivation and some background of the relevant literature concerning with self-esteem and adolescent's sexual behaviour. The data and construction of variables are described in Section 3. Section 4 presents a comprehensive description of the empirical model and strategy used. The instrumental variables are also illustrated in this section. Section 5 presents the results found using different model specifications. Section 6 concludes.

2. Background

Despite encouraging downward trends, American adolescents' sexual conduct is still less responsible than in other Western industrialized nations. According with data from Centers for Disease Control and Prevention, in 2007 almost half of U.S. students enrolled in 9th-12th grade reported having had sexual intercourse. Sexually active adolescents are known to be at risk of unwanted pregnancy and of contracting a number of sexually transmitted diseases including HIV infection (Bingham, 1989; D'Augelli and Bingham, 1993). More than 30 percent of teenage girls in the U.S. become pregnant at least once by the age of 20 (Kirby, 2007). Early motherhood is associated with worse educational and occupational attainments, lower income, and marital instability. Children of teenage parents face poorer infant health, lower academic achievement, higher risk of socio-emotional problems, and a greater probability of becoming teen parents themselves. Children born to teen mothers are one third times more likely to be born prematurely, and 50 percent more likely to be low birth weight babies (under 5.5 pounds). Low birth weight and born premature raise the probability of a number of adverse conditions, including infant death and mental retardation.

Each year, there are approximately 12 million new cases of sexually transmitted disease (STD) in the United States (American Social Health Association, 1998). STD prevalence is 30% higher among Blacks than among Whites for some STDs (Centers for Disease Control and Prevention, 2000a). In 2000, 15-19 year-old black males had a rate of gonorrhoea that was about 20 times the rate of white males in the same age group (Centers for Disease Control and Prevention, 2000b). Chlamydia rates among African American males ages 15 to 24 were 12 times higher than rates among young white males. HIV infection also is more prevalent among black male adolescents than among White (Centers for Disease Control and Prevention, 2002). There are reasons to think that high rate of unintended pregnancy and STDs are due to irresponsible behaviours, major sexual promiscuity, and poor use of contraceptive methods.

To achieve long-term goals, many sexual-risk-reduction interventions underline the need to adopt a strategy targeting factor to influence adolescent behaviour. According with this approach, intervention should be directed to increase the intention to use contraceptive methods, enhancing self-efficacy of condom negotiation and condom use (Santelli et al., 1999; Salazar et al., 2005). Salazar and colleagues (2005) suggest that "[…] another factor that may influence female adolescent sexual behavior is the concept of self". They find a significant relation between self-esteem and a set of mediators of safer sex behavior (i.e. condom attitudes, perceived barriers to condom use, peer norms, self-efficacy of condom use negotiation) once controlling for a set of covariates. Higher self-esteem positively correlates with the condom use negotiating power and lead to a less risky sex conduct.

More generally, self-esteem has been conceptualized as "*social vaccine*". The belief is that high self-esteem can inoculate people, especially young people, against vulnerability to a wide range of social illnesses. Past research studies found that prior low self-esteem is predictive of subsequent reports of a range of "health-compromising" behaviour in youth such as substance abuse, smoking, unprotected sex, criminal behaviours, early sexual activity, early pregnancy, eating problems and suicidal ideation, juvenile delinquency, particular personality disorders and psychological depression (McGee and Williams, 2000; Wells and Rankin,1983). In this sense self-esteem has been conceptualized as a protective factor (Friedman, 1989; Zimmerman et al., 1997). Self-esteem acts both preventing and protecting against risks but also "enhancing the psychological resources on which individuals may draw to deal with stressful situations" (Longmore et al., 2004).

This study gives a contribution in the understanding of causal relation between self-esteem and premature sexual debut and risky sexual behaviour. Most of previous studies provide simple correlations between outcome variables and self-esteem controlling for other covariates (Lehrer et al., 2006 Robinson and Frank, 1994; Spencer et al., 2002; Salazar et al., 2005). Additionally, they generally use cross-sectional data and consider self-esteem and sexual outcomes measured at the same time. Thus, it is not clear whether self-esteem is primarily the cause or the effect of a list of correlated outcomes.

A number of studies have found that sexually active adolescents are more likely to suffer depression symptoms and low self-esteem than their peers who delay first intercourse (Spencer et al., 2002; Maher 2007; Orr et al., 1989) because of the dissolution of a romantic relation (Larson et al., 1999; Joyner and Udry, 2000; Sprecher, 1994; Meier, 2007; Ayduk et al., 2001, Grello et al., 2003, and Davila et al., 2004), unintended pregnancy or the acquisition of a sexually transmitted infection (Maher, 2007). According with this view, early sexual debut and multiple sexual partners are crucial factors which influence mental health in the transition from adolescence to adulthood (Meier, 2007; Hallfors et al. 2005; Rector et al., 2002).

Conversely, few studies look at self-esteem as determinants of adolescent's sexual behaviour (Salazar et al., 2005; Robinson and Frank, 1994). Among these exceptions, Jessor and Jessor (1975) using longitudinal data collected for high school students found that higher levels of pre-existing self-esteem were predictive of transition to sexual activity for boys. Spencer and colleagues (2002), using data collected longitudinally, show that girls who scored low on the self-esteem measure and boys who scored high on self-esteem are more likely to initiate coitus during the subsequent year.

This study extends previous works in different ways. First, I analyze comprehensively the relation between self-esteem and a wide set of sexual outcomes among race- and gender-specific subgroups of adolescents. Second, most of previous studies have focused on a linear relation between self-esteem and sexual outcomes. I relax the assumption of a monotonic relation between self-esteem and the observed sexual outcome. Third, for the first time this study attempts to provide a causal estimation of self-esteem's effect on adolescent sexual outcomes. I take in account of endogeneity and reverse causality issue and I tackle the first problem using instrumental variable estimation methods, and the second measuring self-esteem before sexual initiation.

Early empirical studies documented significant gender and racial sexual behaviour differences among teenagers (Zelnik et al., 1981). Theoretical explanations of gender difference in the age of sexual debut tend to emphasize biological and physical development differences, differences in social control and parental supervision for males and females, differences in risk adversity higher for girls than boys, and in the cost opportunity of being sexually active associated with an higher risk for girls than for boys (for example, in term of unintended pregnancy).

Together with gender, ethnicity is another central factor in explaining the initiation of sexual activity and a number of other sexual outcomes. Although this difference is ever less relevant, more recent studies confirm that race still has a significant effect on the age at voluntary sexual initiation and the number of partners (Ku et al., 1993). Blacks are more likely than adolescents of other races to have multiple partners (Anderson and Dahlberg, 1992; Durbin et al., 1993; Smith, 1991) and to initiate sexual activity earlier (Coker et al., 1994; Hofferth et al. 1987; Kinsman et al., 1998). One possible explanation is the disadvantaged economic position of black population and a set of circumstances that are associated with race

(single-parent families, lower parent's education, and poor child's education performance) tend to incentive early sexual intercourses and risky sexual attitudes (Furstenberg et al., 1987; Dryfoos 1990; Newcomer and Udry 1987). Another possible explanation reflects the presence of culture-specific sexual norms and socially recognized values in motivating the timing of sexual initiation and in regulating adolescent's sexual behaviour in general. Differences between Blacks and Whites in the perceiving scheduling of life course events are well documented as well as it is recognized that Blacks have more tolerant attitudes about early childbearing, weakening the deterrent to teenage sexual activity (Smith and Udry, 1985, Coker et al., 1994: East, 1998).

The present study considers self-esteem as a determinant of adolescent's sexual conduct. I test the assumption that both extremely low and extremely high levels of self-esteem are predictive of risky sexual behaviour. This assumption may seem in contradiction to the idea of self-esteem as protective factor but it is not. My argument here is that self-esteem may be a "double edged weapon". For example, an excess of self concept might negatively affects adolescents' sexual behaviour. The chain of causality may run through a variety of routes: extremely high level of self-esteem may bring to under evaluate dangers or to over evaluate own abilities to deal with risky situations, increasing sexual transgression.

3. Data and variables

Sample description

The data used in this study come from the first three waves of the National Longitudinal Study of Adolescent Health (Add Health). Add Health was specifically designed to study adolescents' health and risk behaviours. Data has been collected in eighty high schools in the United States. Most were then matched with a junior high or middle school from the same community, bringing the total number of participating schools to 132, including 90,118 students in total. From the student rosters of these 132 schools, a random sample of 20,745 students enrolled in grades 7-12 were interviewed in 1994-95 (Adolescent Health Wave I). The Wave II was conducted approximately one year later and it consisted of interviews with 14,738 of the Wave I respondents. The Wave III sample consists of 18,058 Wave I respondents who could be located and re-interviewed six years later. It was conduct in 2001-2002 when the sample was aged 18-26.

Data were gathered from children interviews at home (in home questionnaire) and at school (in school questionnaire), children's biological or step parent's interviews and school administrators' questionnaires. In-home questionnaire contained one young person questionnaire and one main parent questionnaire. The main parent asked to participate to the interview was chosen preferring the biological mother or any other female guardian (step mother or grandmother) to biological or step father or any other male family member. In 93% of cases, the main parent is the biological or the step mother.

Table 1. Sample description

Sample description						
	Female		**Male**		**Differeces**	
	N (7,829)		**N (7,513)**		**Females-Males**	
Gender	Mean	Std. Dev.	Mean	Std. Dev.		
Age (wave1)	14.75	0.049	15.01	0.055	-0.26	***
Age (wave3)	21.43	0.048	21.68	0.053	-0.25	***
White	0.71	0.014	0.74	0.014	-0.03	
	White		**Black**		**Differeces**	
	N (10,785)		**N(4,580)**		**Whites-Blacks**	
Ethnic group	Mean	Std. Dev.	Mean	Std. Dev.		
Age (wave1)	14.86	0.045	14.9	0.059	-0.04	
Age (wave3)	21.52	0.045	21.59	0.055	-0.07	
Female	0.53	0.016	0.56	0.019	-0.03	

Note: *** significant at 99%, ** significant at 95%, * significant at 90%.

In the present study variables concerning self-esteem, family background, child's characteristics and within-family relationships come from Wave I, while information about sexual outcomes comes from Wave III. In the longitudinal analysis, the samples were limited to respondents with non-missing information on psychological well-being in at least one of the first two waves and on sexual outcomes in the third wave[1].

[1] I have less than 10% of no response and missing data can be assumed to be missing completely at random. However, combining variables together in multivariate analysis the number of observations significantly decrease and I end up with a sample of about 6.100 observations.

The following tables contain weighted descriptive statistics[2]. In Table 1 I reported the gender and ethnic composition of the sample I consider. I use the schoolmates' sample[3] including a large sample of children enrolled at school for which in-home questionnaire data are available. Then, I identify those children who are in the same school and in the same grade. I end up with 91,040 individuals at school and 15,365 children interviewed at home. Only for those children interviewed at home I have all data available and they constitute the main sample. For the other observations, only data gathered from in-school interview are available.

Outcome variables

I study adolescent' sexual behaviour considering 5 outcomes variables: age of sexual debut, sexual promiscuity, use of birth control methods, use of condom, and the number of diagnosed STDs in the past year. The set of outcome variables was constructed using information from in-home child's questionnaire in Wave III.

The first outcome variable, the age of first sexual intercourse, is based on the following question: "In what [month and] year did you have sexual intercourse for the very first time? When we say sexual intercourse, we mean when a male inserts his penis into a female's vagina". This question is contained in all waves' questionnaires. In case of missing data in Wave III, I use information from Wave II when available.

The second outcome variable is a continuous measure of adolescent's sexual promiscuity, defined as the number of sexual partners ever had.

The third outcome variable is a measure of the risk to contract a STD. The dependent variable takes value 1 if in none or only in some of the sexual intercourses occurred in the past year he/she and his/her partner used condom and 0 otherwise.

The fourth outcome variable is a dummy concerning more generically with any form of birth control or pregnancy protection used in the past 12 months. It takes value 1 if the adolescent and his/her partner in none or only some occasions had protected vaginal intercourses, whereas it takes value 0 if they protected themselves in most or all occasions.

The last variable is a continuous measure of the number of STD diagnosed in the last year. I also include an alternative specification of this variable, i.e. a dummy variable taking value 1 if he/she has been diagnosed with at least one STD in the past 12 months and 0 otherwise.

In Table 2 I report the mean and the standard deviation of sexual outcomes by gender. In the last column I reported results from two sample t-tests for a difference in mean between boys and girls.

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[2] I use grand sample longitudinal weight specifically design for longitudinal analyses involving questions from all three waves.

[3] I have also tried to use a siblings' sample matching couple of siblings for which in-home questionnaire was available. However, because of the reduced number of siblings' pairs included in the dataset and the numerous missing data, I ended with a small size sample which makes any kind of analysis impossible.

On average, there are no significant differences in the age of sexual initiation between boys and girls. However, at 15 years old 38% of the female population has already experienced a sexual intercourse (against 40% of male population) and this percentage grows to 88% for 18 years old girls (the same for boys). Most of the girls had their first sexual intercourse between 15-18 age while boys begin earlier (14% of them had the first sexual intercourse before the age 13, against 9% of females of the same age).

Table 2. Sexual outcomes by gender

	Female		Male		Differeces	
	N (7,829)		N (7,513)		Females-Males	
Sexual outcomes	Mean	Std. Dev.	Mean	Std. Dev.		
Age sexual debut	16.3	0.037	16.35	0.047	-0.050	
Number of sexual partners	5.78	0.113	7.44	0.169	-1.660	***
Condom use						
never or just occasionally used	0.64	0.008	0.54	0.01	0.100	***
No birth control method	0.32	0.008	0.31	0.009	0.010	
Diagnosed STDs						
Diagnosed with at least one STD	0.13	0.005	0.05	0.003	0.080	***
Number of STDs diagnosed in past 12 months	0.19	0.009	0.09	0.013	0.100	***

Note: *** significant at 99%, ** significant at 95%, * significant at 90%.

Concerning with the number of sexual partners, girls are less promiscuous than boys: on average girls have already had sexual intercourses with 5-6 persons while boys with 7-8 partners.

Sexual conduct differences between boys and girls are more evident looking at contraceptive use attitude. Females adopt less responsible behaviour in the past year sexual intercourses: in 64% of the cases they had sex never using or just occasionally using condom (against 54% of interviewed boys). Comparatively to boys, more frequently girls have been diagnosed with STD: 13% of them (against 5% of boys) had at least one STD in the past year.

In Table 3 I report the same statistics as before but comparing Whites against Blacks' group.

Table 3 . Sexual outcomes by ethnic groups

	White		Black		Differeces	
	N (10,785)		N(4,580)		Whites-Blacks	
Sexual outcomes	Mean	Std. Dev.	Mean	Std. Dev.		
Age sexual debut	16.53	0.034	15.81	0.05	0.720	***
Number of sexual partners	6.22	0.112	7.36	0.204	-1.140	***
Condom use						
never or just occasionally used	0.63	0.008	0.5	0.012	0.130	***
No birth control method	0.28	0.007	0.41	0.012	-0.130	***
Diagnosed STDs						
Diagnosed with at least oneSTD	0.07	0.004	0.15	0.008	-0.080	***
Number of STDs diagnos in last 12 months	0.1	0.007	0.26	0.022	-0.160	***

Note: *** significant at l 99%, ** significant at 95% y * significant at 90%.

Rates of sexual activity vary considerably by ethnicity. Blacks have first sexual intercourse earlier than white children: 31% of black adolescents at the age of 14 against a much lower 19% of white adolescents. Black adolescents adopt a riskier sexual behaviour than white population: they have sexual intercourses with a higher number of partners, 41% never used birth control methods (against 28% of Whites) and 15% of them contract at least one STD during 12 months period (against 7% of Whites). Blacks are more prudent only in the use of condom: in 50% of sexual relations (against 63% for white adolescents) they do not use it or use it just occasionally.

Self-esteem

As a measure of self-esteem, I use as reference Rosemberg (1965) Self-Esteem Scale (RSE), which is the most popular and utilized measure of global self-esteem. The RSE is usually based on 10 items. The Add Health study administered 3 of the 10 questions typically used to derive these 10 items, and it includes also three additional questions which can provide good proxy of other three RSE items (Bankston and Min Zhou, 2002). More precisely, children in Add Health are asked to report how much they agree with each of the following statements[4]:

1. I feel that I have a number of good qualities;
2. I like myself just the way I am;
3. I have a lot to be proud of;
4. I feel socially accepted;
5. I feel I am doing everything just about right;
6. I feel loved and wanted.

Responses can take the following values: "strongly agree" (=4), "agree" (=3), "neither agree nor disagree" (=2), "disagree" (=1), or "strongly disagree" (=0). Each item was re-coded, if necessary, so higher scores corresponded to positive self-evaluations. I created a single scale from these items scores ranging from 0 to 24. Several empirical studies confirm the reliability of RSE which is usually tested using Cronbach's alpha[5]. For this 6 items scale alpha coefficient equal to 0.84.

In panel A of Table 4 I report self esteem values for girls and boys and the results from two-samples tests for a difference in mean between the two groups. On average boys have higher self-esteem than girls. The percentage of girls (14%) in the bottom of self-esteem's distribution is two times the percentage of boys (7%). On the contrary 34% of boys (against 29% of girls) have high level of self-esteem (above the 75th percentile) and 22% of boys (against 14% of girls) are on the top of self-esteem distribution (above 90th percentile).

In panel B of Table 4 I report self esteem statistics for Whites and Blacks. On average, black children have higher self-esteem than white children. Looking at the extreme values of self-esteem distribution, 17% of white children against 23% of Blacks have high self-esteem (above the 90th percentile), while 34% of white children against 25% of black children have low self-esteem (below the 25th percentile). Considering that self-esteem is the product of

[4] For further characteristics of the scale see "Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press."

[5] This is a statistic commonly used as a measure of the reliability of a psychometric instrument. It indicates how well the average of a set of items measure a single unidimensional latent and it takes value which approach to 1 in the case of perfect reliability. It is defined as a function of the number of test items and the average intercorrelation among the items.

reflected appraisals (how one is viewed or evaluated by society), self-perception, and social comparison, one would expect that disadvantaged group of society and minority groups experience lower level of self-esteem (Rosemberg and Pearlin, 1978). Past theories about racial segregation and discrimination suggested that people segregated and rejected by the society have lower self-image and self-confidence. Thus, the expectation is that the social order should reflect individual self-assessments. Nevertheless, according with previous empirical studies these descriptive statistics show that black children, belonging to families with lower socio-economic profile, have higher self-esteem than Whites. A number of theories, including those related to self-protection and misidentification, have been offered to explain these findings (Crocker et al., 1991; Steele, 1994). Rosenberg and Simmons (1972) find that social economic status seemed to have a relationship with white children's self-esteem, but not with Blacks. They argued that "black children have little awareness of how low their socioeconomic status in society really is".

Table 4. Self-esteem by gender and ethnic group

Panel A: self-esteem by gender

	Female		Male		Differeces	
	N (7,829)		N(7,513)		Females-Males	
Self-esteem measurements	Mean	Std. Dev.	Mean	Std. Dev.		
Self esteem (SE)	18.31	0.063	19.42	0.05496	-1.118	***
<10% percentile SE	0.14	0.005	0.07	0.004	0.070	***
<25% percentile SE	0.37	0.008	0.25	0.007	0.120	***
>75% percentile SE	0.29	0.007	0.34	0.008	-0.050	***
>90% percentile SE	0.16	0.006	0.22	0.007	-0.060	***

Panel B: self-esteem by ethnic group

	White		Black		Differeces	
	N (10,785)		N(4,581)		Whites-Blacks	
Self-esteem measurements	Mean	Std. Dev.	Mean	Std. Dev.		
Self esteem (SE)	16.53	0.034	15.81	0.050	0.716	***
<10% percentile SE	0.12	0.004	0.07	0.006	0.050	***
<25% percentile SE	0.34	0.007	0.25	0.010	0.090	***
>75% percentile SE	0.30	0.006	0.35	0.010	-0.050	***
>90% percentile SE	0.17	0.005	0.23	0.009	-0.060	***

*Note: *** significant at 99%, ** significant at 95%, * significant at 90%.*

Control variables

In Table 5 I report some descriptive statistics on control variables I use in multivariate analysis and the results from two-sample tests for a difference in mean between females and males (Panel A) and Whites and Blacks group (Panel B).

I consider a set of control variables capturing the following factors: family background (income, household's dimension, parent's employment, parental education, the presence of economic stressors), family type (single parent, two parents, no residential parent living with young person), parenting style (presence of a supportive mother, family engagement, parental monitoring, parent-child communication, family cohesion), religion (attendance and salience), child's demographic characteristics (gender, age, race), school attainment, health and attractiveness (health status, disability, physical weight and personality attractiveness). As for self-esteem measure, all variables regarding the child's background comes from Wave I.

Family socio-economic characteristics

Family income is the amount of household's income reported by main parent in the parent questionnaire and it is used as continuous variable. Additionally, I control for household's dimension as an indicator of the economic resources available to each individual in the household[6].

The presence of economic stressors in the family is measured by a dummy variable which takes value 1 if the respondent parent admits to have problem or not to have enough money to pay bills, 0 otherwise.

Parental education is a categorical variable measured as the maximum between the levels of education achieved by the mother and the father; it takes value from 0 corresponding to "no education" to 7 "Graduate or professional degree". Among Whites 39% of parents (against 43% for Blacks) have at least high school qualification.

Table 5. Control variables: by gender (Panel A)

Panel A: explanatory variables by gender

	Female		Male		Differeces	
	N (7,829)		N(7,513)		Females-Males	
Explanatory variables	Mean	Std. Dev.	Mean	Std. Dev.		
Family socio-economic characteristics						
Income	49254	1193.09	48535	1095.61	719	
Household's dimension	4.52	0.026	4.43	0.026	0.090	***
Parent full-time job	0.59	0.008	0.59	0.009	0.000	
Parents' education (0-7)	4.55	0.034	4.69	0.033	-0.140	***
Economic stressor	0.83	0.007	0.84	0.007	-0.010	*
No residential parents	0.05	0.004	0.04	0.004	0.010	*
Single parent	0.3	0.008	0.28	0.008	0.020	
Both residential parents	0.65	0.009	0.68	0.009	-0.030	**
Parenting style					0.000	
Mother support (5-25)	20.93	0.061	21.31	0.059	-0.380	***
Family cohesion (3-15)	11.12	0.044	11.4	0.047	-0.280	***
Parental monitoring (0-7)	5.08	0.029	5.09	0.032	-0.010	
Family engagement (1-10)	3.9	0.029	3.55	0.031	0.350	***
Communication about sex issues (7-28)	18.13	0.087	16.74	0.097	1.390	***
Ability to talk about sex issues (2-10)	8.28	0.029	7.79	0.035	0.490	***
Child's demographic charactheristics						
Age	14.75	0.049	15.01	0.055		***
Ethnicity: Black	0.29	0.014	0.26	0.014	0.030	
School attainment						
Grade (1-4)	2.89	0.015	2.72	0.017	0.170	***
Health and attractiveness						
Poor health* disability	0.01	0.002	0.01	0.002	0.000	
Underweight	0.06	0.004	0.06	0.004	0.000	
Obese	0.05	0.004	0.03	0.003	0.020	***
Attractive (2-10)	7.35	0.025	6.94	0.027	0.410	***
Religion						
Religion attendance (1-4)	3.28	0.017	3.19	0.019	0.090	***
Religion salience (1-4)	3.49	0.014	3.39	0.014	0.100	***

Note: *** significant at 99%, ** significant at 95%, * significant at 90%.

As a measure of occupational status, I use main parent's employment status which assumes value 1 if the parent reports to be employed full time and 0 otherwise. In our sample

[6] The presence of numerous missing data on the age of each household's member, does not allow computing a measure of equivalised household's income.

on average 59% of main parents are employed in full time job, while 41% of them have either a part-time job, are unemployed or out of labour force.

Previous studies found that family disruption affects both adolescent sexual behaviour (Miller et al., 2000; Miller and Bingham, 1989; Thorton and Camburn, 1987; Young et al., 1991) and self-esteem (Bachman, 1970; Rosenberg, 1965; Thomas et al., 1974). Adolescents from intact two-parent families delay their sexual debut at a later age relative to those in disrupted families (Laumann et al., 1994; Meschke and Silbereisen, 1997; White and DeBlassie, 1992; Miller and Moore, 1990, Thorton, 1991). A possible explanation could be the general loss of control in single-parent families related with lower level of parental supervision, monitoring and the provision of a less stable environment which is indirectly connected with lack of parental rules or transmission of values.

Table 5. Control variables: by ethnic group (Panel B)

Panel B: explanatory variables by ethnicity

	White		Black		Differeces	
	N (10,785)		N(4,581)		Whites-Blacks	
Explanatory variables	Mean	Std. Dev.	Mean	Std. Dev.		
Family socio-economic characteristics						
Income	53375	1031.7	35636	929.696	17739	***
Household's dimension	4.42	0.019	4.73	0.004	-0.310	***
Parent full-time job	0.56	0.007	0.67	0.011	-0.110	***
Parents' education (0-7)	4.64	0.029	4.56	0.045	0.080	
Economic stressor	0.87	0.005	0.73	0.011	0.140	***
No residential parents	0.03	0.002	0.09	0.006	-0.060	***
Single parent	0.22	0.006	0.47	0.011	-0.250	***
Both residential parents	0.75	0.006	0.44	0.011	0.310	***
Parenting style						
Mother support (5-25)	20.97	0.05	21.45	0.079	-0.480	***
Family cohesion (3-15)	11.19	0.037	11.4	0.061	-0.210	***
Parental monitoring (0-7)	5.14	0.026	4.94	0.037	0.200	***
Family engagement (1-10)	3.73	0.025	3.76	0.044	-0.030	
Communication about sex issues (7-28)	16.95	0.076	19.03	0.114	-2.080	***
Ability to talk about sex issues (2-10)	8.05	0.027	8.06	0.044	-0.010	
Child's demographic charactheristics						
Age	14.86	0.045	14.9	0.059	-0.040	
Sex: female	0.53	0.016	0.56	0.019	-0.030	
School attainment						
Grade (1-4)	2.88	0.013	2.6	0.024	0.280	***
Health and attractiveness						
Poor health* disability	0.01	0.001	0.02	0.003	-0.010	
Underweight	0.07	0.004	0.04	0.004	0.030	***
Obese	0.03	0.002	0.07	0.005	-0.040	***
Attractive (2-10)	7.22	0.024	7	0.036	0.220	***
Religion						
Religion attendance (1-4)	3.16	0.015	3.44	0.018	-0.280	***
Religion salience (1-4)	3.35	0.012	3.68	0.012	-0.330	***

Note: *** significant at 99%, ** significant at 95%, * significant at 90%.

Children who live in single-parent families evidence more behavioural problems and lower self-confidence (Dorbusch et al., 1985; Fergusson et al., 1986; Luster and McAdoo, 1994; Steinberg, 1987). These findings could be explained by economic deprivation often experienced in single-mother family (Conger et al., 1994; Duncan et al, 1994; Elder and Caspi, 1988; Hashima and Amato, 1994), but also by the importance of father presence in the children's socialization process (Teachman et al., 1998; Cooksey and Fondell, 1996).

In my model, family structure is categorized as single-parent family, two-parent family and no residential parent family (with no parent living in the household). On average, 31% of children have only one parent: this rate is much higher for Blacks (47%) than for Whites (22%).

Chid's characteristics

As indicator of child's cognitive skills I use the mean of the grade of math, science and history collected in wave 1. I recoded the response category from 4 (corresponding to grade "A") to 1 (corresponding to grade "D or lower"). In order to fill in missing observations I computed these values both using in-home and in-school questionnaire.

As indicator of child's health, I include a dummy variable capturing who has poor physical health condition and have any learning or physical disabilities.

Additionally, I consider two indicators for obesity and underweight based on the Body Mass Index (BMI) cut-off points set by the World Health Organization (WHO) and Centers for Disease Control and Prevention. I distinguish between teenager and children older than 20 years old and defined obese an individual in his twenties and with a BMI higher than 30 or a teenager who has a BMI equal or greater than the 95th percentile of the BMI distribution among children of the same sex and age. I adopt an analogous method to define those being underweight and I consider underweight an adolescent with a BMI inferior to 18.5 or a teenager with a BMI value less than the 5th percentile. The BMI is based on self-reported values of height and weight of respondents in Wave I.

A measure of personality attractiveness has been obtained using the interviewer's rating of personality attractiveness. The interviewer remark goes from 1 ("very unattractive") to 5 ("very attractive").

Parenting style

A number of longitudinal studies have documented that children and adolescents who enjoy emotionally close relations with their parents report better psychological health in adulthood (Bachman, et al., 1978, Block, 1971; Snarey, 1993; Wallerstein, 1985; Roberts and Bengtson, 1996) and develop a greater self-esteem than other children (Barber and Rollins 1990, McLeod and Shanahan, 1993). The argument here follows the classic symbolic "interactionist view of self-concepts as a social product and as reflexive phenomenon" (Mead, 1934; Blumer, 1969). Self-image is shaped by reflected appraisal; the appraisal from parents represents for children and adolescents an important factor on self-evaluation.

Some previous studies prove that supportive, and communicative parents delay adolescent sexual experience (Inazu and Fox, 1980; Zelnick et al., 1981). However, there is also evidence that levels of closeness and communication with parents have little or no effect (Newcomer and Udry, 1983). Witbeck et al. (1993, 1996) argue that it could be because the effects of parenting on adolescent sexuality are largely indirect through their influence on children's psychological well being (Whitbeck et al., 1993) or positively influencing child's friendship choices (Whitbeck et al., 1996).

I use different indicators for parenting style in order to capture various dimensions of child-parent relationship. A five-item measure of mother's support is computed to assess the quality of child-mother relation and the presence of a warm and supportive parenting. These items concerned how often the mother is warm and loving toward the child, the degree to which the mother encourages him to be independent or she talks to him to make him understand why something is wrong; the last two items concern child's satisfaction about his/her relationship with his/her mother and about the way they communicate. Each item is measured on a 5-point scale. I sum them together and a high score indicates high mother support. The alpha reliability coefficient for this variable is 0.96.

A seven-items measure of parental monitoring has been introduced to assess the presence of close monitoring and supervision by parents. These items includes the freedom let to the child to choose the time to go to bed, the curfew during the weekend, the people he/she hang around with, what to wear, how much television watching and which television programs and what to eat. The adolescent answers to these questions simply affirmatively (corresponding to value 1) or negatively (corresponding to value 0). Summing up the seven items, I obtain a variable taking values from 0 (very close monitoring) to 7 (no monitoring at all) with an alpha reliability coefficient of 0.64 (Ornelas et al., 2007).

I also include a measure of parental engagement based on the time that mother and father spend with their children doing things together and talking about personal problems or simply tell each other what they have done during the day. For instance, it has been asked to the children if they go for shopping together, if they play sport together, if they talk about things the children doing in school. The indicator is the sum of 11 items and it goes from 1 to 10 and the alpha reliability coefficient for this variable is 0.73.

The child's perception on the level of cohesion in the household is measured through the sum of three items: how much he feels to be understood, how much family pays attention on him and how much they have fun together. The scale goes from 3 to 15, where 15 indicate the highest level of family cohesion. The reliability of this variable is 0.79.

It has been proved that parent-child communication on specific sexual related issues helps him/her to develop a responsible sexual behaviour. Parent-child communication is the mean for transmission of values and norms which could affect later decisions. I define two variables to indicate to what extent ("not at all", "somewhat", "a moderate amount", "a great deal") parent and child talk about sexual issues and the parent's ability/attitude to talk about what in some cases is considered an embarrassing topic.

The first variable is a seven-items measure including variables on how much parent and child talk about having sexual intercourse, birth control methods, the negative or bad things that would happen in case of unwanted pregnancy, the dangers of getting a STD, the negative or bad impact of having sex on child's social life and the moral issues of not having sexual intercourse. The variable obtained summing together these questions has a range from 7 to 28 and reliability equal to 0.90.

The second variable is an indicator of parent's ability to talk about sex and birth control and it is obtained summed up two measures: to what extent parent would embarrass to talk about it and how much it would be difficult for him/her. Both questions come from child's questionnaire. The variable obtained has a range value from 2 to 10 with 10 corresponding to easiest communication on this topic. The scale has reliability equal to 0.78.

Another source of values and norms is religion. Some researchers have suggested that religious involvement is associated with the delay of sexual intercourse and decreases the number of partners (Billy et al., 1994; Day, 1992; Thornton and Camburn, 1987).

I consider child's religiosity measured by self reported attendance to religious services[7] and importance given to religion[8].

[7] The question used is the following: "In the past 12 months, how often did you attend religious services" and it takes values from 1 ("Never") to 4 ("Once a week or more")

[8] The question used is the following: "How important is religion to you?" and it takes values from 1 ("Not important at all") to 4 ("Very important").

4. Method

My main aim is to estimate the effect of self–esteem on five sexual outcomes during adolescence: premature sexual initiation, number of sexual partners during the adolescence, use of birth control and pregnancy protection methods and the number STDs diagnosed in the past 12 months.

I proceed by analysing the impacts of self-esteem on each sexual outcome controlling for the set of explanatory variables defined in previous section:

$$\textit{Main equation: } Y_i = \beta_0 + \beta_1 S_i + \beta_2 S_i^2 + \beta_3 S_i^3 + \beta_4 X_i + u_i = \quad (1)$$
$$= \beta_0 + \beta_k S_i^n + u_i \quad \textit{with } k=1,..3;\ n=1,..3$$

where Y_i is the sexual outcome considered, X_i is a vector of exogenous and predetermined regressors, S_i^n is self-esteem with its squares and u_i is an error term.

I consider a polynomial expression for self-esteem because I have reason to believe that the true impact of self-esteem on sexual outcomes is non-linear. The non linearity can be theoretically explained by the discordant effect of self-esteem on adolescent's sexual outcomes depending on the level of self-esteem achieved.

Self-esteem is endogeneous in the sense that $E(S_i u_i) \neq 0$ and the least squares estimator suffers from endogeneity bias.

Assuming that

$$S_i^n = \alpha_0 + \alpha_1 Z_{i,r} + \alpha_2 X_i + v_i \quad (2)$$

where $Z_{i,r}$ is a vector of exogenous variables uncorrelated with both u_i and v_i. Endogeneity problem occurs because of the presence of omitted or unobservable variables and the presence of reverse causality[9].

The endogenity bias due to reverse causality problem is overcome using panel data which allow looking at the relationship between early self-esteem and later sexual outcomes.

However, to deal with endogeneity problem due to unobservables I use instrumental variable models (Bowden and Turkington, 1984; Greene, 2000). I use a two-stage least squares (2SLS) estimation in the case of continuous dependent variable and a two-step probit model with continuous endogenous regressors and binary dependent variables.

The credibility of instrumental variable models depends on the ability to identify a set of relevant and valid exogenous instruments, to have respectively strong and valid instruments (Wooldridge, 1960). The use of invalid or weak instruments lead to larger biases than in the case of ordinary least squares estimation (Stock et al, 2002; Hahn and Hausman, 2003).

In my model, the vector of instruments has to be relevant in explaining self-esteem but orthogonal to the error term of the equation for sexual outcomes' estimation. In other

[9] See Wooldridge (2002), Ruud (2000) for a discussion on the different sources of endogeneity

words, ideal instrumental variables predict self-esteem and have an impact on the considered sexual outcomes only through self-esteem.

If *r* instrumental variables included in the vector $Z_{i,r}$ fulfil both conditions[10], or in other words $E(Z_{i,r}S_i) \neq 0$ and $E(Z_{i,r}u_i) = 0$, betas coefficient in equation (1) can be estimated by using $Z_{i,r}$ to instrument S_i. In the second stage of instrumental variable estimation the predicted $\hat{S}_i$ is substitute in equation (1) and the sexual outcome variable is regressed on $\hat{S}_i$ instead of the endogenous regressor.

In case of binary dependent sexual outcomes I apply a probit model with continuous endogenous regressors using Newey's two-step estimator. The endogenous variables are estimated in the first stage by a simple linear regression as in equation. (1), while the second stage is estimated using maximum likelihood technique through probit regression, following equation (2).

I tested the relevance condition looking at R^2 statistics, F statistics[11], Shea's partial R^2. The over-identifying restrictions to verify the validity of instruments has been tested using Sargan's test.

The choice of instruments

The research for relevant instruments is based on the idea that the processes that lead to self-esteem formation involve social comparison and reflected appraisals. Social interaction between peers has often been hypothesised as an important component of the child's development and subsequently of his/her emotional health. It is widely agreed that during childhood family and school are the two main conduits of socialization. Children compare themselves with the coetaneous with whom they spent most of the time that is their brothers and sister and their schoolmates.

Social inclusion at school, popularity among schoolmates, whether based on excellence in some qualities or bullying attitude, contribute significantly in increasing own self-esteem. Comparison between schoolmates is one of the sources of information in forming self-concept. According with socio-psychological literature, "students will have higher self-evaluation in downward comparison but lower self-evaluation in upward comparison" (Cheng et al. 2007). Following this reasoning, performing better than the other classmates should increase self-esteem.

Similarly, looking at siblings interactions, growing up in the shadow of a clever sibling may damage own self-esteem, while living in a family with "low-profile" siblings may enhance

[10] Note that the number of instruments has to be at least as large as the number of parameters to be estimated, or $r \geq n$.

[11] The bias which rises in case of weak instruments is inversely related to the *F*-statistic of the regression of the endogenous explanatory variable on the instruments (Hahn and Hausman, 2003). Stock et al (2002), suggest that the F statistic should be larger than 10 in order to consider a good estimation.

it. However it is arguable that at some point the low self-esteem feeling of one sibling may become contagious. In this sense downward comparison may decrease child's self-esteem.

For the present analysis I restricted the search of relevant instruments to comparisons within schoolmates' sample. This choice is due to limited number of siblings' pairs and the presence of numerous missing data that made impossible any kind of robust analysis using siblings' sample.

The two variables I consider are the differences in school attainment and in personality attractiveness between the adolescent and his/her schoolmates. Both instruments would not be expected to have a direct effect on sexual outcomes but to have an indirect effect through self-esteem's mediation.

The difference in school attainment is computed as the difference between the child's grade and the average grade of his/her schoolmates. In order to avoid spurious correlations between the dependant variable and the instrument, the mean is calculated over all other individuals in the community excluding the alternatively the considered individual. The instrument takes value 1 if the child is better at school than the average of his/her schoolmates, 0 otherwise.

Similarly, attractiveness instrument takes value 1 if the child is more attractive than the average of his/her schoolmates, 0 otherwise. Attractiveness is a measure of interviewer's assessment of the respondent's personality attractiveness (Rosemberg et al., 1989). Having an unattractive personality may be highly correlated with self-esteem and it may have a direct effect on sexual outcomes. I hypothesize that being relatively more attractive than schoolmates' average would just increase adolescent's self-esteem. Moreover, once including adolescent's attractiveness among control variables, any direct effect of the variable on sexual outcomes is captured.

Furthermore, I use four additional instruments that do not directly involve any within-schoolmates comparison but concern with child's physical and psychological characteristics.

It is widely agreed that being overweight affects sexual outcomes both directly, considering that obese people can be judged less attractive by potential sexual partners, and indirectly, having a negative impact on self-esteem (Biro at el., 2006). I control for the direct impact including "being obese" (or underweight) in the set of explanatory variables. The indirect effect can be considered using a measure of what can be define "subjective obesity". What really matter in term of effects on self-esteem is the "self-image at mirror" or in other words, how do you see yourself. Note that the subjective idea about obesity is the result of "peer group judgments to stereotypes attached to fat, average, and thin body" (Lawson, 1980). So this condition captures indirectly an element of peers' interaction.

To obtain a measure of subjective obesity I construct a dummy variable that takes value 1 if two conditions occurred: 1) the child answers to the question "How do you think of yourself in terms of weight?" saying "slightly overweight" or "very overweight" 2) he /she admits to be trying to loose weight or to stay the same weight.

The first condition alone is not enough. It is necessary to attach a personal judgement of being obese or overweight. For this reason the second condition seems particularly important: one person could be aware to be obese or overweight but it can not represent a problem at all and thus it may not affect self-esteem in anyway. It seems reasonable thinking

that if being/seeing oneself obese represents a problem, at the question "Are you trying to loose weight, or stay the same weight" I expect that the adolescent answers affirmatively.

The second instrument is an indicator of social inclusion at school. It measures how much the adolescent feels close to people at school, he/she likes to be part of it and he/she is happy to be in his/her school. Summing up these three items, I obtain a variable taking values from 0 to 12 with an alpha reliability coefficient of 0.79. This instrument should be expected to be a strong instrument. The quality of life at school is one of the main components in self-esteem's building process during childhood and adolescence. Thus, being happy, feeling accepted and interacting with peers at school are expected to be highly correlated with self-esteem measure and not correlated with sexual outcomes except through self-esteem.

The third additional instrument is a measure of "specific self-esteem". According Rosemberg et al. (1995), global self-esteem is a compound of several facets of specific self-esteem which reflect the individual's confidence to be able to "attain specified performance levels" (Bandura, 1982). Global self-esteem is a measure of general psychological wellbeing; specific self-esteem is "more relevant to behaviour" and it has a lot in common with self-efficacy concept. The magnitude of specific (sexual) self-esteem's effect on global self-esteem depends "by the degree to which the relevant role behaviour is personally valued" (Rosemberg et al., 1995).

In the analysis, sexual self-efficacy is measured by 3-item index based on three questions: (1) "If you wanted to use birth control, how sure are you that you could yourself and use birth control once you were highly aroused or turned on?"; (2) "How sure are you that you could plan ahead to have some form of birth control available?"; (3) "How sure are you that you could resist sexual intercourse if your partner did not want to use some form of birth control?". Only teenagers who were at least 15 years old were asked to answer to these questions[12]. I recoded response categories from 5 (very sure) to 1 (very unsure) so that a high score indicates high specific sexual self-esteem. I obtain a scale going from 3 to 15 where 15 is the highest specific self-esteem value. Coefficient alpha is 0.62 for the present sample.

My hypothesis is that specific (sexual) self-esteem or in other words the evaluation of self-efficacy in sexual relationship can be used as an instrument for (global) self-esteem. I use it just in the models for age of sexual debut and sexual promiscuity. Only in these two cases that instruments seems to be valid and any effects of specific self-esteem on sexual outcomes are through (global) self-esteem. On the contrary, being self-confident on the use of birth control methods and on contraceptive may have a direct influence on their use and on the likelihood to be diagnosed with STDs.

A general approach to the selection of additional instruments is suggested by Wooldridge (2000). He recommend incorporating in the instrumental variable lists "some squares of the exogenous variables appearing somewhere in the system" (Wooldridge, 2000). I use as additional instrument the squared of mother's support variable which is hypothesized to be relevant in self-esteem building process during childhood. Moreover, once controlling for the other parenting style variables, mother support variable is expected to be exogenous to sexual outcomes.

To strengthened the validity of my instruments, I control for a wide set of variables that may possibly be correlated with both self-esteem and sexual outcomes.

[12] In 29% of wave 1 observations, self efficacy is missing: 4,161 were minor than 15 years old and the remaining 1,866 did not answer to the question.

5. Results

In this section I present the results obtained using Two Stage Least Square (2SLS) regressions in case of continuous variable (age of first sexual intercourse and number of sexual partners) and Newey's two-step probit model with continuous endogenous regressors in case of discrete variable (diagnosed with at least one STD, use of condom and use of any birth control methods)[13].

Descriptive analysis showed that once controlled for socio-economic background and family and child's characteristics sexual outcomes are still different by race and across gender. For this reason, I estimates each models separately for women and men and for Blacks and Whites.

Note that in some estimation models I use a different combination of instruments. In some cases, though in presence of good F-statistics for the set of instruments considered, the over-identification test indicates that not all instruments are valid. For example, in age of sexual debut and sexual promiscuity estimation the problematic instrument turns out to be the measure of school inclusion, while in the last outcomes about contraceptive use I exclude personality attractiveness besides specific self-esteem for the reasons explained in previous section. Dropping these instruments improves test statistics, leaving a set of strong exogenous instruments and without qualitatively affecting the main results.

In this section I present the most relevant results and various diagnostic tests for weak instruments and over identification problems[14]. These results are displayed by graphical representation of polynomial or linear smooth plot with confidence intervals. In each figure I reported three vertical lines in correspondence of the self-esteem's values for the 10^{th} (solid line), 25^{th} (dotted line) and 75^{th} (dashed line) percentile of self-esteem's distribution for the sample considered in the estimation.

Age of sexual debut

In Table 6 I report the results for the age of sexual debut. I consider separately boys and girls, Blacks and Whites and I check for pair wise comparisons for each gender-and-ethnic group[15].

There are strong evidences of the importance of self-esteem for some of the sub-samples considered. Significant differences emerged across ethnic groups and each gender.

According with the results reported in the first column of Table 6, self-esteem prevents girls from early sexual intercourses. However, as clearly visible from the curve reported in Panel A of Figure 1, this is the case for those girls in the bottom (less than 10^{th} percentile) and in the top (more than 75^{th} percentile) of self-esteem's distribution. Indeed, for self-esteem's values higher than 10^{th} percentile and lower than the 75^{th} percentile the curve turns in a convex shape. It means that an increase of self-esteem acts in the opposite sense (slightly) decreasing the age of sexual debut. The same conclusions can be drawn looking at

[13] Note that the results presented in this section have not been obtained using weighted model's estimation. I have tried model's estimation using longitudinal weights and I have obtained similar results. Nevertheless, the use of weights generates spurious results given higher standard deviations and a not negligible loss in statistical significance. For this reason, I decide to proceed without weights.
[14] Complete results of instrumental models' estimation are fully reported in the appendix.
[15] Full results are presented in Table A in appendix.

negative coefficient of self-esteem squared and the (small) positive coefficient of cubic self-esteem.

Table 6. Age of sexual debut

	Gender				Ethnicity				Boys			
	Female		Male		White		Black		White		Black	
Self esteem	1.746	***	-11.367		2.145	***	-16.544		1.980	***	2.282	
Self esteem^2	-0.149	***	0.756		-0.175	***	1.154		-0.135	*	-0.283	
Self esteem^3	0.004	***	-0.016		0.004	***	-0.025		0.003		0.007	
IVs	**First stage**											
Grade mates difference	0.165		0.066		0.289		-0.135		0.473		0.299	
Mother's support ^2	0.013	***	0.031	***	0.022	***	0.016		0.034	***	0.024	***
Personality attractiveness	0.321	**	0.126		0.144		0.248		0.025		0.408	
Specific self esteem	0.107	***	0.106	***	0.122	***	0.081		0.121	***	0.114	***
Subjective obesity	-1.004	***	-0.815	***	-1.042	***	-0.798		-1.046	***	-0.491	
N	2993		2941		3783		1603		1715		657	
F(4, 4633): self-esteem	24.80		29.01		41.07		9.25		24.48		4.74	
Sargan overid: p value	0.00		0.76		0.05		0.83		0.03		0.64	
Shea's partial R-sq	0.00		0.00		0.00		0.00		0.00		0.02	
R-sq	0.31		0.25		0.32		0.22		0.28		0.22	
Partial R-sq	0.04		0.05		0.05		0.03		0.68		0.04	

*p<0,10, ** p<0,05, *** p<0,01

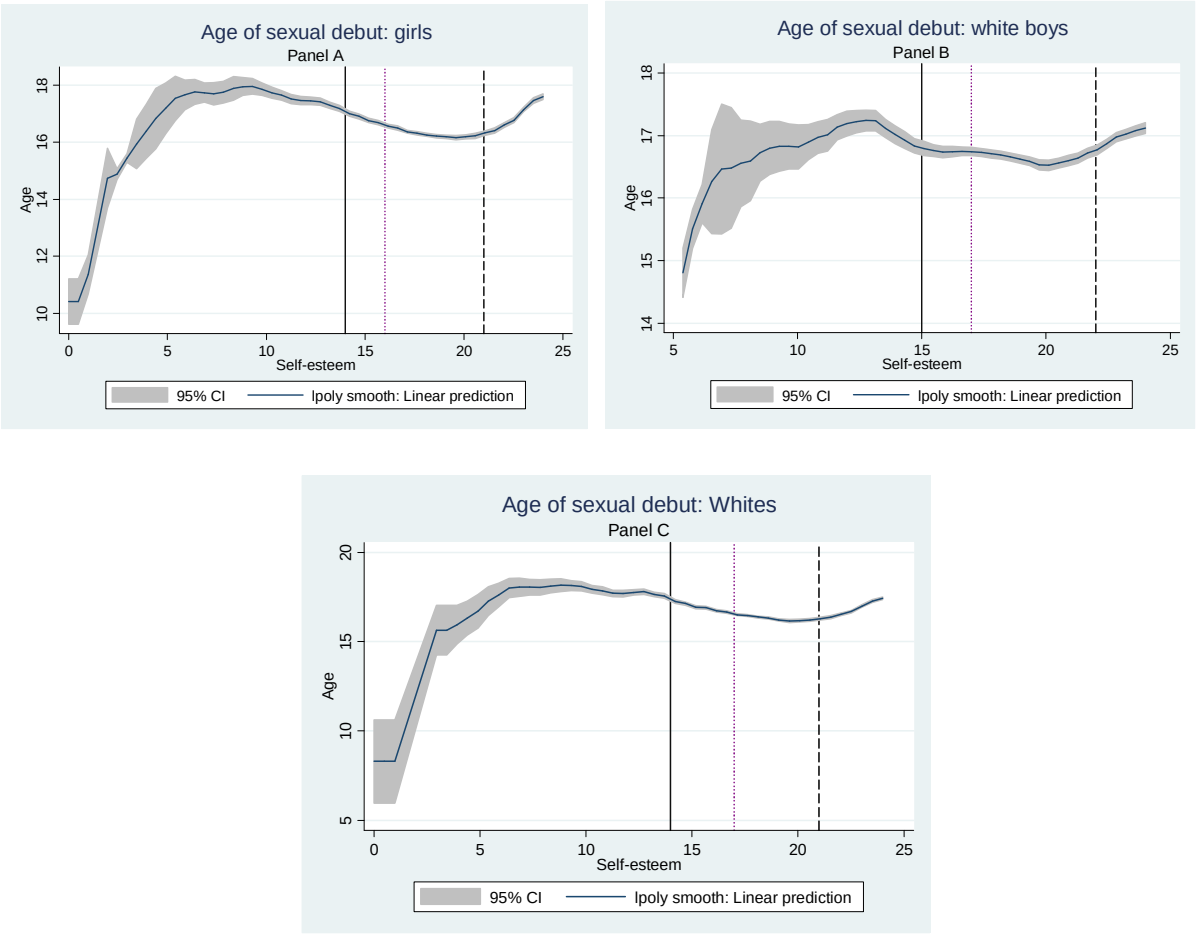
In the third and fourth columns of Table 6, I report results obtained estimating separately a model for Whites and one for Blacks. Self-esteem turns out to be relevant just for Whites. Similarly to what found for female group, the strongest delaying effect of self-esteem is for those adolescents with lowest self-esteem. Again, for intermediate self-esteem's levels an increase of self-esteem contributes, although minimally, to anticipate sexual initiation.

From pair wise comparisons for each gender-and-ethnic group result that only among white males the protecting effect of self-esteem is still significant and dominant[16]. There is reason to think that the small sample size of black males may affect results and it may be the cause for self-esteem not to be relevant for this population subgroup[17].

[16] Note that in this case the coefficient of cubic self-esteem is not significant; that means that self-esteem delays sexual debut only for low self-esteem adolescents.

[17] Additionally, F statistics shows that the set instruments used constitutes weak instruments for black adolescents in explaining the age of sexual initiation. In the other estimation models reported in Table 2, F statistic for the joint significance of the instruments is considerably larger than the rule of thumb value of 10.

Figure 1. Age of sexual debut



Number of sexual partners

Most of previous empirical works found that high self-esteem males and females have a significantly greater number of sexual partners than low self-esteem adolescents.

Walsh (1991) argues that "any kind of behaviour that carries with it the risk of rejection requires a certain level of self-confidence that accompanies higher-self esteem". Thus, the number of sexual partners has expected to be higher for who posses a "certain amount" of self esteem and particularly among males "who generally initiate any sexual activity" (Walsh, 1991).

Results reported in Table 7[18] and displayed in Figure 2 partially confirm previous findings but suggest that self-esteem has a mixed effect on adolescents' sexual promiscuity conditioning on the level of self-esteem reached.

Self-esteem is a strong predictor of the number of sexual partners among girls, Whites and white boys. In all these cases the coefficient of self-esteem and cubic self-esteem are significant and positive and the coefficient of self-esteem squared is significant and negative. In other words, an increase of self-esteem acts in the same direction for highly self-confident

[18] Results are fully reported in Table B in appendix.

and low self-confident adolescents increasing the number of sexual partners, whereas it decreases sexual promiscuity for middle self-confident adolescents.

However, looking at the three curves reported in Figure 2, note that there are significant differences among the three sample's results. In Panel A, for example, an increase of girls' self-esteem enhances sexual promiscuity just in correspondence of very extreme (low and high) values of self esteem. It means that on average self-esteem still has a protective effect reducing girl's sexual promiscuity. This seems even more evident for Whites subgroup, displayed in Panel B

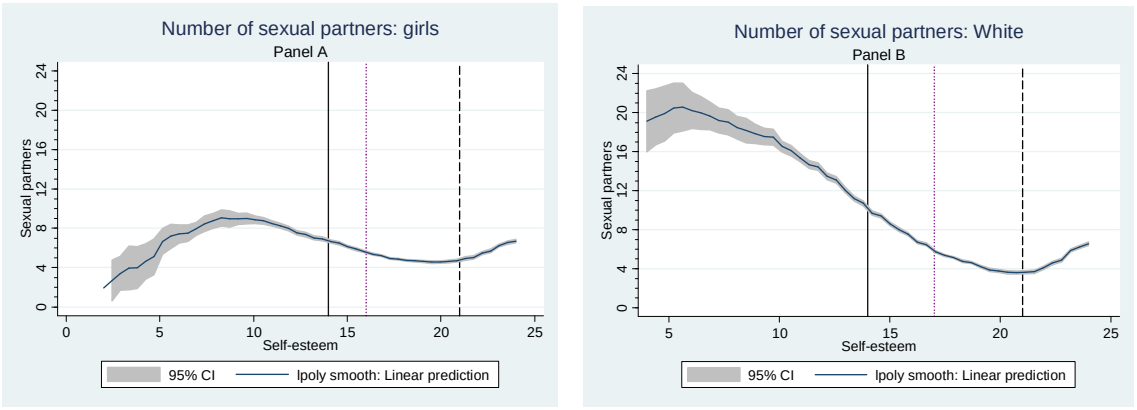
Slightly different results have been found for white boys. Extreme levels of self-esteem still predict high adolescent' promiscuity and the number of coital partners is a decreasing function of self-esteem only for those boys with intermediate self-esteem's value. However, for white boys the impact of self-esteem in both enhancing sexual promiscuity and reducing sexual partners is much more deeper than for the other two subgroups considered.

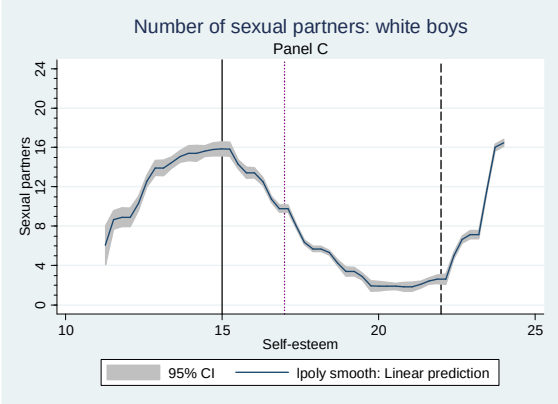
Table 7. Number of sexual partners

	Gender				Ethnicity				White			
	Female		Male		White		Black		Female		Male	
Self esteem	3.701	***	6.143		4.144	***	40.632		62.945		5.855	*
Self esteem^2	-0.291	***	-0.705		-0.454	***	-3.338		-4.137		-0.658	*
Self esteem^3	0.007	***	0.018		0.011	***	0.077		0.086		0.017	*
IVs	**First stage**											
Grade mates difference	0.165		-0.060		0.108		0.155		0.181		0.156	
Mother's support ^2	0.014	***	0.038	***	0.024	***	0.019	***	0.018	***	0.036	***
Personality attractiveness	0.398	**	-0.018		0.073		0.421		0.240		-0.122	
Specific self esteem	0.106	***	0.076	***	0.113	***	0.062	*	0.118	***	0.136	***
Subjective obesity	-0.999	***	-0.772	***	-0.375		-0.547		-1.015	***	-0.927	***
N	2503		2286		2820		1041		1447		1513	
F(4, 4633): self-esteem	21.18		26.46		17.81		4.32		13.77		24.21	
Sargan overid: p value	0.13		0.07		0.55		0.35		0.99		0.15	
Shea's partial R-sq	0.00		0.07		0.00		0.00		0.00		0.00	
R-sq	0.33		0.26		0.33		0.22		0.36		0.31	
Partial R-sq	0.04		0.06		0.03		0.02		0.05		0.08	

*p<0,10, ** p<0,05, *** p<0,01

Figure 2. Number of sexual partners





Probability to be diagnosed with STDs and number of STDs diagnosed in the past year

Descriptive statistics reported in Table 2 shows that 13% of females have been diagnosed (11% Whites and 19% Blacks) with at least one STDs in the last 12 months against 5% of males (3% Whites and 8% Blacks).

In Table 8 results for the probability to have been diagnosed with at least one STD are reported[19]. The probability is an increasing function of self-esteem for all subgroups for which it results to be significant[20].

Table 8. Ever diagnosed with at least one STD in the past year

	Gender		Ethnicity		Boys		Female	
	Female	**Male**	**White**	**Black**	**White**	**Black**	**White**	**Black**
Self esteem	0.408 *	0.100 *	0.078 *	0.877 *	0.184 **	-0.059	0.382 +	0.482
Self esteem^2	-0.011 *			-0.023 *			-0.009	-0.013
Self esteem^3								
IVs								
Grade mates difference	0.106	0.275	0.299	-0.118	0.105	0.321	0.232	-0.254
Mother's support ^2	0.018 ***	0.035 ***	0.023 **	0.024 ***	0.034 ***	0.044 ***	0.019 ***	0.017 ***
Personality attractiveness			0.251 *	0.086				
School inclusion	0.188 ***	0.167 ***	0.180 **	0.159 ***				
Subjective obesity	-1.138 ***	-0.881 ***	-1.130 **	-0.790 ***				
N	2919	2286	3880	1399	2504	881	2079	833
F(4, 4633): self-esteem	57.36	52.16	64.60	19.49	42.47	30.10	47.76	11.05
Sargan overid: p value	0.24	0.79	0.20	0.33	0.31	0.87	0.99	0.06
Shea's partial R-sq	0.06	0.08	0.08	0.04	0.33	0.07	0.06	0.05
R-sq	0.35	0.32	0.37	0.28	0.29	0.25	0.37	0.28
Partial R-sq	0.07	0.08	0.08	0.07	0.03	0.07	0.09	0.05

"+"p<0,16 *p<0,10, ** p<0,05, *** p<0,01

Notes: Coefficients of probit models with endogenous variables reflect average marginal effects (evaluated at the mean of the independent variables). For white girls the marginal effect is significant at 16% level.

Results from model estimation for the number of diagnosed STDs confirm previous findings for females, Black and white girls[21] subgroups (see Table 9)[22]. For these groups, self-

[19] After two-step probit model's estimation, marginal effects of each independent variable have been computed holding the remaining variables at their mean. Note that the marginal effect for girls is particularly high but significant at 16% level.

[20] Note that the coefficient for self-esteem squared is approximately equal to zero for all subgroups where non linearity has been hypothesized.

esteem increases both the probability to be diagnosed with STDs and the number of STDs diagnosed in the past. Note that it is true for low level of self esteem (inferior to 25th percentile of self-esteem distribution in each subgroups considered), otherwise for the highest value of self-esteem (higher than 75th percentile of self-esteem distribution in each subgroups considered), an increase of self-esteem decreases the number of STDs diagnosed. In correspondence of self-esteem values between 25th and 75th percentiles curves in Panel A, B, C turns to almost flat shape and an increase of self-esteem has approximately a null effect on the number of STDs diagnosed.

Table 9. Number of STDs diagnosed in the past year (white male almost significative: compare with black male (as in the table) or white female (quasi)

	Gender		Ethnicity		Boys		Girls	
	Female	Male	White	Black	White	Black	White	Black
Self esteem	0.170 **	0.318	0.03	0.620 **	-4.889 ++	2.048	0.117 +	0.225
Self esteem^2	-0.004 **	-0.008	0.00	-0.016 **	0.300 ++	-0.048	-0.003	-0.006
Self esteem^3					-0.006 ++	0.000		
IVs								
Grade mates difference	0.091	0.234	0.306	-0.147	0.388	-0.066	0.223	-0.201
Mother's support ^2	0.017 ***	0.035 ***	0.021 ***	0.024 ***	0.031 ***	0.043 ***	0.018 ***	0.017 ***
Personality attractiveness	0.248	0.093	0.270 **	0.085	0.114	0.167	0.364 **	0.049
School inclusion	0.187 ***	0.163 ***	0.183 ***	0.163 ***	0.150 ***	0.216 ***	0.210 ***	0.127 ***
Subjective obesity	-1.143 ***	-0.877 ***	-1.324 ***	-0.864 ***	-0.977 ***	-0.512 ***	-1.221 ***	-0.944 ***
N	2929	2369	3889	1409	1806	563	2083	846
F(4, 4633): self-esteem	46.50	41.29	71.32	20.88	27.36	15.59	39.05	8.85
Sargan overid: p value	0.18	0.74	0.21	0.61	0.38	0.416	0.19	0.18
Shea's partial R-sq	0.06	0.03	0.06	0.04	0.00	0.006	0.06	0.06
R-sq	0.35	0.32	0.35	0.28	0.33	0.304	0.37	0.28
Partial R-sq	0.07	0.08	0.08	0.07	0.07	0.127	0.09	0.05

"+" p<0,14, "++" p<0,12, *p<0,10, ** p<0,05, *** p<0,01

Comparing with findings reported in Table 8, different results have been found for White subgroups. Indeed, self-esteem's coefficients for Whites (reported in Table 9, third column) turn to be not significant estimating the number of STDs diagnosed. This result can be explained looking at gender differences within Whites' sample[23]. Considering white females, both the probability to be diagnosed with STD and the number of STDs diagnosed are a positive function of self-esteem. In this case self-esteem is not a protective factor for female group. On contrary, self-esteem is negatively related to the number of STDs diagnosed for white males with extreme (low and high) values of self-esteem (see Figure 3 Panel D). In the other cases, i.e. for intermediate values of self-esteem, it is positively related to the number of STDs, though the effect of one unit change in self-esteem is quite small.

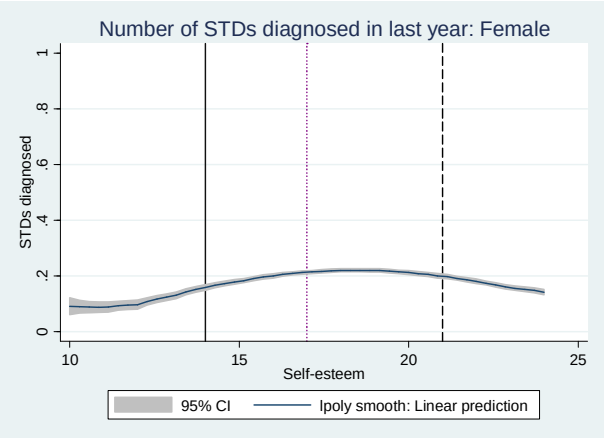
Summing up, an increase of self-esteem for low self-confident adolescents predicts a higher risk to be diagnosed with STDs while for high level of self-esteem it should decrease the likelihood and the incidence of STDs diagnosed.

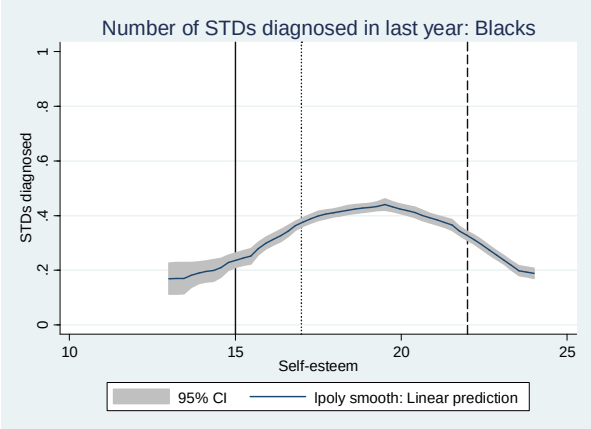
[21] Note that self-esteem's coefficients for white females are statistically significant at the 11% level both for estimation of the likelihood to have been diagnosed with at least one STD and the number of STDs diagnosed.

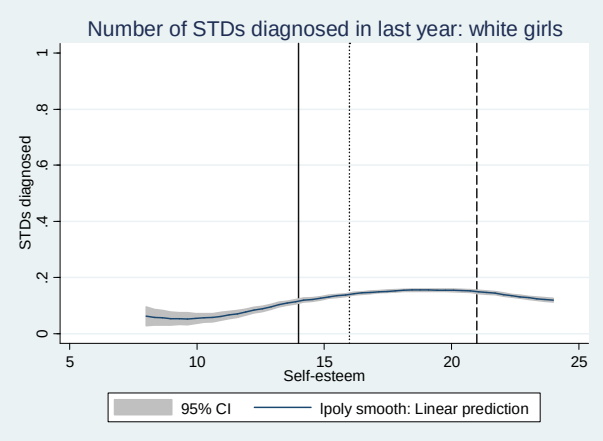
[22] See Table C in appendix for full results on the number of STDs diagnosed in the past year.

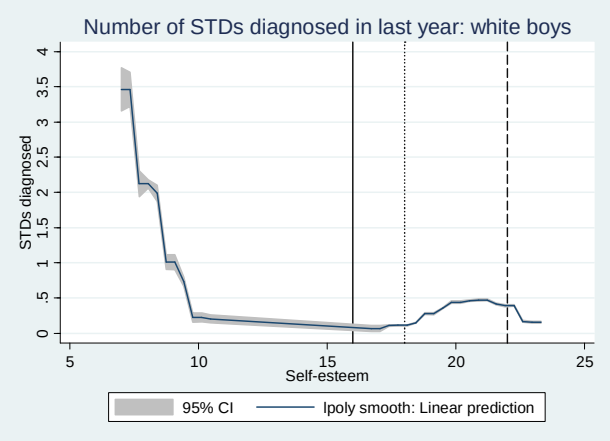
[23] Note that both for white girls and white males, self-esteem's coefficients are statistically significant at the 11% level.

Figure 3. Number of STDs diagnosed in the past year









Use of condom: risk of STDs contracting

In Table 10 I report results from two-step probit model's estimation of the likelihood to use (or made the partner use) condom. The dependent variable takes value one if in none or only in some of the sexual intercourses occurred in the past year he/she and his/her partner used condom and 0 if in most or all occasions they use it[24].

The results presented in last section show that an increase of self-esteem raises the likelihood to be diagnosed with at least one STD. Considering that the use of condoms can be used as a proxy for the risk of contracting STDs, it should expect to find a similar relation between self-esteem and the use of contraceptive.

This hypothesis is confirmed by the results reported in Table 10 for female and Whites groups. Self-esteem is positively related to the likelihood of never (or just occasionally) use condom for both groups. That means that one unit increase of self-esteem among girls and Whites raises respectively of 36% and 33% the probability to never or only occasionally use condoms[25]. However, looking at the curve reported in Figure 4 Panel A, notice that for those females who have self-esteem higher than 25th percentile, any additional increase of self-

[24] See Table E in appendix for full results on the likelihood to never (or just occasionally) use condom.
[25] In other words, the likelihood to never use condom increases with self-esteem at a rate such that, if the rate were constant, this likelihood would increase by 0.36 if self-esteem increased by 1.

esteem reduces the probability to never use condom. The same considerations are valid for Whites subgroup displayed in Panel C.

Similar results have been found for Blacks and particularly for black females[26] but in this case self-esteem is linearly related to the probability to never use condom. Self-esteem acts as protective factors in each point of self-esteem's distribution. For high level of self-esteem (above 75th percentile) the probability of using regularly condom or made her partners use it, it is near to 1.

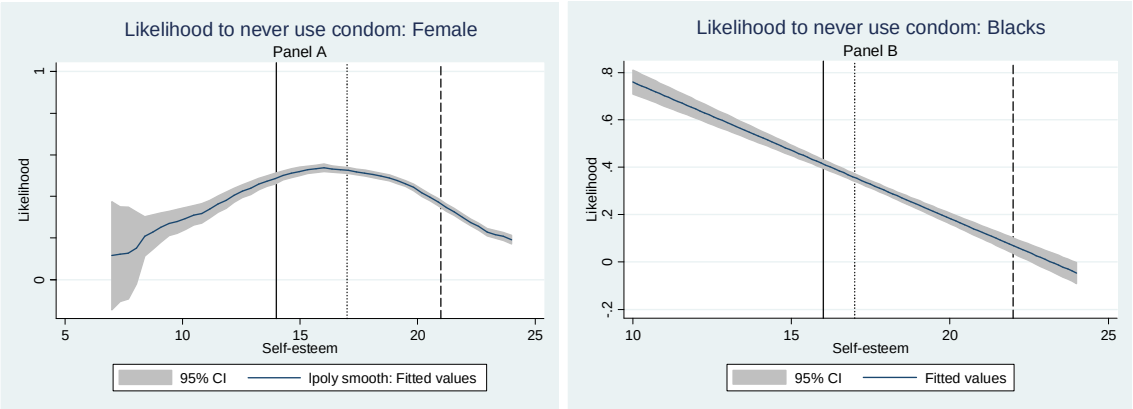
Table 10. Never (or just occasionally) use condom

	Gender		Ethnicity		Black	
	Female	Male	White	Black	Female	Male
Self esteem	0.362 *	0.256	0.445 **	-0.113 **	-0.112 +	-1.475
Self esteem^2	-0.011 **	-0.007	-0.012 **			0.036
IVs						
Grade mates difference	0.283	0.395	0.499 **	-0.006	-0.094	0.093
Mother's support ^2	0.017 ***	0.035 ***	0.021 ***	0.023 ***	0.016 ***	0.043 ***
School inclusion	0.180 ***	0.164 ***	0.184 ***	0.161 ***	0.119 ***	0.224 ***
Subjective obesity	-1.168 ***	-0.815 ***	-1.333 ***	-0.987 ***	-1.155 ***	-0.252
N	2363	1805	3028	1140	693	447
F(4, 4633): self-esteem	44.32	44.32	67.32	21.64	10.13	10.13
Sargan overid: p value	0.95	0.95	0.46	0.86	0.18	0.20
Shea's partial R-sq	0.06	0.06	0.54	0.07	0.06	0.07
R-sq	0.34	0.34	0.35	0.27	0.28	0.28
Partial R-sq	0.01	0.07	0.08	0.07	0.06	0.06

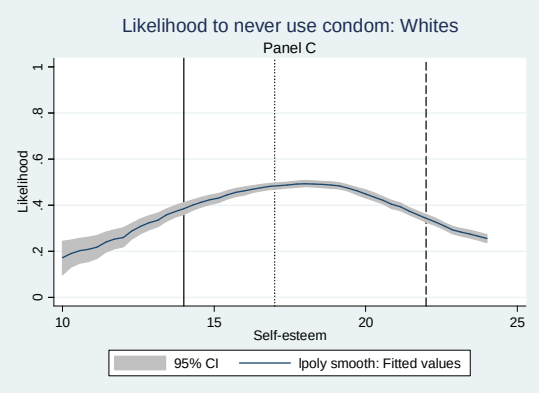
+ p<0,11,*p<0,10, ** p<0,05, *** p<0,01

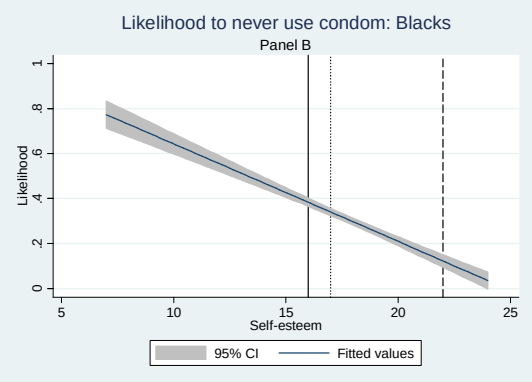
Notes: Coefficients of probit models with endogenous variables reflect marginal effects evaluated at the mean of the independent variables.

Figure 4. Likelihood to never (or just occasionally) use condom



[26] Note that in this case self-esteem's coefficient is statistically significant at the 11% level.





Occasional use of birth control methods: risk of unintended pregnancy

Table 11 reports the results from birth control methods model's estimation[27]. The dependent variable takes value 1 if the use of any kind of birth control methods is totally absent or it is just occasional. This variable can be considered as a proxy of the risk of unintended pregnancy.

Table 11. Never (or just occasionally) use of any birth control methods

	Gender				Girls			
	Female		Male		White		Black	
Self esteem	-0.084	**	-0.703		-0.076	*	-0.125	*
Self esteem^2			0.017					
IVs								
Grade mates difference	0.321		0.463	*	0.386		0.252	
Mother's support ^2	0.018	***	0.035	***	0.020	***	0.017	***
School inclusion	0.200	***	0.148	***	0.209	***	0.177	***
Subjective obesity	-1.135	***	-0.908	***	-1.176	***	-1.080	***
N	2115		1611		1519		596	
F(4, 4633): self-esteem	43.36		32.57		33.26		10.89	
Sargan overid: p value	0.15		0.07		0.18		0.21	
Shea's partial R-sq	0.08		0.03		0.08		0.07	
R-sq	0.35		0.30		0.38		0.29	
Partial R-sq	0.08		0.08		0.08		0.07	

*p<0,10, ** p<0,05, *** p<0,01

Notes: Coefficients of probit models with endogenous variables reflect marginal effects evaluated at the mean of the independent variables.

Self esteem does not seem to have significant effect on male decision to use (or make their partner use) any birth control methods[28].

The most interesting results concern again female group. The negative self-esteem coefficient for females indicates that self-confident girls more likely have protected sexual intercourses. The same happens separately for white and black girls. Particularly for black

[27] See Table D in appendix for full results on the likelihood to use any birth control methods.

[28] Note that 7 out of 8 of birth control methods (birth control pills, implant, depo provera, diaphragm, emergency contraception or the morning after pill, natural family planning, female sterilization, condom) proposed by the interviewer can be used only by females.

females, self-esteem's influence on the decision to use regularly any birth control method is strong. A one unit increase of self-esteem raises the probability to use any birth control methods by around 12 per cent. Considering that the occurrence of unintended pregnancy is higher for black girls this result seems to be particularly relevant for policy implications.

6. Conclusion

The results of this study show that self-esteem plays a significant role in explaining adolescents' sexual behaviour and gender differences in the considered sexual outcomes. Due to the relatively small sample size of black adolescents, some caution is recommended in interpreting the results found for Blacks.

Self-esteem has predominately a protective effect on female and Whites and particularly on white males delaying first sexual intercourse. Notwithstanding, the relationship between self-esteem and age of first sexual intercourse is not linear. Self-esteem turns to have a risk enhancing effect anticipating sexual initiation of adolescents with higher self-esteem. Even so, both for girl and white sub groups, this effect although strongly significant it is of small entity.

Looking at sexual promiscuity, on average self-esteem has still a protective effect on the same subgroups and particularly on females and Whites. I found that an increase of self-esteem enhances sexual promiscuity just in correspondence of very extreme values of self-esteem's distribution. For all the other values, self esteem decreases the number of sexual partners.

The results from the remaining outcomes, use of birth control methods, use of condom and diagnosed STDs, confirm that self-esteem strongly affects responsible sexual behaviour and that it works differently by gender and ethnic groups.

Self-confident girls more likely have protected sexual intercourses both because more frequently they make their partners use condoms and/or they use birth control methods. That relation is particularly strong and relevant for Blacks. On contrary, a low level of self-esteem raises the probability to never or only occasionally use condoms. That was what I was expecting once observed the high incidence of STDs among low self-confident females. Indeed, having scarce self-esteem increases the female's risk to be diagnosed with sexual transmitted diseases.

Further research may be done in the direction of introducing other measures of psychological well-being or indicators of personality traits in order to explain adolescent's sexual behaviour; studying directly sexual specific self-esteem as a determinant of the female's negotiating power within the couple, for example concerning with the use of contraceptive methods.

Table A. Age of sexual debut

Age at first sexual intercourses

	Female						Male						Females and Males			
	Overall		White		Black		Overall		White		Black		White		Black	
	2SLS		2SLS				2SLS		2SLS				2SLS			
Self esteem	1.746	0.000 ***	9.443	0.751	1.110	0.879	-11.367	0.266	1.980	0.008 ***	2.282	0.721	2.145	0.000 ***	-16.544	0.364
Self esteem^2	-0.149	0.000 ***	-0.651	0.735	-0.093	0.853	0.756	0.272	-0.135	0.092 *	-0.283	0.597	-0.175	0.000 ***	1.154	0.372
Self esteem^3	0.004	0.000 ***	0.014	0.727	0.002	0.836	-0.016	0.278	0.003	0.168	0.007	0.558	0.004	0.000 ***	-0.025	0.376
Socio-economic background																
Income	0.001	0.222	0.002	0.459	-0.002	0.440	0.000	0.992	0.002	0.123	-0.004	0.096 *				
Household's dimension	0.046	0.115	0.075	0.756	-0.023	0.742	0.002	0.951	0.010	0.834	0.092	0.294	0.030	0.331	0.069	0.433
Parent fulltime job	-0.199	0.018 **	-0.137	0.478	-0.382	0.034	-0.010	0.929	-0.123	0.273	-0.117	0.666	-0.162	0.029 ***	-0.299	0.215
Economic pressure	-0.026	0.803	0.096	0.866	-0.017	0.926	0.045	0.759	0.009	0.960	-0.135	0.646	0.139	0.221 ***	-0.198	0.49
Parent education	0.086	0.001	0.082	0.567	0.085	0.360	0.132	0.000	0.187	0.000	0.099	0.328	0.167	0.000	0.221	0.092 *
Single parent family	-0.205	0.045 **	-0.084	0.891	-0.184	0.411	-0.328	0.026 **	-0.237	0.146	-0.315	0.260	-0.244	0.017 ***	0.122	0.749
Parental style																
Mother's support	0.042	0.038 **	0.057	0.606	0.003	0.984	0.021	0.539	0.023	0.430	0.049	0.606	0.058	0.004 ***	0.261	0.323
Family cohesion	0.128	0.000 ***	0.140	0.248	0.064	0.433	0.047	0.461	0.118	0.019 **	0.158	0.205	0.155	0.000	-0.024	0.854
Parental monitoring	-0.091	0.003 ***	-0.036	0.907	-0.097	0.153	-0.065	0.143	-0.043	0.293	-0.092	0.303	-0.080	0.005 ***	-0.053	0.546
Family engagement	-0.015	0.554	0.000	0.996	-0.014	0.862	-0.073	0.102	-0.014	0.680	-0.092	0.207	-0.001	0.958	-0.100	0.145
Communication about sex	-0.061	0.000 ***	-0.093	0.000 ***	-0.034	0.172	-0.062	0.000 ***	-0.062	0.000 ***	-0.009	0.798	-0.076	0.000 ***	-0.072	0.211
Ability talk sex	-0.046	0.078 *	-0.016	0.878	-0.091	0.362	0.008	0.843	-0.026	0.458	0.027	0.714	0.002	0.928 ***	0.053	0.647
Religion																
Attendance	0.165	0.001 ***	0.198	0.282	0.188	0.091	0.083	0.392	0.240	0.000 ***	-0.093	0.634	0.260	0.000 ***	0.135	0.322
Salience	0.273	0.000 ***	0.349	0.423	0.358	0.025	0.282	0.007 ***	0.186	0.055 *	0.399	0.131	0.173	0.003	0.204	0.341
Child's caracteristics																
Mean grade	0.345	0.000 ***	0.367	0.289	0.236	0.158	0.366	0.000 ***	0.399	0.000 ***	0.467	0.142	0.433	0.000 ***	0.384	0.173
Female													-0.175	0.124	0.604	0.092
Age	0.426	0.000 ***	0.340	0.076 *	0.452	0.000	0.215	0.000 ***	0.206	0.000 ***	0.270	0.010 ***	0.300	0.000 *	0.398	0
Health: Poor	-0.559	0.000 ***	-0.810	0.444	0.119	0.914	-1.301	0.000 ***	-0.666	0.303	-0.094	0.919	-0.893	0.025	-0.041	0.967
Obese	-0.520	0.211	0.171	0.785	0.265	0.464	-0.515	0.339	0.351	0.273	0.082	0.894	0.396	0.060	0.164	0.731
Underweight	0.166	0.427	0.294	0.414	0.223	0.748	0.054	0.856	0.288	0.422	0.843	0.416	0.291	0.168 ***	0.844	0.394
Attractive	0.248	0.292	-0.002	0.991	-0.013	0.822	0.361	0.320	0.019	0.643	-0.043	0.666	-0.016	0.535	-0.033	0.657
Black	-0.017	0.537					-0.030	0.548								
IVs									First stage							
Grade mates difference	0.165	0.488	0.212	0.519	-0.175	0.733	0.066	0.764	0.473	0.104	0.299	0.554	0.289	0.162	-0.135	0.684
Mother's support ^2	0.013	0.000 ***	0.015	0.000 ***	0.010	0.053 *	0.031	0.000 ***	0.034	0.000 ***	0.024	0.000 ***	0.022	0.000 ***	0.016	0
Personality attractiveness	0.321	0.046 **	0.170	0.415	0.394	0.224	0.126	0.438	0.025	0.899	0.408	0.266	0.144	0.293	0.248	0.267
Specific self esteem	0.107	0.000 ***	0.114	0.000 ***	0.047	0.283	0.106	0.000 ***	0.121	0.000 ***	0.114	0.008 ***	0.122	0.000 ***	0.081	0.003
Subjective obesity	-1.004	0.000 ***	-0.988	0.000 ***	-0.814	0.001 ***	-0.815	0.000 ***	-1.046	0.000 ***	-0.491	0.198	-1.042	0.000 ***	-0.798	0
N	2993		1715		731		2941		1715		657		3783		1603	
F(4, 4633): self-esteem	24.80		14.34		3.66		29.01		24.48		4.74		41.07		9.25	
Sargan overid: p value	0.00		0.29		0.59		0.76		0.03		0.64		0.05		0.83	
Shea's partial R-sq	0.00		0.00		0.00		0.00		0.00		0.02		0.00		0.00	
R-sq	0.31		0.34		0.23		0.25		0.28		0.22		0.32		0.22	
Partial R-sq	0.04		0.04		0.03		0.05		0.68		0.04		0.05		0.03	

*p<0,10, ** p<0,05, *** p<0,01

Table B. Number of sexual partners

Number of sexual partners

	Female									Male									Females and Males				
	Overall			White			Black			Overall			White			Black			White			Black	
	2SLS									2SLS									2SLS				
Self esteem	3.701	0.000	***	62.945	0.620		-48.877	0.290		6.143	0.164		5.855	0.067	*	-181.856	0.285		4.144	0.003	***	40.632	0.641
Self esteem^2	-0.291	0.000	***	-4.137	0.620		3.382	0.302		-0.705	0.153		-0.658	0.058	*	10.254	0.306		-0.454	0.007	***	-3.338	0.587
Self esteem^3	0.007	0.001	***	0.086	0.619		-0.075	0.307		0.018	0.149		0.017	0.055	*	-0.187	0.326		0.011	0.010	***	0.077	0.564
Socio-economic background																							
Income	0.001	0.478		0.004	0.730		0.020	0.397		0.002	0.661								-0.001	0.796		0.024	0.234
Household's dimension	-0.297	0.001	***	0.311	0.805		0.641	0.460		-0.180	0.218		-0.098	0.616		-0.587	0.326		-0.132	0.276		-0.415	0.545
Parent fulltime job	0.627	0.011	**	0.961	0.583		2.141	0.257		0.608	0.154		0.608	0.193		-0.210	0.915		0.641	0.029	**	0.739	0.552
Economic pressure	0.051	0.516		-0.211	0.772		0.723	0.404		-0.098	0.491		0.070	0.641		-0.923	0.276		0.112	0.254		-0.471	0.438
Parent education	0.384	0.208		-1.705	0.590		1.664	0.317		0.121	0.832		0.321	0.660		1.330	0.480		0.035	0.938		1.663	0.210
Single parent family	0.208	0.501		1.327	0.604		2.502	0.280		0.029	0.957		0.603	0.365		-0.749	0.660		0.445	0.274		0.354	0.796
Parental style																							
Mother's support	-0.073	0.234		-0.375	0.541		1.167	0.321		0.130	0.346		-0.051	0.678		0.378	0.341		0.104	0.376		0.122	0.925
Family cohesion	-0.242	0.017	**	-0.547	0.365		-0.790	0.248		0.125	0.653		0.086	0.711		-0.330	0.558		0.146	0.507		0.527	0.571
Parental monitoring	0.314	0.001	***	1.226	0.522		0.822	0.154		0.329	0.042	**	0.283	0.094	*	-0.021	0.970		0.301	0.009	***	0.233	0.718
Family engagement	0.111	0.135		0.053	0.836		-0.430	0.450		0.239	0.056	*	0.334	0.016	**	0.379	0.427		0.217	0.018	**	0.102	0.713
Communication about sex	0.032	0.262		0.082	0.449		-0.139	0.512		0.170	0.001	***	0.150	0.008	***	0.133	0.630		0.099	0.008	***	0.194	0.563
Ability talk sex	0.173	0.025	**	-0.222	0.711		1.112	0.168		0.146	0.366		0.276	0.082	*	0.002	0.997		0.188	0.079	*	-0.246	0.700
Religion																							
Attendance	-0.085	0.555		-0.628	0.577		0.027	0.980		-0.760	0.002	***	-0.558	0.036	**	-2.253	0.062	*	-0.480	0.004	***	-0.744	0.256
Salience	-0.558	0.005	***	0.632	0.768		-0.708	0.660		-0.444	0.214		-0.477	0.234		0.485	0.767		-0.132	0.563		0.025	0.987
Child's caracteristics																							
Mean grade	-0.662	0.000	***	-1.694	0.371		0.169	0.876		-0.276	0.473		-0.340	0.345		-0.242	0.847		-0.438	0.085	*	-0.301	0.751
Female																			-2.758	0.000	***	-4.171	0.122
Age	-0.137	0.197		-0.826	0.489		0.400	0.574		0.462	0.009	***	0.426	0.031	**	-0.354	0.694		0.223	0.103		0.107	0.796
Health: Poor	-0.028	0.982		3.592	0.484		6.284	0.553		-1.000	0.632		0.838	0.742		-5.609	0.407		-0.813	0.636		-4.260	0.379
Obese	0.480	0.431		-1.718	0.670		0.066	0.983		-1.463	0.183		-0.473	0.728		1.166	0.788		-0.842	0.313		-3.004	0.450
Underweight	-0.638	0.352		-1.220	0.571		-5.269	0.314		-0.154	0.907		-2.103	0.160		-2.427	0.672		-0.888	0.275		-4.205	0.250
Attractive	0.028	0.725		0.360	0.643		0.336	0.492		0.141	0.389		0.109	0.521		0.328	0.595		0.121	0.279		0.354	0.544
Black	1.588	0.000								4.081	0.000	***											
IVs	First stage																						
Grade mates difference	0.165	0.521		0.181	0.608		-0.180	0.754		-0.060	0.808		0.156	0.605		0.231	-0.826	***	0.108	0.655		0.155	0.706	
Mother's support ^2	0.014	0.000	***	0.018	0.000	***	0.008	0.194		0.038	0.000	***	0.036	0.000	***	0.053	0.036	**	0.024	0.000	***	0.019	0.000	***
Personality attractiveness	0.398	0.024	**	0.240	0.289		0.580	0.122		-0.018	0.921		-0.122	0.558		0.245	-0.521	***	0.073	0.646		0.421	0.135	
Specific self esteem	0.106	0.000	***	0.118	0.000	***	0.059	0.247		0.076	0.001	***	0.136	0.000	***	0.078	-0.013	***	0.113	0.000	***	0.062	0.085	*
Subjective obesity	-0.999	0.000	***	-1.015	0.000	***	-0.860	0.002	***	-0.772	0.000	***	-0.927	0.000	***	-0.804	-1.643	***	-0.375	0.647		-0.547	0.674	
N	2503			1447			582			2286			1513			517			2820			1041		
F(4, 4633): self-esteem	21.18			13.77			3.15			26.46			24.21			9.10			17.81			4.32		
Sargan overid: p value	0.13			0.99			0.69			0.07			0.15			0.96			0.55			0.35		
Shea's partial R-sq	0.00			0.00			0.00			0.07			0.00			0.00			0.00			0.00		
R-sq	0.33			0.36			0.25			0.26			0.31			0.24			0.33			0.22		
Partial R-sq	0.04			0.05			0.03			0.06			0.08			0.08			0.03			0.02		

*p<0,10, ** p<0,05, *** p<0,01

Table C. Number of sexual transmitted diseased diagnosed (in the past year)

Number of STDs diagnosed in the last 12 months

	Female									Male									Females and Males					
	Overall			White			Black			Overall			White			Black			White			Black		
	2SLS									2SLS									2SLS					
Self esteem	0.170	0.023	**	0.117	0.138		0.225	0.241		0.318	0.216		-4.889	0.111		2.048	0.874		0.03	0.58		0.620	0.045	**
Self esteem^2	-0.004	0.027	**	-0.003	0.203		-0.006	0.191		-0.008	0.230		0.300	0.113		-0.048	0.951		0.00	0.78		-0.016	0.035	**
Self esteem^3													-0.006	0.116		-2E-04	0.99							
Socio-economic background																								
Income																								
Household's dimension	-0.006	0.458		0.001	0.959		-0.017	0.266		-0.012	0.326		-0.012	0.255		0.014	0.797		-0.006	0.340		-0.015	0.409	
Parent fulltime job	0.018	0.426		0.018	0.445		0.033	0.565	**	0.022	0.490		-0.001	0.965		0.053	0.749		0.018	0.230		0.016	0.812	
Economic pressure	-0.003	0.659		-0.002	0.776		-0.009	0.543		0.003	0.779		-0.001	0.938		0.063	0.242		-0.006	0.223		0.008	0.665	
Parent education	-0.050	0.103		-0.012	0.734		-0.117	0.036	***	0.048	0.310		-0.026	0.602		0.07	0.703		0.001	0.959		-0.047	0.490	
Single parent family	0.000	0.991		-0.020	0.525		0.041	0.447		-0.100	0.018	**	0.027	0.512		-0.233	0.121		-0.014	0.495		-0.068	0.274	
Parental style																								
Mother's support	-0.008	0.146		-0.012	0.027	**	0.000	0.977		-0.008	0.364		-0.004	0.610		0.005	0.89		-0.005	0.177		-0.020	0.259	
Family cohesion	-0.021	0.005	***	-0.016	0.060	*	-0.030	0.030	**	-0.026	0.015	**	-0.031	0.015	**	-0.053	0.3		-0.014	0.012	**	-0.038	0.021	**
Parental monitoring	0.012	0.143		0.009	0.289		0.015	0.359		-0.019	0.094	*	-0.005	0.600		-0.043	0.373		0.001	0.789		-0.018	0.374	
Family engagement	-0.001	0.920		-0.001	0.838		-0.004	0.780		0.001	0.909		-0.008	0.428		0.014	0.761		0.004	0.397		0.001	0.949	
Communication about sex	0.002	0.358		0.004	0.207		0.003	0.636		-0.004	0.256		-0.003	0.302		-0.008	0.577		0.002	0.363		-0.001	0.846	
Ability talk sex	0.008	0.251		-0.002	0.789		0.023	0.127		0.001	0.934		0.017	0.106		-0.031	0.52	***	0.006	0.233		0.006	0.722	
Religion																								
Attendance	-0.008	0.573	***	0.000	0.991		-0.050	0.191	***	-0.014	0.445		-0.016	0.395		-0.03	0.775		0.002	0.847		-0.056	0.174	
Salience	-0.007	0.728		-0.004	0.833		-0.048	0.375		-0.029	0.249		-0.014	0.664		-0.028	0.854	***	-0.026	0.031	**	-0.003	0.959	
Child's caracteristics																								
Mean grade	-0.007	0.643		-0.005	0.749		-0.013	0.718		0.003	0.873		-0.017	0.315		0.116	0.227		-0.001	0.959		0.026	0.538	
Female																			0.112	0.000	***	0.650	0.321	
Age	-0.003	0.641		0.003	0.684		-0.019	0.229		0.010	0.347		0.008	0.425		0.06	0.292		0.000	0.965		0.007	0.691	
Health: Poor	0.053	0.656		0.165	0.204		-0.345	0.188		-0.031	0.852		0.070	0.641		-0.105	0.866		0.050	0.544		-0.215	0.452	
Obese	-0.014	0.777		0.007	0.904		-0.026	0.802	***	-0.094	0.290		0.044	0.634		-0.343	0.318		-0.006	0.887		-0.035	0.774	
Underweight	-0.009	0.850		0.008	0.855		-0.068	0.658	***	-0.047	0.508		-0.043	0.423		0.004	0.993	***	-0.002	0.942		-0.076	0.664	
Attractive	0.007	0.356		-0.001	0.855		0.023	0.124		0.003	0.762		-0.022	0.046	**	0.051	0.306	***	0.000	0.988		0.029	0.121	
Black	0.145	0.000	***							0.239	0.000	***												
IVs	First stage																							
Grade mates difference	0.091	0.684		0.223	0.411		-0.201	0.615		0.234	0.291		0.388	0.135		-0.066	0.881		0.306	0.109		-0.147	0.619	
Mother's support ^2	0.017	0	***	0.018	0	***	0.017	0.001	***	0.035	0	***	0.031	0	***	0.043	0	***	0.021	0	***	0.024	0	***
Personality attractiveness	0.248	0.113		0.364	0.048	**	0.049	0.868		0.093	0.564		0.114	0.539		0.167	0.623		0.27	0.042	**	0.085	0.704	
School inclusion	0.187	0	***	0.21	0	***	0.127	0.001	***	0.163	0	***	0.15	0	***	0.216	0	***	0.183	0	***	0.163	0	***
Subjective obesity	-1.143	0	***	-1.221	0	***	-0.944	0	***	-0.877	0	***	-0.977	0	***	-0.512	0.118	***	-1.324	0	***	-0.864	0	***
N	2929			2083			846			2369			1806			563			3889			1409		
F(4, 4633): self-esteem	46.5			39.05			8.848			41.29			27.36			15.59			71.32			20.88		
Sargan overid: p value	0.178			0.187			0.182			0.739			0.382			0.416			0.21			0.61		
Shea's partial R-sq	0.062			0.061			0.055			0.029			0.004			0.006			0.06			0.04		
R-sq	0.349			0.374			0.281			0.317			0.329			0.304			0.35			0.28		
Partial R-sq	0.074			0.087			0.051			0.081			0.071			0.127			0.08			0.07		

*p<0,10, ** p<0,05, *** p<0,01

Table D. Ever been diagnosed with STDs

Ever been diagnosed with STDs

	Female								Male								Females and Males					
	Overall			White			Black		Overall			White			Black		White			Black		
	IV Probit								IV Probit								IV Probit					
Self esteem	0.408	0.062	*	0.382	0.158		0.482	0.262	0.100	0.083	*	0.184	0.028	**	-0.059	0.534	0.078	0.054	*	0.877	0.089	*
Self esteem^2	-0.011	0.062	*	-0.009	0.219		-0.013	0.223												-0.023	0.069	*
Self esteem^3																						
Socio-economic background																						
Household's dimension	-0.030	0.216		-0.015	0.674		-0.046	0.187	-0.071	0.105		-0.061	0.345		-0.060	0.363	-0.036	0.221		-0.045	0.134	
Parent fulltime job	0.005	0.938		0.015	0.859		-0.019	0.876	0.025	0.822		0.014	0.923		0.010	0.961	0.011	0.880		-0.008	0.940	
Economic pressure	-0.026	0.210		-0.035	0.191		-0.019	0.577	-0.015	0.668		-0.033	0.487		0.025	0.668	-0.037	0.095	*	-0.006	0.829	
Parent education	-0.085	0.326		-0.006	0.965		-0.182	0.134	-0.015	0.923		0.049	0.842		-0.038	0.855	0.034	0.760		-0.171	0.105	
Single parent family	-0.056	0.473		-0.101	0.372		0.023	0.846	-0.148	0.286		0.103	0.604		-0.363	0.064	*	-0.057	0.556		-0.072	0.464	
Parental style																						
Mother's support	-0.021	0.186		-0.044	0.024	**	-0.002	0.962	-0.015	0.512		-0.021	0.527		0.019	0.683	-0.033	0.040	**	-0.004	0.896	
Family cohesion	-0.066	0.003	***	-0.075	0.016	**	-0.069	0.019	**	-0.110	0.000	***	-0.179	0.000	***	-0.039	0.309	-0.089	0.000	***	-0.072	0.006	***
Parental monitoring	0.037	0.118		0.040	0.213		0.029	0.432	-0.019	0.600		-0.053	0.285		0.037	0.545	0.006	0.827		0.024	0.448	
Family engagement	0.002	0.901		-0.001	0.952		0.001	0.978	-0.060	0.064	*	-0.038	0.393		-0.073	0.149	-0.006	0.790		-0.020	0.419	
Communication about sex	-0.004	0.577		-0.001	0.893		-0.006	0.652	0.005	0.662		-0.010	0.565		0.025	0.184	-0.004	0.650		0.005	0.634	
Ability talk sex	0.036	0.097	*	0.020	0.484		0.046	0.171	0.001	0.969		0.007	0.873		-0.014	0.780	0.016	0.485		0.029	0.293	
Religion																						
Attendance	-0.033	0.418		-0.024	0.618		-0.072	0.382	-0.034	0.572		-0.047	0.541		-0.023	0.836	-0.031	0.437		-0.036	0.584	
Salience	0.014	0.808		0.051	0.458		-0.122	0.293	-0.112	0.175		-0.179	0.083	*	0.168	0.307	-0.023	0.674		-0.058	0.530	
Child's caracteristics																						
Mean grade	-0.054	0.228		-0.061	0.277		-0.042	0.592	-0.003	0.969		-0.023	0.811		0.090	0.448	-0.048	0.307		-0.012	0.854	
Female																	0.751	0.000	***	0.558	0.000	***
Age	-0.032	0.126		-0.026	0.331		-0.037	0.278	0.056	0.104		0.118	0.016	**	-0.016	0.758	0.017	0.444		-0.018	0.534	
Health: Poor	0.153	0.664		0.575	0.160		(omitted)		0.021	0.970		(omitted)			0.547	0.424	0.223	0.523		-0.434	0.421	
Obese	-0.114	0.456		-0.075	0.747		-0.122	0.609	(omitted)			(omitted)			(omitted)		-0.197	0.359		-0.215	0.291	
Underweight	-0.124	0.411		-0.043	0.798		-0.481	0.232	-0.200	0.513		-0.367	0.405		-0.033	0.949	-0.072	0.629		-0.300	0.346	
Attractive	0.042	0.047	**	0.027	0.338		0.059	0.080	*	0.020	0.595		-0.030	0.579		0.079	0.183	0.011	0.655		0.063	0.032	**
Black	0.507	0.000	***	(omitted)			(omitted)		0.658	0.000	***											
IVs	First stage																					
Grade mates difference	0.106	0.633		0.232	0.392		-0.254	0.525	0.275	0.222		0.105	0.650		0.321	0.413	0.299	0.112		-0.118	0.690	
Mother's support ^2	0.018	0.000	***	0.019	0.000	***	0.017	0.001	***	0.035	0.000	***	0.034	0.000	***	0.044	0.000	***	0.023	0.000	***	0.024	0.000	***
Personality attractiveness																	0.251	0.055	*	0.086	0.703	
School inclusion	0.188	0.000	***	0.212	0.000	***	0.137	0.000	***	0.167	0.000	***					0.180	0.000	***	0.159	0.000	***
Subjective obesity	-1.138	0.000	***	-1.210	0.000	***	-0.920	0.000	***	-0.881	0.000	***					-1.130	0.000	***	-0.790	0.000	***
N	2919			2079			833		2286			2504			881		3880			1399		
F(4, 4633): self-esteem	57.36			47.76			11.05		52.16			42.47			30.10		64.60			19.49		
Sargan overid: p value	0.24			0.99			0.06		0.79			0.31			0.87		0.20			0.33		
Shea's partial R-sq	0.06			0.06			0.05		0.08			0.33			0.07		0.08			0.04		
R-sq	0.35			0.37			0.28		0.32			0.29			0.25		0.37			0.28		
Partial R-sq	0.07			0.09			0.05		0.08			0.03			0.07		0.08			0.07		

*p<0,10, ** p<0,05, *** p<0,01

Table E. Never (or occasional) use of condom

Never (or occasionally) use condom

	Female						Male						Females and Males			
	Overall		White		Black		Overall		White		Black		White		Black	
	IV Probit						IV Probit						IV Probit			
Self esteem	0.362	0.057 *	0.254	0.292	-0.112	0.109	0.256	0.641	0.829	0.142	-1.475	0.345	0.445	0.034 **	-0.113	0.021 **
Self esteem^2	-0.011	0.032 **	-0.008	0.240			-0.007	0.618	-0.020	0.143	0.036	0.367	-0.012	0.030 **		
Socio-economic background																
Household's dimension	0.028	0.180	0.003	0.913	0.066	0.044 **	0.019	0.429	0.012	0.686	0.016	0.744	0.008	0.704	0.062	0.016 **
Parent fulltime job	0.121	0.035 **	0.145	0.030 **	0.047	0.692	0.012	0.856	0.007	0.927	-0.010	0.953	0.086	0.082 *	0.019	0.839
Economic pressure	-0.041	0.022 **	-0.046	0.035 **	-0.026	0.425	-0.006	0.774	0.014	0.558	-0.079	0.099 *	-0.019	0.236	-0.049	0.060 *
Parent education	0.008	0.920	0.016	0.875	0.035	0.767	0.135	0.153	0.164	0.178	0.091	0.609	0.074	0.352	0.028	0.759
Single parent family	-0.063	0.362	-0.047	0.602	-0.099	0.388	0.033	0.684	0.022	0.836	-0.062	0.683	-0.004	0.954	-0.054	0.530
Parental style																
Mother's support	0.001	0.946	0.000	0.981	0.035	0.210	-0.021	0.247	-0.034	0.154	-0.026	0.457	-0.014	0.282	0.018	0.369
Family cohesion	-0.013	0.506	0.000	1.000	-0.015	0.569	-0.004	0.865	-0.043	0.168	0.051	0.159	-0.024	0.218	0.003	0.864
Parental monitoring	0.021	0.299	0.015	0.550	0.029	0.407	0.026	0.244	0.012	0.654	0.079	0.114	0.015	0.403	0.063	0.022 **
Family engagement	-0.011	0.500	-0.015	0.463	0.000	0.992	0.015	0.421	0.005	0.828	0.032	0.400	-0.005	0.758	0.019	0.401
Communication about sex	0.025	0.000 ***	0.022	0.008 ***	0.028	0.022 **	0.008	0.273	0.003	0.697	0.017	0.267	0.015	0.013 **	0.026	0.005 ***
Ability talk sex	0.000	0.993	-0.009	0.697	0.019	0.540	-0.029	0.132	-0.024	0.306	-0.042	0.300	-0.015	0.350	-0.001	0.959
Religion																
Attendance	-0.009	0.788	0.013	0.746	-0.077	0.355	-0.047	0.192	-0.048	0.241	-0.148	0.128	-0.011	0.694	-0.081	0.166
Salience	0.124	0.011 **	0.115	0.034	0.098	***	0.027	0.594	0.070	0.232	-0.064	0.649	0.099	0.013 **	0.034	0.681
Child's caracteristics																
Mean grade	-0.033	0.410	-0.011	0.820	-0.049	0.518	-0.009	0.833	-0.055	0.255	0.163	0.104	-0.043	0.206	0.067	0.246
Female													0.246	0.000 ***	0.279	0.002
Age	0.041	0.023 **	0.060	0.007 ***	-0.012	0.715	0.125	0.000 ***	0.126	0.000 ***	0.102	0.033 **	0.085	0.000 ***	0.031	0.220
Health: Poor	0.507	0.118	0.443	0.288	0.471	0.388	-0.225	0.508	-0.164	0.704	-0.103	0.874	0.270	0.364	0.207	0.585
Obese	-0.044	0.740	0.231	0.258	-0.357	0.073 *	-0.095	0.625	-0.070	0.781	0.055	0.874	0.134	0.394	-0.211	0.192
Underweight	-0.111	0.361	-0.174	0.185	0.167	0.621	-0.051	0.740	-0.019	0.910	-0.392	0.392	-0.122	0.243	0.009	0.970
Attractive	0.014	0.465	0.017	0.453	0.018	0.589	0.014	0.551	-0.010	0.721	0.066	0.195	0.005	0.762	0.050	0.061 *
Black	-0.338	0.000 ***	(omitted)	***	(omitted)	***	-0.431	0.000 ***	(omitted)	***	(omitted)	***	(omitted)		(omitted)	***
IVs	**First stage**															
Grade mates difference	0.283	0.270	0.453	0.144	-0.094	0.840	0.395	0.123	0.537	0.075 *	0.093	0.852	0.499	0.024 **	-0.006	0.985
Mother's support ^2	0.017	0.000 ***	0.018	0.000 ***	0.016	0.003 ***	0.035	0.000 ***	0.031	0.000 ***	0.043	0.000 ***	0.021	0.000 ***	0.023	0.000 ***
Personality attractiveness																
School inclusion	0.180	0.000 ***	0.205	0.000 ***	0.119	0.004 ***	0.164	0.000 ***	0.150	0.000 ***	0.224	0.000 ***	0.184	0.000 ***	0.161	0.000 ***
Subjective obesity	-1.168	0.000 ***	-1.178	0.000 ***	-1.155	0.000 ***	-0.815	0.000 ***	-0.936	0.000 ***	-0.252	0.507	-1.333	0.000 ***	-0.987	0.000 ***
N	2363		1670		693		1805		1358		447		3028		1140	
F(4, 4633): self-esteem	44.32		35.40		10.13		44.32		35.40		10.13		67.32		21.64	
Sargan overid: p value	0.95		0.28		0.18		0.95		0.28		0.20		0.46		0.86	
Shea's partial R-sq	0.06		0.05		0.06		0.06		0.05		0.07		0.54		0.07	
R-sq	0.34		0.37		0.28		0.34		0.37		0.28		0.35		0.27	
Partial R-sq	0.01		0.08		0.06		0.07		0.08		0.06		0.08		0.07	

*p<0,10, ** p<0,05, *** p<0,01

Table F. Never (or just occasionally) use any birth control method

Never (or just occasionally) use any birth control method

	Female									Male									Females and males					
	Overall			White			Black			Overall			White			Black			White			Black		
	2SLS									2SLS									2SLS					
Self esteem	-0.084	0.018	**	-0.076	0.066	*	-0.125	0.077	*	-0.703	0.249		-0.153	0.798		-2.509	0.137		-0.031	0.344		-0.077	0.195	
Self esteem^2										0.017	0.249		0.004	0.778		0.064	0.142							
Socio-economic background																								
Income	-0.003	0.004	***	-0.004	0.001	***	0.000	0.883		0.000	0.992		0.000	0.904		-0.001	0.826		-0.002	0.032	**	0.000	0.888	
Household's member	0.048	0.034	***	0.039	0.201		0.082	0.026	**	0.048	0.075	*	0.041	0.198		0.023	0.708		0.037	0.086	*	0.081	0.005	***
Parent fulltime job	0.066	0.310	**	0.049	0.517		0.079	0.555		-0.055	0.456		-0.020	0.813		-0.235	0.219		0.014	0.792		-0.029	0.769	
Parent's education	-0.056	0.007		-0.057	0.027	**	-0.037	0.335		-0.020	0.417		-0.028	0.323		0.019	0.742		-0.051	0.006	***	-0.029	0.332	
Economic pressure	0.040	0.633	***	0.044	0.693		0.024	0.856		-0.002	0.988		-0.103	0.442		0.138	0.483		-0.038	0.653		0.042	0.672	
Single parent family	0.042	0.589		0.056	0.579		0.056	0.670		0.031	0.739		0.040	0.741		-0.107	0.568		0.070	0.347		0.005	0.959	
Parental style																								
Mother's support	0.019	0.189	***	0.020	0.224		0.021	0.479		-0.010	0.614		-0.008	0.739		-0.049	0.178		0.007	0.640		-0.007	0.749	
Family cohesion	0.000	0.984		0.021	0.447		-0.030	0.298		0.033	0.215		-0.013	0.702		0.119	0.005	***	-0.005	0.799		0.013	0.577	
Parental monitoring	-0.042	0.060		-0.061	0.028	**	-0.005	0.909		-0.038	0.142		-0.026	0.390		-0.061	0.310		-0.043	0.029	**	-0.026	0.393	
Family engagement	-0.015	0.401	*	-0.027	0.230		0.001	0.975		-0.007	0.735		-0.036	0.167		0.043	0.318		-0.027	0.100	*	0.026	0.268	
Communication about sex	0.021	0.005		0.025	0.008	***	0.012	0.397		0.001	0.910		0.000	0.979		0.006	0.749		0.015	0.026	**	0.006	0.553	
Ability talk sex	-0.013	0.534	***	-0.025	0.337		-0.004	0.901		-0.015	0.496		0.002	0.945		-0.056	0.221		-0.012	0.516		-0.025	0.339	
Religion																								
Salience	0.030	0.436	***	0.035	0.412		0.054	0.540		-0.064	0.110		-0.050	0.257		-0.197	0.079	*	-0.011	0.716		-0.032	0.611	
Attendance	0.014	0.790		0.006	0.916		-0.026	0.841		0.123	0.035	**	0.150	0.022	**	0.155	0.334		0.086	0.045	**	0.007	0.936	
Child's caracteristics																								
Mean grade	-0.159	0.000	***	-0.133	0.010	***	-0.213	0.012	**	-0.117	0.016	**	-0.133	0.014	**	-0.020	0.864		-0.139	0.000	***	-0.141	0.025	**
Female																			0.011	0.887		0.01	0.923	
Age	0.015	0.438	***	0.019	0.419		-0.004	0.914		0.093	0.000	***	0.096	0.001	***	0.073	0.181		0.050	0.004	***	0.033	0.238	
Health: Poor	0.289	0.308		0.215	0.536		0.642	0.230		-0.099	0.800		-0.002	0.997		0.008	0.990		0.147	0.596		0.277	0.445	
Obese	0.365	0.011		0.789	0.000	***	0.021	0.921		-0.307	0.186		-0.153	0.596		-0.493	0.249		0.463	0.005	***	-0.069	0.692	
Underweight	-0.096	0.488	**	-0.097	0.529		-0.175	0.615		0.021	0.907		0.034	0.863		-0.043	0.935		-0.055	0.640		0.023	0.930	
Attractive	0.010	0.615		0.013	0.615		0.012	0.754		-0.006	0.814		-0.003	0.935		-0.041	0.496		0.004	0.850		0.007	0.813	
Black	0.216	0.012								0.250	0.005	***												
IVs																								
Grade mates difference	0.321	0.235		0.386	0.237		0.252	0.612		0.463	0.090	*	0.516	0.111		0.483	0.358		0.463	0.050	**	0.219	0.551	
Mother's support ^2	0.018	0.000	***	0.020	0.000	***	0.017	0.002	***	0.035	0.000	***	0.031	0.000	***	0.043	0.000	***						
School inclusion	0.200	0.000	***	0.209	0.000	***	0.177	0.000	***	0.148	0.000	***	0.140	0.000	***	0.204	0.000	***	0.182	0.000	***	0.204	0.000	***
Subjective obesity	-1.135	0.000	***	-1.176	0.000	***	-1.080	0.000	***	-0.908	0.000	***	-0.997	0.000	***	-0.364	0.377		-1.326	0.000	***	-0.972	0.000	***
N	2115			1519			596			1611			1216			395			2735			991		
F(4, 4633): self-esteem	43.36			33.26			10.89			32.57			20.88			13.17			66.87			19.48		
Sargan overid: p value	0.15			0.18			0.21			0.07			0.03			0.86			0.44			0.53		
Shea's partial R-sq	0.08			0.08			0.07			0.03			0.04			0.03			0.00			0.00		
R-sq	0.35			0.38			0.29			0.30			0.31			0.29			0.33			0.26		
Partial R-sq	0.08			0.08			0.07			0.08			0.07			0.12			0.07			0.06		

*p<0,10, ** p<0,05, *** p<0,01

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