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**DISCRIMINATION AND SOCIAL NETWORKS:
POPULARITY AMONG HIGH SCHOOL STUDENTS
IN ARGENTINA**

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Abstract*

The objective of this paper is to better understand peer popularity during adolescence and detect discrimination. High school students in Argentina are asked to select and rank 10 classmates with whom they would like to form a team to perform school activities, and this information is then used to construct a measure of popularity. The paper subsequently explores how student's characteristics affect their popularity. It is found that physically attractive students and with high academic performance are highly ranked by their peers, but the former effect is only significant in mixed schools, suggesting that is primarily driven by mating. Other traits, such as skin color, nationality and parental socioeconomic background do not affect peer popularity, although ethnic origin and parental education are statistically significant in some specifications. The findings are informative about discrimination in the school system. In particular, it appears that the unequal treatment based on race, wealth and nationality found in other social environments in Argentina is not observed among adolescents attending school. Also analyzed is what to expect about the sorting of individuals into different groups and other aspects of grouping and networking in schools. The analysis suggests that a high degree of positive sorting should be expected in academic performance and beauty.

Keywords: Popularity, discrimination, adolescents, Argentina.

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1. Introduction

The main goal of this paper is to better understand peer popularity and to assess the extent of discrimination in the formation of networks during adolescence in Argentina. Are teenagers of some particular ethnic origin less likely to be accepted by their peers? Does parental income matter for popularity? Are foreign born teenagers excluded? Does physical attractiveness matter?

In order to answer these questions, high school students are asked to select and rank 10 classmates with whom they would like to form a team to perform school activities, and this information is used to construct a measure of popularity. Second, information is collected on student's characteristics, including physical attractiveness, ethnic origin, skin color, nationality, previous academic performance, personality traits, parental socioeconomic background and other family characteristics. The effect of these characteristics on popularity is then explored.

There are at least three reasons why being popular during adolescence is relevant. First, school peer effects are important for academic achievement. Second, peer popularity affects the development of social skills, which in turn appear to be important for success during adulthood. Galeotti and Mueller (2005) find that adults who were highly ranked by their classmates during high school earn significantly higher wages, and Kuhn and Weinberger (2005) find that people who occupied leadership positions in high school subsequently earn more during adulthood. Third, attaining status in the groups to which we belong is a goal of social life.

This study has two distinctive features. First, and contrary to most empirical work that has relied on experiments where the environment is artificial, we study real school classes. School authorities asked students to select classmates to form a team with, mentioning that, based on their expressed preferences teams would actually be formed to conduct activities during the rest of the year. Second, to the best of our knowledge, the available micro datasets to study discrimination in Argentina do not include information on factors such as skin color, ethnicity or physical attractiveness. The findings reported here collected a rich set of students' characteristics in order to explore the existence of discrimination against different traits and to avoid potential omitted variable bias.

This paper finds that the main factors affecting popularity are beauty and school performance; both factors have a positive effect. However, the impact of academic performance is stronger in single-sex schools than in mixed schools, and the effect of beauty is only significant in mixed schools, suggesting that it is primarily driven by mating. Average parents'

education appears as another relevant factor, with positive effects on popularity, although it is not significant in some specifications.

There is also a strong positive correlation between the student average ranking and the variability of her ranking. This suggests that there is agreement among peers over the position of students at the bottom of the ranking. As the expected position in the ranking increases, however, disagreement among peers also increases. In other words, it seems that students “know what they don’t like,” but there is no general agreement on “what they like.”

The paper subsequently analyzes what to expect about the sorting of individuals into different groups. It is found that the beauty and academic performance of students who have chosen themselves in the first position are on average greater than for those who do not have a match. A strong positive correlation is also found between a student academic’s performance and the academic performance of the student who is her first choice in forming a group. The same is true for beauty, average parents’ education, and gender. This evidence suggests that a high degree of positive sorting should be expected in academic performance and beauty.

The paper proceeds as follow. Section 2 describes the experiment design and procedures, and Section 3 presents the data and discusses the measures of popularity and beauty. Section 4 describes the data and presents results on the main determinants of students’ popularity. Sections 5 and 6 discuss some features of popularity and social networks and the expected sorting by groups, while Section 7 provide some estimates of the potential benefits of joining a network. Section 8 concludes.

2. Field Experiment Design and Procedures

The sample frame consists of schools with students attending third grade in the Polimodal (i.e., equivalent to last year in high school) in Florencio Varela and Hurlingham (two municipalities located in greater Buenos Aires) and in the city of Tucumán.¹ According to the 2001 Census there are approximately 1.3 million individuals aged 16-17 years living in Argentina. The selected sample frame imposes two potential biases with respect to the population. First, only 40 percent of the population under study resides in the selected provinces (35 percent in Buenos Aires and 5 percent in Tucumán). Second, not all teenagers who are supposed to be attending

¹ These jurisdictions were chosen simply because the authors possessed the technical capacities to conduct the experiment in these places.

high school are actually doing so. According to the Ministry of Education, approximately three-quarters were enrolled in high school in 2001 (Ministerio de Educación, 2004). The figure for greater Buenos Aires is 73 percent, and for Tucumán is 65 percent. Dropouts have different characteristics than those attending high school (e.g., they are on average poorer), which suggests the inadequacy of extrapolating the results of the experiment to them.

There are almost one thousand schools with Polimodal in Greater Buenos Aires, including 30 located in the municipality of Florencio Varela and 23 in Hurlingham. In the city of Tucumán, there are 88 schools with Polimodal (Ministerio de Educación, 2004). The experiment was performed in nine schools in Greater Buenos Aires (six in Florencio Varela and three in Hurlingham), and seven schools in Tucumán.

Data were collected in the following manner. First, an experiment is run in the classroom, where the “tutor”² gave each student Questionnaire 1 (see Appendix) and asked him/her to rank classmates according to her/his preference for forming a team.³ Based on this information, different measures of popularity were constructed.

Two important aspects of the surveys are worth emphasizing. First, the experiment was conducted during March (the first month of the school year in Argentina) and students were told that based on their expressed preferences teams would be formed at some point during the year to conduct activities at school, and that teams would meet in a regular basis. Second, in all schools where the experiment was conducted, the authorities were actually thinking about forming teams and to act on this information. Therefore, the environment of the experiment was not artificial.

After collecting the first questionnaire, the tutor gave each student Questionnaire 2 (see Appendix), which includes questions about socioeconomic background, nationality, race, ethnicity and personality. Finally, each student received Questionnaire 3 (see Appendix) where she/he is asked to name and rank, separately, the three female and male classmates she/he considers to be physically the most attractive. At this point, the tutor asked students to fill out the questionnaire responsibly, mentioning that the results would remain strictly confidential and

² In Argentina, the “tutor” (*preceptor* in Spanish) is a school authority in charge of several chores at school such as controlling students’ behavior and attendance, and organizing school events.

³ A figure of 10 nominations was chosen because that is the number used in the National Longitudinal Study of Adolescent Health conducted across schools in the United States. This survey has been the source of information of most empirical studies on popularity and friendship networks among students.

would be used by researchers to analyze the role that beauty and other factors play among adolescents.

The second source of information was school records. Information was collected on students' grades and disciplinary sanctions during the previous year, whether the student is beneficiary of the Becas program and the year in which the student enrolled in the school.⁴

The Appendix includes an English translation of the three questionnaires. The questionnaires were designed with the following (sometimes conflicting) objectives: maintaining simplicity, collecting relevant information, avoiding non-responses and increasing the reliability of answers. Discussions with schoolteachers and authorities were extremely helpful in designing the questionnaires.

3. Data

3.1. Popularity and Beauty

Measures of popularity and beauty were created by focusing on the ranking sections of the survey (Questionnaires 1 and 3). As each student ranked his order of preference of 10 classmates as members of a group to perform school activities, measures of peer popularity can be derived based either on the rankings that the student received from his classmates or simply on the basis of whether the student was chosen or not.⁵

There are alternative ways to measure popularity and beauty. One of the most common measures of popularity in network analysis is the number of times each student is chosen by her/his classmates divided by class size. In this study, an analogous measure is constructed that, additionally incorporates the extra information coming from the student position in the ranking.

First, the position of the student in the average ranking is considered as a measure of popularity. To construct this measure, a ranking from 1 to 11 is considered, where the eleventh position is assigned to students who were not nominated in the first 10 positions by their classmates. Under this assumption, the average ranking for student i is given by

⁴ The Becas is a federal program where students with poor parental background receive a fellowship equal to 400 pesos per year in exchange for attending school; only students attending public schools are eligible.

⁵ Developmental psychologists usually distinguish between “sociometrically” and “perceived” popular students. The latter refers to students who are considered popular by their classmates but are not necessarily liked. This variable is usually obtained from asking students to point out which classmates they consider to be the most popular. Our measure captures sociometric popularity. For further discussion see Cillessen and Rose (2005).

$$\bar{r}_i = \sum_{h=1}^{11} \frac{N_{h,i} w_h}{ClassSize_i - 1} \quad (1)$$

where $w_1 = 1$, $w_2 = 2, \dots$, $w_{10} = 10$, and $w_{11} = 11$, $N_{h,i}$ is the number of times student i was nominated in the h position by his/her classmates, w_h is the ranking position, and $ClassSize_i$ is the total number of students in the class. While there are other potential ways of measuring popularity, an advantage of this simple measure is that any monotonic transformation of the ranking variable, w_h , will leave the qualitative results unaffected.

Additionally, a dichotomous variable approach is applied to perform the analysis, which in fact can be considered as a monotonic transformation of the student ranking variable, w_h . As a consequence, similar results are obtained. However, this approach is helpful in analyzing other important aspects of the same problem.

Within this approach, two alternatives are considered. First, popularity is defined as a dichotomous variable that indicates whether or not the student was chosen by at least 50 percent of her/his classmates. That is,

$$D_i = \begin{cases} 1 & \text{if } \frac{\sum_{h=1}^{10} N_{h,i}}{ClassSize - 1} \geq 0.5 \\ 0 & \text{Otherwise} \end{cases} \quad (2)$$

A second alternative considered for each student in the class is whether or not she/he was separately chosen by each of her/his classmates in the first five places for forming a group. That is,

$$d_{i,j} = \begin{cases} 1 & \text{if } \text{student } j \text{ choose student } i \text{ in the first five places} \\ 0 & \text{Otherwise} \end{cases} \quad (3)$$

For example, in a class of 20 students there will be 19 observations for each student, indicating whether or not he was chosen by each of the members of his class. In this example, there will be a total of 380 observations just for this class. A valuable feature of this approach is that permits an investigation of how the rater's characteristics affect her selection of peers.

Finally, the standard deviation of the ranking of each student is computed. That is,

$$\sigma_{ri} = \sqrt{\frac{\sum_{h=1}^{11} N_{h,i} (w_h - \bar{r}_i)^2}{ClassSize_i - 1}}$$

This last measure can be used as a proxy of the difficulty of forming a group for a student and additionally permits an analysis of the degree of homogeneity of preferences within a class.

Using the information coming from the third questionnaire, a formula similar to equation (1) is applied to construct a proxy for beauty. In this case, however, h goes from 1 to 4 since students were asked to rank only the three physically most attractive classmates. That is, the measure of beauty is defined as follows

$$B_i^* = \frac{\sum_{h=1}^4 N_{h,i} w_h}{Class\ Size_i - 1} \quad (4)$$

where $w_1 = 3$, $w_2 = 2$, $w_3 = 1$, and $w_4 = 0$ and $N_{h,i}$ is the number of times student i was ranked in the h position by his/her classmates.

3.2. Schools Located in Buenos Aires

In Buenos Aires, the experiment was conducted in nine schools—six in Florencio Varela and three in Hurlingham. Four out of the nine schools are public, and two are located in the municipality of Florencio Varela. The total number of students in the selected schools is 641 students, and the average class size is 26 students. Although 62 students were absent on the day the experiment was conducted, there was a 100 percent participation rate among those who were present. Therefore 579 students completed the surveys. The average age is 17 years old, less than half of the students are male, and almost all students were born in Argentina (only one student in the sample is foreign-born—in neighboring Paraguay).

Table 1 presents basic statistics, the number of responses and correlations for the main independent variables that enter into the preliminary specification. A valuable feature of this experiment is that a very high percentage of students answered each question. With the exception

of ethnicity, which was answered by only 65 percent of students,⁶ all the remaining questions were answered by more than 90 percent of students. Approximately 45 percent of the sample has white skin. With respect to ethnic origin, 87 percent of the students who answered the question mention European origins, 18 percent Native American, 4 percent Middle Eastern, 2 percent Asian, and 1 percent African (students were asked to select all ethnic origins that apply). The average parental education is 9.7 years of schooling. Out of a set of four goods (i.e., car, computer, access to internet, and air conditioning), students have on average 1.6 goods. Each student has on average 2.6 siblings. The average grade the previous year is 7 out of 10 for math and 7.7 out of 10 for literature, and 19 percent of the sample receives a Beca scholarship.

In Panel A of the table we look at the correlations between the main independent variables included in our specification. As expected, the wealth measure (hereafter, “parental wealth”) is highly correlated with average parents’ education, with a correlation coefficient of 0.46, and negatively correlated with whether the student receives scholarship and number of siblings, with correlation coefficients of -0.32 and -0.23, respectively. Parental wealth and average parents’ education are also positively correlated with whether the student is white and with having European ethnicity. Regarding school performance, math grades are highly correlated with literature grades, with a correlation coefficient of 0.33. Hereafter, the average grade is used as a measure of student’s academic performance.

The overall standard deviation of the variable white skin is 0.5, of parental wealth is 1.37 and of parental education is 3.75. The within school-class standard deviation for these variables is 0.47, 1.07 and 3.09 respectively. These figures show that heterogeneity within the school class is high with respect to race and socioeconomic status. Therefore, the school classes in the sample are highly integrated.

3.3. Schools Located in Tucumán

The experiment was additionally conducted in seven schools in Tucumán. Two out of the seven schools are public. The total number of students in the selected schools is 375 students, and the average class size is 28.8 students. While 32 students were absent the day the experiment was conducted, there was a 100 percent participation rate among those who were present. Therefore,

⁶ Students who did not report their ethnicity are less likely to have white skin, are on average poorer and have less educated parents. Given the positive correlation between these variables and European ethnicity it is likely that students who did not report their ethnicity are part of a minority group.

information is available for 343 students. The average age in the sample is 16.8 years old, slightly lower than in the sample for Buenos Aires, and only two students in the sample are foreign-born.

Table 2 presents basic statistics for the sample of Tucumán, the number of responses and correlations for the main independent variables that enter into the specifications. As in the case of Buenos Aires the response rate was very high. Most questions, including ethnicity, were answered by more than 95 percent of the students. Approximately 44 percent of the sample has white skin, almost the same as the 45 percent found for Buenos Aires. With respect to ethnic origin, the percentage of the students who report European and Native American origin are much lower than in Buenos Aires. Sixty-four percent of students in Tucumán reported European origin, compared to 87 percent in Buenos Aires, and 13 percent reported Native American origin, compared to 18 percent in Buenos Aires. On the other hand, the proportion reporting Middle Eastern origin is much higher, 12 percent compared to 4 percent in Buenos Aires.

Clearly, the average income of students in the Tucumán sample is larger than in the Buenos Aires sample. This difference is explained in part by the fact that the average income in the capital city of Tucumán is higher than in both Hurlingham and Florencio Varela. The difference is additionally explained by the fact that five of the seven schools surveyed in Tucumán are private. The average parental education in the sample is 13 years of schooling, and out of four goods (i.e., car, computer, access to internet, and air conditioning) students have on average 2.1 goods. Students in this sample have an average of 2.4 siblings. The average grade the previous year is 6.4 out of 10 for math and 7.4 out of 10 for literature; only 8 percent of the sample receives a Beca scholarship.

Panel A of Table 2 presents, for Tucumán, the correlations among the main independent variables included in the specification. As in the case of Buenos Aires, parental wealth is positively correlated with average parents' education, and negatively correlated with whether the students receive scholarship and the number of siblings, but they are lower in absolute terms than for Buenos Aires. Parental wealth and average parents' education are also positively correlated with whether the student is white and with having European ethnicity.

As in Buenos Aires, heterogeneity within the school class is high with respect to race and socioeconomic status. The overall and within school-class standard deviation of the variable

white skin is 0.5 and 0.48, of parental wealth is 1.4 and 1.23, and of parental education 3.8 and 3.4.

4. Empirical Results

The goal of this section is to investigate the effects of individual characteristics, such as skin color, beauty, ethnic origin, and family wealth on student popularity. The analysis assumes that student rankings depend on a set of individual characteristics. In addition, in ranking their classmates, students may differ in their valuation of each relevant characteristic. Hence, there is a distribution of valuations over each characteristic in the population.

A student's ranking is therefore determined by her characteristics and by the value that their classmates (i.e., the raters) place on each of these characteristics. The following empirical model, which serves as a baseline for the estimations, summarizes such considerations

$$r_{i,j} = x_i \alpha_j + \beta_{1,j} B_i + u_{i,j}, \quad (5)$$

where $r_{i,j}$ is the ranking assigned to student i by student j , with values from 1 to 11, x_i is a vector of individual characteristics, B_i is a measure of beauty of the student, and $u_{i,j}$ is a disturbance, representing the other forces affecting $r_{i,j}$ that are not explicitly measured.

Using equation (5), the average ranking of student i is given by

$$\bar{r}_i = x_i \bar{\alpha} + \bar{\beta}_1 B_i + \bar{u}_i, \quad (6)$$

where the upper bar denotes the mean over the school class.

According to equation (6), the partial effect of a student characteristic (e.g., beauty, race) on its average ranking will be equal to the class average valuation of that characteristic. An important implication of this analysis is that, by using the average student ranking as a measure of popularity, it is only possible to recover the population average valuation placed on each characteristic.

In addition, the average valuations may also vary across different classes according to unobservable or observable class characteristics, such as average parental wealth and whether the class is mixed or not. This implies that the average ranking for student i in class k is given by

$$\bar{r}_i = x_i \bar{\alpha}_k + \bar{\beta}_{1,k} B_i + \bar{u}_i, \quad (7)$$

where the subscript k reflects variations in average valuations across school classes.

Estimating equation (7) raises some econometric problems. First, the error term in the linear regression model will be heteroskedastic because the number of students differs by class, and the distribution itself may vary across classes. This problem is solved by computing clustered standard errors, where the clusters correspond to school classes.

Second, in estimating the effect of beauty on student average ranking, the measure of beauty is likely to have measurement error for at least two reasons: First, students only selected and ranked the three most attractive female and male classmates, not the entire class. Second, students did not provide an absolute measure of beauty for the selected classmates.

Different versions of equation (7) will be estimated below. First, a common effect of individual characteristics on student average ranking is assumed. Then, variations on coefficients across classes are allowed according to whether the school is mixed or not. In order to check the robustness of our estimates to different definitions of popularity, a probit model is additionally run, using student popularity as defined in equation (2) as dependent variable. Finally, a modified version of equation (5) is used to investigate how the beauty and the academic performance of the rater affect her/his valuations placed on each individual characteristic.

4.1. Baseline Effects of Individual Characteristics on Popularity

In Table 3 students are categorized according to their average ranking as: very popular (top 20 percent of the class), moderately popular (between 20 and 80 percent) and unpopular (bottom 20 percent of the class). The table presents the mean of parental wealth, parental education, beauty, school performance and race for these three groups. Results for Buenos Aires and Tucumán are presented separately.

In both provinces, highly popular students are on average physically more attractive and have better grades than unpopular students. When looking at differences in race, wealth, and parents' education across groups, the sign of the differences varies according to the sample. In Buenos Aires, high-ranked students are on average poorer than low-ranked students, and average parents' education is also lower among high-ranked students. In Tucumán, the opposite is observed: students with a high average ranking are on average wealthier, and their parents are on average more educated. Since average wealth in the sample of Buenos Aires is lower than in the sample of Tucumán, this suggests that the relationship between average ranking and wealth may

vary with the level of wealth, displaying a U-shaped relationship between average ranking and income. Regarding race, the percentage of students in Buenos Aires with Native American ethnicity among high-ranked students is larger than among low-ranked students, while in Tucumán the reverse is true. In addition, in Tucumán the percentage of students with white skin among high-ranked students is lower than among low-ranked students.

Table 4 presents estimates of the effects of individual characteristics on student popularity assuming a homogenous effect across school classes. All regressions are run by OLS. The dependent variable is the average student ranking as defined in equation (1). The first column presents results using the pooled sample. Columns 2 and 3 present results for Buenos Aires and Tucumán, respectively.

All specifications include school class dummies. The table reports only the variables that turn out to be important in the analysis, and the regressions include the following controls that are not reported in the table because they are not statistically significant: student's numbers of years living in the school district, whether the student has a scholarship, whether the student lives with both parents, whether the student's parents are married, whether the student's parents were born outside the province in which the school is located, and measures of student's personality. Clustered standard errors are reported in parentheses below each coefficient, where clusters correspond to school classes.

The results paint a consistent picture when looking across samples for two factors as the main determinants of students' average ranking. These two factors are academic performance (average grade) and beauty. Both factors have a negative sign, which means that students with better grades and those perceived as more beautiful among their peers are ranked in a higher position (i.e., are more popular). Both variables are statistically significant at the 1 percent level in all samples.

Consider first the effect of average grade on student popularity. The coefficients on this variable are very similar across samples, -0.18 for the sample of Buenos Aires and -0.2 for the sample of Tucumán, implying that a 5 points increase in grades leads to approximately one position gain in the ranking.⁷ Regarding the effect of beauty, the magnitude of the effect in the

⁷ We also included a dummy equal to 1 if the student is the best grade achiever in the class. This indicator is not significant in any of the samples.

sample of Tucumán is larger than in the sample of Buenos Aires—by a factor of 1.7. This issue is discussed in more detail below.

There does not appear to be a strong and consistent effect of ethnicity and skin color on the average ranking of students. Skin color is not significantly correlated with popularity in any of the specifications. Regarding ethnic origin, in the pooled sample only Asian ethnicity has a negative effect on popularity, and the effect is only significant at the 10 percent level. When looking at the sample of Buenos Aires, having European ethnicity significantly increases popularity, while having African ethnicity decreases popularity (significant at the 10 percent level). In Buenos Aires, however, it is also found that those who do not report their ethnicity are more popular. Given that those who do not report ethnicity are more likely to be part of a minority (see Section 3.2), the estimated positive effect of European ethnicity may be biased upwards. For Tucumán, where 95 percent of students reported ethnicity, African and Asian ethnicity are negatively correlated with popularity (although in the latter case the effect is only significant at the 10 percent level).

Regarding the effects of average parents' education, the coefficients are negative and statistically significant in the pooled sample and in Tucumán (i.e., students with more educated parents are more popular). Parental wealth, on the other hand, has no significant effect on popularity. Since the variables of wealth and average parents' education are highly correlated (a correlation coefficient of 0.46 and 0.39 for the samples of Buenos Aires and Tucumán, respectively), however, it is hard to disentangle the effect. Finally, no correlation is found between popularity and parental nationality (except in Tucumán, where students with foreign-born parents are less popular, although the effect is only significant at the 10 percent level).

The effect of physical attractiveness on popularity would be biased if beauty is correlated with the error term. Physical attractiveness is measured based on the rankings provided by students, not by external evaluators. If students rank their classmates based not only on their physical attractiveness, but also on other traits unobservable to the econometrician, the estimated effect of beauty would be capturing the effects of both physical attractiveness and the unobserved factor. Personality traits, such as extraversion, represent factors that are usually unobserved by the econometrician but could be correlated with both beauty and popularity (Anderson et al., 2001).

To deal with this concern, students are explicitly asked to rank their classmates based on their physical appearance, and information is also collected on some characteristics of students' personality such as extraversion and conscientiousness.⁸ In particular, students are asked to report what they like to do when they meet with their friends (i.e., talk a lot, tell jokes, listen), and what they plan to do after finishing high school (i.e., study, work, work and study, don't know). The estimates presented in Table 4 controls for these factors. Therefore, it is unlikely that the effect of physical attractiveness on popularity captures personality traits.

Furthermore, using the sample of mixed schools, four additional measures of physical attractiveness were generated, as defined in equation (4), but varying the group of raters according to their gender as follows: 1) considering the rankings generated by females only; 2) by males only; 3) by students of the same gender of the rated student; and 4) by students of the opposite gender of the rated student. Even though this strategy does not fully solve the concern that students select their most attractive classmates based on unobservable factors other than beauty, the underlying premise is that the criteria used by the rater to assess beauty in an "objective" way may vary according to student gender or in relation to the gender of the rated student. That is, the omitted variable bias may vary with the gender of the rater of beauty. Although it is a priori unknown how the bias varies with the different measures of beauty (i.e., whether males or females are more "objective" raters), at least it is possible to analyze to what extent the magnitude and the statistical significance of the coefficients are affected by the use of these different measures of beauty.

Table 5 presents the correlations between the different measures of physical attractiveness for the whole sample, as well as separately for Buenos Aires and Tucumán. As the table shows, the four additional beauty measures are highly correlated with the measure of beauty generated using all students in the school class as raters (correlations coefficients range from 0.84 to 0.92). On the other hand, the correlation between the measures of beauty when the group of raters is restricted to male students and to female students only is much lower, 0.65 for the whole sample. Thus it seems that both measures offer different information or measure different things.

⁸ Extraversion refers to energy and the tendency to seek stimulation and the company of others. Conscientiousness refers to a tendency to show self-discipline, aim for achievement, with planned rather than spontaneous behavior.

Table 6 presents estimates of the effect of beauty on popularity using the four additional measures of beauty defined above. There are four columns, corresponding to each of the four beauty measures. As the table shows the results are practically unaffected, and the effect of beauty on popularity is positive and statistically significant independently of the measure of beauty that is used. However, the magnitude of the effect varies depending on the gender of the raters used to generate beauty. In particular, the coefficient when beauty as rated by male students is used is much lower than when females are used as raters.

Finally, in order to check the robustness of the results to an alternative definition of popularity, a probit model is also run, using as dependent variable whether or not the student was chosen by at least half of the class (see equation 2). The results of the probit model, presented in Table 7, confirm the previous findings. Academic performance and beauty appear as the main determinants of student popularity in all three samples. Parental education is also positively correlated with popularity, and parental wealth, skin color, and ethnicity are not significant factors (except for Native American ethnicity, which is positively correlated with popularity, although only in the pooled sample and at the 10 percent level).

4.2. Heterogeneity in the Effects of Individual Characteristics on Student Popularity: Mixed versus Single-Sex Schools

Table 8 investigates how the effects of average grade, beauty, and average parents' education vary according to whether the school is mixed or not. The table presents separate regressions for mixed and single-sex schools for the pooled sample and for Tucumán and Buenos Aires separately. Eight out of the 38 school-classes in the sample are single-sex, with four classes only including females and four classes only including males. The same specifications are run as in Table 4, but this table reports only the coefficients of the variables of interest: average grade, beauty, and average parents' education.

When looking across samples, the effects of average grade and beauty appear to be different according to whether the school is mixed or not. For the pooled sample, columns I and II suggest that the effect of average grade is statistically significant in both kinds of schools but it is much larger among single sex schools.

An interesting result is that beauty only matters in mixed schools. Moreover, for the Tucumán sample, average grade does not affect student popularity among mixed schools, while

beauty has a strong positive effect. On the other hand, among single-sex schools in Tucumán, the effect of academic performance is strong, while beauty has no statistically significant effect on popularity. Since the effect of beauty is more important in mixed schools, this result suggests that mating may be driving the relationship between popularity and beauty.

4.3. Heterogeneity in Individual Valuations According to Beauty and Academic Performance of the Rater

This section investigates how the beauty of the rater affects her/his valuations placed on beauty, academic performance and parents' education of other fellow students. In order to learn about the distribution of valuations across students, a probit model is used to estimate the determinants of the probability that a student i is chosen in the first five places by a student j to form a group (see equation 3). In this specification, students' beauty, academic performance and parents' education now enter not only alone, but also interacted with the beauty variable of the rater (i.e., beauty of the student j). Table 9 reports the marginal effects of the probit model.

The interaction terms between beauty of the rater and beauty of the rated student is positive and statistically significant for the sample of Buenos Aires, meaning that more beautiful students place a higher value on beauty of other students when choosing classmates to form a group. The same is true for the effect of beauty of the rater on the valuation of parental education: more beautiful students place a higher value on the parental education of other students when choosing classmates to form a group.

When the effect of academic performance of the rater on her valuation of other students traits in forming a group is considered, it is found that the higher the average grade of the rater the lower the value that she places on beauty, the higher the value that she places on academic performance, and the lower the value she places on parental education.

5. Popularity and Social Networks

It is plausible that discrimination or segregation in formation of social networks during the school years against particular group of people hinders their acquisition of social skills, and that lack of social competencies is subsequently penalized in the labor market. The formation of social networks calls attention to the importance of popularity and non-anonymity in an individual's chances of joining a network. It is possible to proxy how difficult it will be for a

student to form a group and the degree of homogeneity of preferences within a class by looking at students' average ranking and its variability measured by the standard deviation of the student ranking, respectively.

Figure 1 shows the relationship between the average ranking and the standard deviation of the ranking for each student for the pooled sample.⁹ As the figure shows, there is a strong positive relationship between the average ranking and its standard deviation. One interpretation of this relationship is that most people agree on whom they do not want to have in a group, but the degree of agreement over potential teammates decreases as the student's expected ranking increases. In other words, there is agreement over the position of students at the bottom of the ranking; as the expected position in the ranking increases, however, disagreement among peers also increases.

Moreover, this suggest that factors that adversely affect students' average ranking, like having low academic performance or being not beautiful, not only reduces the student's expected position in the ranking, but also increases agreement among peers about the student's undesirability as a potential group member. This evidence, together with the previous estimates, suggests that a high degree of segregation by beauty and academic performance should be expected on the part of the members of a group or network.

6. Expected Sorting

In order to identify potential differences in characteristics and behavior between students who could easily join a network and those who may have difficulty in joining, groups of two students are formed by matching students who chose themselves as their first choice in forming a group. Using this simple matching function, in the case of Tucumán 80 groups of two students each are formed, a total of 160 students. In the case of Buenos Aires 146 groups of two students each are formed, a total of 292 students. These students are then compared with 215 students in Tucumán and 349 students in Buenos Aires that are not considered to have a group.

Table 10 presents the mean academic performance, beauty and average parents' education by group according to whether or not the student has a match. As the table shows for

⁹ Note that by construction the standard deviation of the student ranking is bounded from above with an inverted U-shaped function. To notice that consider the two extreme cases: an individual with the lowest possible average ranking has mean 1 and standard deviation zero; and an individual with the highest possible average ranking has mean 11 and standard deviation zero as well.

both the Buenos Aires and Tucumán samples, the students who have a match have on average higher grades and are perceived as more beautiful among their peers. The gaps in academic performance between groups are large, 0.3 and 0.4 for Buenos Aires and Tucumán, respectively.

Table 11 presents correlations between the student characteristics and the characteristic of her first choice student for all students and for those students who have a match separately. As the table shows, there is a strong correlation between the student's academic performance and the academic performance of the student's first choice. The same is true for beauty, average parents' education, and gender. Again, this evidence suggests that a high degree of positive sorting in academic performance and beauty should be expected.

7. The Benefits of Networks

The previous section identified differences in characteristics between members and nonmembers of group or networks, and this evidence could help to assess potential benefits of being a member of a network. In order to have a rough estimate of the potential benefit of being part of a group or network, student performance at school is examined. It can be considered as a quality measure of the level of schooling, and within certain approximations it could have an effect on wages similar to that of the quantity of schooling.

Table 10 shows that the average school performance of members is 0.26 higher than nonmembers, representing a 4 percent difference in school quality that could be considered an achievement of the group or network. In the case of Argentina, with an average schooling of 10 years for the labor force, this 4 percent increase in schooling quality represents an increase of 0.40 years of schooling, where perfect substitution between quality and quantity dimensions of schooling is assumed. Then, considering a value of 15 percent for the return to schooling in Argentina, the group or network will obtain a benefit of a 6 percent increase in wages. Heckman et al. (1996) suggest, however, that it is more appropriate to consider how schooling quality affects the rate of return to schooling. Under this assumption, if one third of the 15 rate of return to schooling is due to schooling quality, then the expected increase in wages will be only 2 percent.

Some estimates of network benefits offer potentially useful comparisons with those rough estimates. For example, Angrist and Levy (1997) study the effects of an education reform in Morocco that replaced French-language instruction with instruction in Arabic; the reform led to a

17-percent decrease in the wages of those who do not know French. The authors also mention that immigrants in Germany who knew German had wages 30 percent higher than their counterparts who did not know German; knowledge of a language is here understood as a way of being able to join a network. Other studies about “local externalities” mentioned by Banerjee and Duflo (2005) indicate that social learning could increase the adoption rate of new technologies by 17 percent in agriculture.

8. Conclusions

As established in the Argentine Federal Education Law, one of the main objectives of the education system is to provide real equality of opportunities to every individual and to eradicate all forms of discrimination in the classroom. Furthermore, the school, as an agency of socialization, attempts to inculcate these values in its pupils. In turn, students are expected to change their behavior, thus contributing to the eradication of discrimination in other social environments.

This paper studies the determinants of popularity among students attending their last school year in Buenos Aires and Tucumán. As this population has spent at least 12 years attending school, analyzing how they rank their classmates provides valuable information in assessing whether there is any evidence of some form of discrimination in the school system.

The importance of this issue is underscored by several studies suggesting that discrimination is a problem in Argentine society. Reviewing the literature, Braylan and Jmelniczky (2004) show that most allegations involve discrimination based on nationality, ethnic origin, socioeconomic status, and physical appearance. While estimates of the magnitude of the phenomenon are lacking, most observers believe that discrimination is a major problem.

The findings of this paper, however, suggest that students do not rank their classmates based on their skin color, parental wealth and nationality (although there is some evidence of discrimination against African and Asian ethnicity, the results are not robust across specifications). Comparing these results to the reports on discrimination in other social environments suggests that either the school system has improved over time in its efforts to eradicate discrimination (i.e., younger generations are less likely to discriminate than older generations), or individuals change their behavior over the life cycle. In either case, it is clear that the school system is not reproducing major forms of discrimination observed in other social

environments. Adolescents who have dark skin, and those whose parents are poor or were born in neighboring countries, do not appear to be discriminated against at school.

Physical appearance and previous academic performance, on the other hand, are strong predictors of popularity. The finding that students have a preference for higher achievers should not necessarily be a reason for concern. Students selected their classmates with the expectation that groups were going to be formed, and that those groups would meet to conduct school activities. Assuming that having higher achievers in a group increases its productivity, the finding can be interpreted as evidence that students are interested in improving their performance. Alternatively, it can be interpreted as reflecting meritocracy.

The evidence that beauty matters, however, is more troubling. On the one hand, beauty is an irrelevant trait for carrying out school-related activities. On the other hand, students are likely to select their teammates not only with the objective of improving academic performance, but also because of mating. From this perspective it becomes difficult to consider lookism as a form of prejudice.

There is nonetheless an instrumental reason why policymakers should be concerned about the finding that beauty is a major determinant of popularity among adolescents. As social-psychological studies have found, being highly ranked by one's peers during high school enhances confidence, self-esteem, oral and interpersonal skills; and labor economists have found that social skills are an important determinant of success in the labor market.

It is presumed that the present findings reflect teachers' behavior. Schoolteachers generally emphasize equal treatment independently of race, wealth and nationality—because most discrimination is believed to be on the basis of those traits in Argentina—and the findings suggest they are successful. Equal treatment independently of physical attractiveness, however, might have been overlooked by teachers. While it is beyond the scope of this paper to pass judgment on the justice or injustice of lookism, it seems that teachers should devote more attention to this issue given the important consequences that peer popularity during adolescence has for future outcomes.

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Appendix

ENGLISH VERSION (students received a Spanish version)

Questionnaire 1

First and Last Name:.....

List the 10 classmates with whom you would like to form a group to do activities at school. Rank them beginning with your first choice. (Write their first and last name, no nicknames please!)

First:.....

Second:.....

Third:.....

Forth:.....

Fifth:.....

Sixth:.....

Seventh:.....

Eighth:.....

Ninth:.....

Tenth:.....

Questionnaire 2

First and Last Name:.....

Age:.....

Gender (Mark the correct answer with X):

- Male
- Female

If you were born in Argentina, in which province:.....and locality:.....

If you were born in other country, in which country?.....

For how many years have you been living in the current neighborhood?.....

Which grade did you got last year in Literature?.....in Mathematics?.....

Of which material is your house made of?

- Corrugated iron
- Wood
- Bricks

Do your parents have a car?

- No
- Yes

Do you have a computer at home?

- No
- Yes

And access to internet?

- No
- Yes

Is there air conditioning at home?

- No
- Yes

Do you live with your parents?

- No
- Yes

Are they married?

- No
- Yes

How many brothers and sisters do you have?.....

What is your mother's maximum educational attainment? (Mark only one box)

- College graduate
- Some college
- High school graduate
- High school drop out
- Primary school graduate
- Primary school drop out
- Don't know

What is your father's maximum educational attainment? (Mark only one)

- College graduate
- Some college
- High school graduate
- High school drop out
- Primary school graduate
- Primary school drop out
- Don't know

In which province did your mother born? (Name country if foreign-born).....

In which province/country did your father born? (Name country if foreign-born).....

Do you have any of the following ethnic origins? (Check all boxes that apply)

- African
- Asian
- European
- Native American
- Middle East

Do you consider yourself? (Check only 1 box)

- White
- Olive-skinned
- Dark
- Other

When you meet with friends, you like to: (check all boxes that apply)

- Talk a lot
- Listen
- Tell jokes
- None of the above

What do you plan to do after finishing high school?

- Study and work
- Just study
- Just work
- Do not know

How important are friends to find a good job?

- Very Important
- Important
- Not important at all
- Do not know

Do you think there is discrimination in the labor market?

- Yes
- No
- Do not know

In a scale from 1 to 5 (where 1 indicates very important and 5 indicates not important)

How important are the following characteristics to find a good job?

Education:.....

Physical Beauty:.....

Skin color:.....

Parents wealth:.....

Other:.....

Questionnaire 3

First and Last name:.....

Which are the 3 female classmates you consider the most physically attractive?

(Please answer seriously. This information is useful to analyze the role of beauty among adolescents. Your answer would remain strictly confidential).

The most beautiful female classmate is:.....

The second most beautiful is:.....

The third most beautiful is:.....

And, which are the 3 male classmates you consider the most physically attractive?

The most handsome male classmate is:.....

The second most handsome is:.....

The third most handsome is:.....

Table 1. Descriptive Statistics, Buenos Aires

A. Mean, Standard Deviation and Correlations of Selected Individual Characteristics

	Parental Wealth	Parental Education	Has Scholarship	Literature Grade	Math Grade	Beauty	White Skin	Native American Ethnicity	European Ethnicity	Foreign-born parents	Number of Siblings
Mean	1.59	9.74	0.19	7.72	6.97	0.28	0.45	0.18	0.87	0.09	2.6
Std. Dev.	1.37	3.75	0.39	1.47	2.09	0.40	0.50	0.38	0.33	0.28	1.8
Number of Responses	568	578	641	532	530	641	572	371	371	545	564
Parental Education	0.46										
Has Scholarship	-0.32	-0.29									
Literature Grade	-0.11	-0.03	0.11								
Math Grade	-0.05	-0.02	0.11	0.33							
Beauty	0.07	-0.05	0.07	0.09	0.02						
White Skin	0.18	0.19	-0.03	-0.02	-0.02	0.05					
Native American Ethnicity	-0.13	-0.20	0.08	0.01	0.09	-0.06	-0.15				
European Ethnicity	0.16	0.14	-0.02	0.03	-0.01	0.07	0.20	-0.59			
Foreign-born parents	0.02	-0.08	0.01	0.04	-0.01	0.01	-0.06	0.11	-0.11		
Number of Siblings	-0.23	-0.19	0.12	-0.10	-0.02	0.01	-0.10	0.09	-0.06	0.04	1.00

B. Means and Standard Deviation of Selected Individual Characteristics

Variable	Number of responses	Mean	Std. Dev.
Age	579	17.1	0.71
Gender (male = 1)	641	0.47	0.50
Nationality (Argentine = 1)	576	0.99	0.05
African Ethnicity	371	0.01	0.09
Asian Ethnicity	371	0.02	0.15
Middle East Ethnicity	371	0.04	0.19

Table 2. Descriptive Statistics, Tucumán

A. Mean, Standard deviation and Correlations of Selected Individual Characteristics

	Parental Wealth	Parental Education	Has Scholarship	Literature Grade	Math Grade	Beauty	White Skin	Native American Ethnicity	European Ethnicity	Foreign-born parents	Number of Siblings
Mean	2.13	13.05	0.08	7.37	6.40	0.31	0.44	0.13	0.64	0.03	2.40
Std. Dev.	1.40	3.8	0.27	1.51	1.99	0.51	0.50	0.33	0.48	0.17	1.32
Number of Responses	342	343	375	339	336	375	343	343	343	336	343
Parental Education	0.39										
Has Scholarship	-0.14	-0.15									
Literature Grade	0.28	0.15	-0.19								
Math Grade	0.20	0.20	-0.21	0.40							
Beauty	-0.04	0.10	0.00	-0.06	-0.06						
White Skin	0.14	0.12	-0.02	0.05	0.03	0.09					
Native American Ethnicity	-0.12	-0.07	0.05	0.03	0.00	-0.14	-0.16				
European Ethnicity	0.18	0.25	0.07	0.12	0.04	-0.08	0.06	0.00			
Foreign-born parents	0.10	0.04	-0.04	0.00	0.02	0.13	-0.05	0.04	-0.05		
Number of Siblings	-0.04	0.03	0.01	-0.07	-0.06	0.09	0.00	0.01	0.03	0.00	1.00

B. Means and Standard Deviation of Selected Individual Characteristics

Variable	Number of responses	Mean	Std. Dev.
Age	343	16.78	0.53
Gender (male = 1)	375	0.36	0.48
Nationality (Argentine = 1)	343	0.99	0.08
House is of corrugated iron	332	0.01	0.09
African Ethnicity	343	0.01	0.08
Asian Ethnicity	343	0.03	0.18
Middle East Ethnicity	343	0.12	0.32

Table 3. Wealth, Parental Education, School Performance, Race, and Beauty according to Student's Average Ranking, Buenos Aires and Tucumán

	Buenos Aires			Tucumán		
	Very Popular (top 20%)	Moderately Popular (between 20% and 80%)	Unpopular (bottom 20%)	Very Popular (top 20%)	Moderately Popular (between 20% and 80%)	Unpopular (bottom 20%)
Parental Wealth	1.45	1.52	2.05	2.51	2.05	1.91
Parental Education	9.21	9.71	10.52	13.53	13.00	12.6
Literature Grade	8.04	7.76	7.10	7.62	7.39	7
Math Grade	7.39	7	6.27	6.75	6.38	6.07
Beauty	0.40	0.28	0.10	0.51	0.28	0.14
White Skin	0.45	0.46	0.41	0.39	0.46	0.46
Native American Ethnicity	0.21	0.19	0.12	0.09	0.14	0.14
European Ethnicity	0.89	0.86	0.91	0.63	0.62	0.69
Foreign Parents	0.09	0.08	0.07	0	0.03	0.03

Table 4. Estimates of the Effects of Individual Characteristics on Student's Average Ranking, Buenos Aires and Tucumán

The samples, for Buenos Aires and Tucumán, comprise all the students who fill the surveys for whom all the variables included in the regression are available. The Dependent Variable is the Student's Average Ranking (see eq. (1)). All regressions includes additionally the following controls: School class dummies, student's numbers of years living in the school district, whether the student has a scholarship, whether the student live with both parents, whether the student parents are married, whether the student's parents were born outside the school province, and measures of student's personality.

	All I	Buenos Aires II	Tucumán III
Age	0.037 (0.044)	0.097* (0.055)	-0.104** (0.048)
Gender (Male = 1)	-0.168 (0.118)	-0.309** (0.129)	0.118 (0.239)
Not born in the School Province	0.549** (0.235)	0.791*** (0.212)	-0.062 (0.473)
Not Born in the School District	-0.101 (0.069)	-0.147** (0.064)	0.145 (0.271)
Average Grade	-0.195*** (0.033)	-0.179*** (0.037)	-0.199*** (0.069)
Beauty	-0.377*** (0.099)	-0.297*** (0.101)	-0.501*** (0.167)
Native American Ethnicity	-0.063 (0.116)	-0.335 (0.217)	0.003 (0.152)
European Ethnicity	-0.111 (0.112)	-0.538** (0.248)	-0.030 (0.135)
African Ethnicity	0.190 (0.143)	0.583* (0.315)	0.466*** (0.134)
Asian Ethnicity	0.227* (0.136)	-0.268 (0.217)	0.284* (0.167)
Middle Eastern Ethnicity	0.081 (0.083)	-0.101 (0.176)	0.030 (0.128)
Did Not Report Ethnicity	-0.038 (0.142)	-0.494* (0.253)	-
Skin Color (White = 1)	-0.022 (0.069)	-0.073 (0.094)	0.082 (0.093)
Parental Wealth	-0.022 (0.031)	-0.005 (0.042)	-0.046 (0.047)
Average Parents Education	-0.018** (0.009)	-0.016 (0.013)	-0.025** (0.010)
Number of Siblings	0.019 (0.020)	0.037* (0.020)	-0.024 (0.050)
Foreign Parents	0.037 (0.156)	-0.045 (0.174)	0.623* (0.333)
Observations	840	509	331
R-squared	0.45	0.48	0.48

Clustered standard errors are reported in parentheses below each coefficient, where clusters correspond to school classes.

* Significant at 10%; ** significant at 5%; *** significant at 1%

Table 5. Matrix Correlation of Different Measures of Beauty, Buenos Aires and Tucumán**A. Whole Sample**

		Measure of Beauty computed using raters:			
		Males	Females	Opposite Gender	Same Gender
Measure of Beauty computed using raters:	Females	0.65			
	Opposite Gender	0.82	0.85		
	Same Gender	0.83	0.80	0.65	
	All Class	0.87	0.91	0.91	0.86

Number of observations is 778.

B. Buenos Aires

		Measure of Beauty computed using raters:			
		Males	Females	Opposite Gender	Same Gender
Measure of Beauty computed using raters:	Females	0.61			
	Opposite Gender	0.81	0.84		
	Same Gender	0.81	0.77	0.62	
	All Class	0.84	0.92	0.91	0.85

Number of observations is 573.

C. Tucumán

		Measure of Beauty computed using raters:			
		Males	Females	Opposite Gender	Same Gender
Measure of Beauty computed using raters:	Females	0.69			
	Opposite Gender	0.83	0.87		
	Same Gender	0.85	0.83	0.69	
	All Class	0.91	0.89	0.92	0.88

Number of observations is 205.

Table 6. Estimates of the Effects of Individual Characteristics on Student’s Average Ranking using Different Measures of Beauty: Mixed Schools, Whole Sample

The sample comprises all the students from Mixed Schools of Buenos Aires and Tucumán who fill out the surveys for whom all the variables included in the regression are available. The dependent variable is the Student’s Average Ranking (see equation (1)). Each column corresponds to a different measure beauty as defined in Section 4. All regressions include the same controls as in Table 4.

	Beauty is Measured using as Rates:			
	Females	Males	Same Gender of Rated	Opposite Gender of Rated
Beauty	-0.366*** (0.074)	-0.242** (0.108)	-0.322*** (0.075)	-0.279** (0.113)
Observations	633	633	633	633
R-squared	0.46	0.44	0.46	0.45

Clustered standard errors are reported in parentheses below each coefficient, where clusters correspond to school classes.

*** Significant at 1% level.

Table 7. Probit Model for the Probability of Being Chosen by at Least 50 Percent of the Class, Tucumán and Buenos Aires

The table reports the marginal effects of a probit regression. The samples, for Buenos Aires and Tucumán, comprise all the students who fill out the surveys for whom all the variables included in the probit model are available. The dependent variable is whether or not the student was chosen by at least 50 percent of the class (see equation (3)). The model includes the same set of variables as in Table 4.

	All	Buenos Aires	Tucumán
	I	II	III
Age	0.020 (0.074)	-0.035 (0.088)	0.087 (0.140)
Gender (Male = 1)	0.272*** (0.093)	0.514*** (0.124)	-0.003 (0.155)
Not born in the School Province	-0.455** (0.218)	-0.603* (0.309)	0.189 (0.388)
Not Born in the School District	0.162 (0.099)	0.262** (0.125)	-0.113 (0.258)
Average Grade	0.164*** (0.034)	0.175*** (0.046)	0.146*** (0.056)
Beauty	0.520*** (0.110)	0.583*** (0.154)	0.552*** (0.161)
Native American Ethnicity	0.243* (0.146)	0.609** (0.272)	0.221 (0.221)
European Ethnicity	0.105 (0.130)	0.598* (0.316)	0.037 (0.163)
Asian Ethnicity	-0.615 (0.380)	-	-0.324 (0.393)
Middle Eastern Ethnicity	0.040 (0.197)	0.900** (0.425)	-0.109 (0.236)
Did Not Report Ethnicity	0.090 (0.163)	0.672* (0.343)	-
Skin Color (White = 1)	-0.027 (0.094)	0.094 (0.124)	-0.183 (0.155)
Parental Wealth	0.026 (0.040)	-0.002 (0.057)	0.072 (0.063)
Average Parents Education	0.031** (0.014)	0.038** (0.019)	0.041* (0.023)
Number of Siblings	-0.029 (0.028)	-0.029 (0.036)	-0.012 (0.054)
Foreign Parents	0.183 (0.199)	0.276 (0.218)	-0.494 (0.515)
Observation	836	502	329
R-Squared	0.0791	0.1188	0.0861

Z-values are reported in parentheses below each coefficient.

* Significant at 10%; ** significant at 5%; *** significant at 1%

Table 8. Estimates of the Effects of Individual Characteristics on Student's Average Ranking for Mixed and Single Sex Schools; Buenos Aires and Tucumán

All regressions includes the same set of variables as in Table 4, but we only report the coefficients of average grades, beauty, and average parents' education.

	Pooled Sample		Buenos Aires		Tucumán	
	Mixed Schools I	Single-Sex Schools II	Mixed Schools III	Single-Sex Schools IV	Mixed Schools V	Single-Sex Schools VI
Average Grade	0.18*** (0.04)	-0.26*** (0.08)	0.18*** (0.04)	-0.13** (0.06)	-0.11 (0.09)	-0.28*** (0.11)
Beauty	0.41*** (0.11)	-0.07 (0.16)	0.29*** (0.10)	-0.76 (0.79)	0.62*** (0.17)	-0.11 (0.24)
Average Parents' Education	-0.02** (0.01)	-0.00 (0.02)	-0.02* (0.01)	0.04 (0.06)	-0.02 (0.02)	-0.02 (0.02)
Observations	633	207	453	56	180	151
R-squared	0.46	0.42	0.50	0.53	0.52	0.40

Clustered standard errors are reported in parentheses below each coefficient, where clusters correspond to school classes.

* Significant at 10%; ** significant at 5%; *** significant at 1%

Table 9. The Effect of Beauty and Academic Performance of the Rater on Her/His Valuations of Student's Individual Characteristics, Tucumán and Buenos Aires

In the table we report the marginal effects of a probit regression. The dependent variable is whether or not student i was chosen in the first five places by student j to form a group (see equation (4)). In this specification, the student's beauty, academic performance and parents' education now enter not only alone, but also interacted with the beauty variable of the rater (i.e., beauty of student j). We only report the variables of interest; the model also includes the same set of variables as in Table 4.

	All I	Buenos Aires II	Tucumán III	All IV	Buenos Aires V	Tucumán VI
Average Grade	0.018*** (0.002)	0.017*** (0.003)	0.017*** (0.003)	-0.004 (0.005)	-0.005 (0.007)	-0.011 (0.008)
Beauty	0.033*** (0.006)	0.010 (0.009)	0.055*** (0.008)	0.112*** (0.028)	0.124*** (0.046)	0.087** (0.034)
Average Parents' Education	-0.002** (0.001)	-0.003** (0.001)	-0.001 (0.001)	0.010*** (0.003)	0.011** (0.005)	0.014*** (0.004)
Beauty of the Rater * Beauty	0.026*** (0.009)	0.061*** (0.016)	0.001 (0.011)			
Beauty of the Rater * Average Grade	-0.002 (0.002)	-0.004 (0.003)	-0.006** (0.003)			
Beauty of the Rater * Average Parents' Education	0.002** (0.001)	0.004* (0.002)	0.004*** (0.002)			
Average Grade of the Rater * Beauty				-0.009** (0.004)	-0.012** (0.006)	-0.004 (0.005)
Average Grade of the Rater * Average Grade				0.003*** (0.001)	0.003*** (0.001)	0.004*** (0.001)
Average Grade of the Rater * Average Parents' Education				- 0.001*** (0.000)	-0.002** (0.001)	- 0.002*** (0.001)
Observations	24318	13812	10506	21596	12069	9527

Z-values are reported in parentheses below each coefficient. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10. Average Grade, Beauty and Average Parents Education of Matched Students and Not Matched Students; Buenos Aires and Tucumán

The Matched group is composed of those students who have chosen themselves as first choice in forming a group. The Not Matched group is composed of all the remaining students.

		N	Average Grade	Beauty	Average Parents' Education
All	Matched	452	7.3	0.32	10.7
	Not Matched	564	7.04	0.25	11.2
Buenos Aires	Matched	292	7.5	0.32	9.6
	Not Matched	349	7.2	0.23	9.9
Tucumán	Matched	160	7.1	0.32	12.8
	Not Matched	215	6.7	0.28	13.2

Table 11. Correlations between the Student Characteristics and the Characteristics of Her/His First Choice Student to Form a Group: Average Grade, Beauty, Average Parents Education, and Gender, Buenos Aires and Tucumán

A. Buenos Aires

Characteristic of Student	Characteristic of Student First Choice			
	Average Grade	Beauty	Average Parents' Education	Gender
All Students				
Average Grade	0.30	0.05	-0.04	-0.04
Beauty	0.01	0.28	-0.03	-0.12
Average Parents' Education	-0.08	-0.05	0.17	0.01
Gender	-0.03	-0.15	0.05	0.78
Matched Students				
Average Grade	0.49	0.07	-0.07	0.06
Beauty	0.07	0.39	-0.04	-0.13
Average Parents' Education	-0.07	-0.04	0.18	0.02
Gender	0.06	-0.13	0.02	0.84

B. Tucumán

Characteristic of Student	Characteristic of Student First Choice			
	Average Grade	Beauty	Average Parents' Education	Gender
All Students				
Average Grade	0.26	-0.03	0.12	0.05
Beauty	-0.07	0.23	-0.01	0.23
Average Parents' Education	0.15	-0.03	0.15	0.03
Gender	-0.05	0.06	0.05	0.85
Matched Students				
Average Grade	0.49	0.01	0.22	0.03
Beauty	-0.01	0.12	-0.02	0.19
Average Parents' Education	0.25	-0.02	0.29	0.07
Gender	0.00	0.19	0.07	0.89

Figure 1. Average Student Ranking and Standard Deviation of the Student Ranking Pooled Sample, Buenos Aires and Tucumán

