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GENDER MIX AND TEAM PERFORMANCE: DIFFERENCES BETWEEN EXOGENOUSLY AND ENDOGENOUSLY FORMED TEAMS

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Gender Mix and Team Performance: Differences between Exogenously and Endogenously Formed Teams

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Abstract

We conduct a randomized controlled trial to study the effect of gender composition of teams on performance, self-concept, working style, and individual satisfaction in endogenously and exogenously formed teams. We randomly divide a sample of high school students into two groups: we assign students in one group to teams of varying gender composition using random assignment and we allow the students in the other group to form teams freely. We find that students form disproportionately more male-predominant teams that those that would be formed under random assignment and that students in endogenously-formed gender-biased teams prefer even more gender-biased teams ex-post. Our results also show that female-predominant teams under-perform other types of teams but these differences disappear when teams are endogenously-formed.

JEL Classification: J16, I21, I24

Keywords: Team Composition, Gender, Team Formation, Team Dynamics, Team Performance, Field Experiment, Decision-making

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1 Introduction

Since the 1970s, the increase in female labor force participation has changed the demography of the workplace. In the working context, the chances of having teams diversified by gender have increased. In several countries, the introduction of gender quotas has fostered the integration of women in specific segments of the labor market: this is the case, for example, in professions such as politics and in the corporate sector. Greater female representation on political committees, company boards and other group settings makes it important to understand the effects of gender composition on team dynamics and performance for academics and policy makers. The gender composition of teams has significant consequences for corporate performance and collective decision making (Bagues and Esteve-Volart [2010], Carter, Simkins, and Simpson [2003], Farrell and Hersch [2005]).

In the work or academic context, groups are usually endogenously formed. In the presence of taste-based discrimination, individuals' capacity to choose their teams may crucially influence teams' gender composition and working dynamics of male versus female predominant teams. If individuals with certain characteristics self-select into gender-biased teams, endogeneity of group formation makes difficult the estimate of the effect of gender composition on team performance for the entire population. Azmat and Petrongolo [2014] state that with the experimental approach we can solve this problem through random assignment in groups. However, they also acknowledge that experiments create an artificial environment which may not mirror many real contexts. Indeed, existing experimental research that studies the impact of the gender ratio on team performance using teams that are endogenously and exogenously formed find different results (Apesteguia, Azmat, and Iriberri [2012]; Hoogendoorn, Oosterbeek, and Van Praag [2013a]). Managers and educators considering forming working teams themselves or allow individuals to form them can benefit from information regarding which team formation rule maximizes performance or reduces heterogeneity across groups. In this paper, we explore how the gender composition of teams affects team outcomes for endogenously and exogenously formed groups.

We use a three day long mathematics camp for top-performing students to design an experiment in which we randomly divide students in two groups. In the first group, we randomly assign students to teams with different gender compositions. We call this the group of exogenously formed teams. We let the second group form their teams endogenously. In our analysis, we first study the gender composition that arises in the endogenously formed group. We then analyze the effect of the team's gender composition on satisfaction with the gender mix of the team, team performance, individual performance, individual psychological traits, team working style, and individual satisfaction with the team and the camp, with special emphasis on how these effects differ for endogenously and exogenously formed teams.

Why should we expect an effect of the gender mix on team outcomes? And why is this effect potentially different between exogenous and endogenously formed teams? The experimental literature has largely documented gender differences in skills, psychological traits, individual attitudes and preferences.[1] Differences in behaviors and choices by gender can easily translate into differences in economic outcomes. The majority of the studies on gender differences are done at the individual level, despite the fact that important decisions in modern economies are often made by groups or teams. Indeed, if different psychological traits lead men and women to make different choices in similar contexts, the gender composition of teams becomes a relevant factor in collective decision-making. Moreover, various studies have shown that individual behavior changes in the presence of people from the same or opposite sex (Gneezy and Rustichini [2004]; Antonovics, Arcidiacono, and Walsh [2009]; Ivanova-Stenzel and Kübler [2011]). Becker [1957] argues that taste-based discrimination arises because some individuals receive a dis-utility when they work with women. By allowing individuals to endogenously form teams, individuals can self-select according to their gender preferences. As a result, the impact of gender composition on team outcomes may differ greatly across endogenously and exogenously formed teams.

This paper contributes to the literature on the impact of team gender composition on performance and it adds to the literature on the impact of the team formation rule

[1] Kagel and Roth [2016] provides a comprehensive review of the studies on the topic.

on team outcomes. A branch of the literature on the impact of the gender mix on team outcomes uses reforms that mandate certain levels of female representation on boards of directors as a source of exogeneous variation, thus generating a quasi-experimental setting. Ahern and Dittmar [2012] found that the 2003 law requiring that 40 percent of Norwegian firms' directors be women caused a significant drop in the stock price and operating profits. They also found evidence that boards became less capable. Matsa and Miller [2013] also study the effects of the Norwegian gender quota on corporate decision-making and conclude that firms affected by the quota undertook fewer employee layoffs, causing an increase in relative labor costs.

Close to our purpose, recent papers that use field data have also found evidence that the gender composition of a team does influence performance. Apesteguia et al. [2012] use a large online business game to study how female presence on endogenously-formed teams affects collective choices and performance. The game is played by teams of three, where each team takes the role of a general manager of a beauty-industry company, competing in a market composed of four other simulated companies. The analysis shows that teams composed of three women are significantly outperformed by any other gender combination. Differences in performance are explained by differences in decision-making: all-women teams are less aggressive in their pricing strategies, invest less in R&D, and invest more in social sustainability initiatives, than any other gender combination. Hoogendoorn et al. [2013a] use a similar business game setting with Dutch university students, in which students are exogenously allocated to teams, and detect an inverse u-shaped relationship between the share of women and a team's business performance, such that teams with an equal gender mix perform best.

The previously mentioned papers study the impact of team gender composition on performance under one team formation rule, either endogenous or exogenous. Another branch of the literature, aside from gender, studies how different endogenous team formation rules affect performance. Ahn, Isaac, and Salmon [2008] study endogenous formation of groups in a public-goods provision game by allowing subjects to change groups and find that the rules governing entry and exit do have a significant impact on individual behavior and teams' performance. Page, Putterman, and Unel [2005] allow the groups to

be formed by active choices of the subjects, who can provide the experimenter with a rank of whom they would like to have in their groups. Then, groups are formed using an algorithm based on the subjects' preferences. In Coricelli, Fehr, and Fellner [2004], subjects chose partners according to two different mechanisms (unidirectional and bidirectional) with a group size of two. Ehrhart, Keser, et al. [1999] show that individuals self-select into teams according to their desired strategies. This entire stream of literature suggests that the team formation rule influences team's performance. To the best of our knowledge, we are the first to compare the effect of team's gender composition between endogenous and exogenous teams.

We find that, when subjects are free to choose who to work with, individuals display a preference for male-predominant teams and that subjects choosing gender-biased teams declare to prefer even more gender-biased teams after the camp experience. Our results also show that female-predominant teams under-perform other types of teams when teams are exogenously formed but these differences disappear when teams are endogenous. We also find that endogenous male-predominant teams perform worse than exogenous male-predominant teams. Differences in performance are in line with differences in teams' working style and in perception of oneself with respect to other team members. Exogenous female-predominant teams are less likely than exogenous male-predominant teams to specialize and their members are less likely to consider themselves more talented than their team mates. Also individuals in exogenous gender-balanced teams are less likely than those in exogenous male-teams to declare themselves more talented than their mates. The same happens to individuals in endogenous versus exogenous male-predominant teams.

The remainder of this paper is organized as follows. In Section 2, we describe the mathematics camp. We provide details on the design of the field experiment in Section 3. We describe our data in Section 4. In section 5, we present the results of the randomization and describe the empirical strategy. We discuss the results of our estimations in Section 6. Finally, section 7 concludes. The Appendix includes the questionnaire we gave to students.

2 Background

The Mathesis Mathematics Camp involves students from 48 high-schools in northwestern Italian regions. It is organized by Mathesis, a well-known association of math high-school teachers [2]. The summer camp has been organized yearly since 1995. It takes place few weeks before the end of the academic year (last days of May and early June). The camp lasts three days, in which participants work in the Olympic Village in Bardonecchia, a touristic resort in a mountain location near the city of Turin. The mathematics camp aims to enhance excellence in mathematics. The Camp is sponsored by Compagnia di San Paolo, one of the largest philanthropic organizations in Italy. Students pay a small contribution (around ninety euros) which covers only a small part of the total cost. Some schools pay the student contribution. On several occasions, the initiative was supported by the financial contribution of local institutions.

In each edition around one thousand high-school students from grade nine to twelve participate. They are followed by 120 high-school professors, 6 professors from the Department of Mathematics of the University of Turin, 20 undergraduate students in Mathematics, and 8 recent graduates in Mathematics. Due to location capacity constraints, the students are divided into 4 waves. In each wave a different set of schools participate and students from each grade are equally represented. The camp is characterized by its learning mode and mathematics contents. Students are introduced to traditional mathematics concepts (infinite, series, geometry, etc.) which are illustrated through applications to topics of great actuality (QR codes, crypto currencies, etc.). The learning mode is based on "inquiry-oriented" activities and a "hands-on" problem solving methodology: support for the reasoning is given by manipulatives (for instance, geometrical shapes built with recycled materials) which induce a more effective understanding of the theoretical concepts. Teachers propose complex problems and mathematical games in order to urge the students to present original solutions and strategies in a climate of playful competition.

During the mathematics camp students work in open spaces, one for each of the four grades. Students work in teams of 6 individuals (in the cases in which the total number of

[2] Further information on the Mathesis association can be found at http://www.associazionesubalpinamathesis.it/en/

students of one grade in one wave is not multiple of 6, some teams have 5 or 7 students). Each team must submit one common solution to the proposed mathematical problems. At the end of the mathematics camp students are involved in a "Treasure hunt" on the topics covered in the camp. Prizes are awarded to teams who have performed particularly well during the camp and in the treasure hunt. The composition of the team remains invariant along the entire duration of the camp. In a regular year, students are casually placed, avoiding students from the same school in the same team. We change this approach in the 2019 edition for the purposes of our study.

In an accompanying paper (Aparicio Fenoll, Coda-Moscarola, and Zaccagni [2020]), we evaluate the effectiveness of the matematics camp and find that participants improve their problem-solving skills. The improvement is higher in problems that require logic skills rather than problems that require formal mathematics knowledge (formulas, standard solving methods, etc.). The camp also leads to improvements in self-concept. Students randomly selected to attend the camp are less likely to declare themselves neurotics and more likely to consider themselves extroverts.

3 Experiment Design

We take each group of students in the same grade who participate in the camp in the same dates and randomly divide them into the exogenous and the endogenous groups. For the exogenous group, we proceed in two steps: we first design the teams' gender compositions creating the greatest possible diversity given the total number of teams and second, we randomly assign students to those teams avoiding teams with students belonging to the same school. For the endogenous group, we let students form teams freely, asking them to avoid team members belonging to the same school. Table 12 in Appendix A shows the distribution of team gender composition separately for exogeneous and endogeneous teams across grades and waves.

In practice, we provided the teachers in charge of organizing the teams with one sheet of paper per team. For the exogenous teams, each sheet included a heading with the number of the team and the names of the team components in random order. For endogenous

teams, in each sheet there were spaces to be filled with the names of the team components that chose that team. Teachers asked students assigned to the exogenous teams to take a seat first. The teachers allowed the remaining half of students to form teams endogenously by seating on the same table. After all teams are built, students in endogenous teams report their names in the corresponding sheet of paper.

The teachers read these instructions upon students arrival to the open-space: "Dear students, we are carrying out an experiment in the field to optimize the functioning of the stage, and to this end, we kindly ask for your cooperation. We propose you a game. We now assign a table to some of you, we ask the others to wait for a moment. We now read the composition of the tables that have already been assigned, and when you hear your name, please go and take a sit at the established table." After all students belonging to exogeneous teams have taken a seat, teachers kept reading: "Those who have remained standing are going to sit now at the remaining tables forming X groups of 6 students and Z groups of five (or seven) students (on the tables there is a sheet with how many components must sit there). We will start a timer that counts up to six minutes. Before time runs out, you all need to be seated down. The only rule that you must respect is the following: You *cannot* sit down with students from your school. Ready, set, go!"

Teachers evaluate the students' activity during the mathematics camp in at least five distinct instances. They assign a score in each evaluation based on the appropriateness of the answer formulated, the originality in the execution of the work, the speed, and any other dimension they consider relevant in order to return an exhaustive overview of performance. The number of evaluations varies according to the grade. Teachers report evaluations on a board that students can check at any time during the three days. For each evaluation, teachers rank teams by assigning the best performer a score equal to the number of teams, and a decreasing score for the other teams. For instance, if there are 20 teams, teachers give a score of 20 to the team that performs best, 19 to the second best, 18 to the third, etc.. The last test consists of a "treasure hunt" taking the final two hours of the mathematics camp. Teams are asked to answer some mathematics questions and only by giving the right answer, they can move to the next question. The winning team is the first to provide right answers to all questions. At the end of the two hours, the teachers

draw up the final ranking of the teams based on the final score. The final score deciding the winning team is determined by calculating a weighted average where twenty percent is the sum of scores obtained during the intermediate evaluations and eighty percent is the treasure hunt score.

At the end of the activities, students were given an electronic questionnaire to be filled in on their respective devices (often mobile phones). The specific questions asked in the questionnaire are reported in Appendix B. Teachers have the responsibility to control that students send the questionnaires, carrying out this check on the bus that takes students back home.

We have information for some of the individuals in our sample from two additional questionnaires. The first questionnaire took place before the camp. The questionnaire consists of 74 questions, divided into four sections: six student identification questions, 14 socio-demographic questions, 45 psychological and aptitude questions, nine mathematics related questions including three problems and questions about the methods used to solve the three problems. We use this information to make sure that the endogenous and exogenous groups are balanced in terms of observable characteristics. Teachers gave the second questionnaire a week after the mathematics camp: teachers administered a post-camp questionnaire to students in treatment and control groups. The post-camp questionnaire consists of the six student identification questions, the 14 socio-demographic questions in the pre-camp questionnaire (to be filled only by students who did not answer the pre-camp questionnaire), 50 psychological and aptitude questions (the 45 questions in the pre-camp questionnaire and the Big Five), five mathematics problems, and three questions about the methods used to solve the problems. We use this information to address the effect of team's gender composition on individual performance and self-concept.

4 Data and Descriptive Statistics

Our sample is composed of students who participated in the camp, were part of a team of six members, and answered the questionnaire administered at the end of the camp. A total of 1,364 students participated in the Math camp. From those, 1,288 students an-

swered the questionnaire. For comparability, we kept only those students who were part of teams of six members. They are 1,038 students, among which 552 belonging to endogenous teams and 486 belonging to exogenous teams.

Table 1 reports mean and standard deviation of the variables that relate to team gender composition. As explained above, 53% of students belong to endogenously formed teams, while 47% belong to exogenously formed teams. We define male-predominant teams as those with four or more males, and vice versa for female predominant teams. Of the endogenously formed teams, 23% are male-predominant, 17% are female-predominant, and 13% are gender-balanced, while for the exogenously formed teams, 21% are male-predominant, 17% are female-predominant and 9% are gender balanced. When asked about their satisfaction with the gender composition of their team, 10% of students indicated that they would have preferred more males in their teams, while 18% indicated that they would have preferred more females. The remaining 72% indicated that they were satisfied with the gender composition of their team.

Table 1: Descriptive Statistics. Team Composition

Variable	**Mean**	**Std. Dev.**
Endogenous teams	0.532	0.499
Male-predominant	0.444	0.497
Female-predominant	0.334	0.472
Balanced	0.222	0.416
Endogenous male-predominant	0.233	0.423
Endogenous female-predominant	0.165	0.371
Endogenous balanced	0.134	0.341
Exogenous male-predominant	0.211	0.408
Exogenous female-predominant	0.17	0.375
Exogenous balanced	0.088	0.283
Preference for more male	0.098	0.298
Preference for more female	0.178	0.383
Happy as it was	0.724	0.447

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. The total number of observations is 1,038.

Table 2 shows descriptive statistics for the variables used as outcomes in the analysis. The standard score is the result of standardizing the raw test score by grade to have mean zero and standard deviation equal one.

The average team is in position number nine in the ranking of its grade and wave. As different grades and waves have different number of teams, we standardized the ranking dividing it by the total number of teams which produced a measure with average equal to 0.53. The average individual performance is 4.6 out of 5. Students increasingly found difficulty in solving one of the logic, the parabola, the other logic, the trapezoid, and the system of equations problem. The average individual declares to be open, conscientious, agreeable, extroverted, and neurotic in decreasing order. The students expressed their overall satisfaction with the camp, with an average score of eight out of ten. A similar opinion is declared on team performance, with the average student believing the performance of their team deserves a score of 7.9 out of ten. The average score for the working environment within the team was 8.6 out of ten. On average, students consider that their individual contribution to the team can be ranked eight out of ten. Average students consider that their knowledge, brightness and effort with respect to the rest of members of the team can be evaluated slightly above seven out of ten. Finally, the average degree of specialization is slightly lower than 6 out 10. 13% of students believe that they were leaders in their teams while 53% believe that they were followers. The remaining 34% consider themselves neither leaders nor followers.

The individual characteristics of our sample of students are summarized in Table 3. 53% of individuals in our sample are male . The average student has one sibling while the maximum number of siblings is five. Students' fathers are highly educated: 42% of students have a father who graduated from high school and the same proportion have a a father who graduated from university. The level of education of mothers is even higher: 45% of students have a mother who graduated from high-school and 48% of students have a mother who graduated from university. Unfortunately, information on individual characteristics is available only for 85% of the sample. This prevents us from using these variables as controls in our main specification. When we use them results remain invariant. There are relatively more students from third and fourth grades of

Table 2: Descriptive Statistics. Outcomes

Variable	Mean	Std. Dev.	Min.	Max.	N
Standardized team score	-0.013	1.012	-2.696	2.225	1038
Team ranking	8.901	5.17	1	20	1038
Standardized team ranking	0.53	0.305	0.039	1	1038
Individual score	4.595	0.715	1	5	860
Individual standardized score	0.023	0.987	-6.263	0.669	860
Correct system of equations problem	0.971	0.168	0	1	860
Correct parabola problem	0.888	0.315	0	1	860
Correct trapezoid problem	0.96	0.195	0	1	860
Correct logic I problem	0.859	0.348	0	1	860
Correct logic II problem	0.916	0.277	0	1	860
Extroversion	7.414	1.942	1	10	970
Agreeableness	8.1	1.466	1	10	970
Conscientiousness	8.398	1.318	1	10	970
Neuroticism	6.016	2.548	1	10	970
Openness	8.609	1.39	1	10	970
Opinion on camp	8.236	1.281	1	10	1038
Opinion on team performance	7.916	1.447	2	10	1038
Opinion on team environment	8.613	1.498	1	10	1038
Team influence on individual performance	8.061	1.843	1	10	1038
Individual contribution to team	7.256	1.451	1	10	1038
Relative knowledge	7.166	1.483	1	10	1038
Relative brightness	7.172	1.465	1	10	1038
Relative effort	7.361	1.437	1	10	1038
Specialization	5.787	2.488	1	10	1038
Leader	0.134	0.341	0	1	1038
Follower	0.528	0.499	0	1	1038

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. The total number of observations is 1,038.

high-school (corresponding to grades 11 and 12 of the standard education path) although the distribution is fairly balanced across grades.

Table 3: Descriptive Statistics. Individual Characteristics

Variable	Mean	Std. Dev.	Min.	Max.	N
Male	0.525	0.5	0	1	907
Number of siblings	1.068	0.794	0	5	874
High-school grad father	0.419	0.494	0	1	884
University grad father	0.42	0.494	0	1	884
High-school grad mother	0.449	0.498	0	1	887
University grad mother	0.477	0.5	0	1	887
Grade	2.324	1.103	1	4	1038

Notes: Data is from the questionnaire administered before the camp.

5 Randomization and Econometric Strategy

In Table 4 we compare the average individual characteristics of students in endogenous and exogenous teams (columns 1 and 2, respectively). The third column displays the absolute differences in those averages. P-values in the fourth column show that those differences are not statistically significant at conventional levels. All p-values are above 14%.

Table 4: Randomization Test

Variable	Mean Endogenous	Mean Exogenous	Difference	P-Value
Male	0.544	0.507	-0.037	0.271
Number of siblings	1.076	1.058	0.018	0.741
High-school grad father	0.413	0.424	-0.011	0.747
Father university	0.437	0.400	0.037	0.269
Mother high-school	0.443	0.455	-0.012	0.721
Mother university	0.490	0.462	0.028	0.401
Grade	2.371	2.270	0.102	0.138

We conclude that randomization produced two comparable sets of students. We test differences in the impact of team's gender composition between endogenous and exoge-

nous teams by means of the following equation:

$$\begin{aligned} Y_{it} = \beta_0 + \beta_1 EN_t + \beta_2 FT_t + \beta_3 BT_t + ... \\ ... + \beta_4 EN_t * FT_t + \beta_5 EN_t * BT_t + \beta_6 Grade_t * Wave_t + \epsilon_{it} \end{aligned} \tag{1}$$

where Y_{it} is one of the outcomes of the study (tastes for gender mix in the team, team performance, individual performance, individual self-concept, team working style, and opinions about the camp and the team) for individual i working in team t. EN is a dummy variable equal to 1 if the student belongs to an endogenous team, FT is an binary variable for being in a female-predominant team (a team with more females than males), and BT is a binary indicator for being in a gender-balanced team (a team with 3 males and 3 females). Therefore, the reference category remains male-predominant exogenous teams. Hence, coefficient β_1 measures differences between endogenous and exogenous male-predominant teams. β_2 reflects differences between exogenous female-predominant and exogenous male-predominant teams and β_3 reflects differences between exogenous gender-balanced and exogenous male-predominant teams. The difference between endogenous female-predominant and exogenous male-predominant teams is captured by $\beta_1 + \beta_2 + \beta_4$ while the difference between endogenous gender-balanced and exogenous male-predominant teams is captured by $\beta_1 + \beta_3 + \beta_5$. $Grade * Wave$ is an indicator for each combination of grade (one to four) and each of the four waves of the camp. Finally, ϵ represents the error term, which is clustered at the team level.

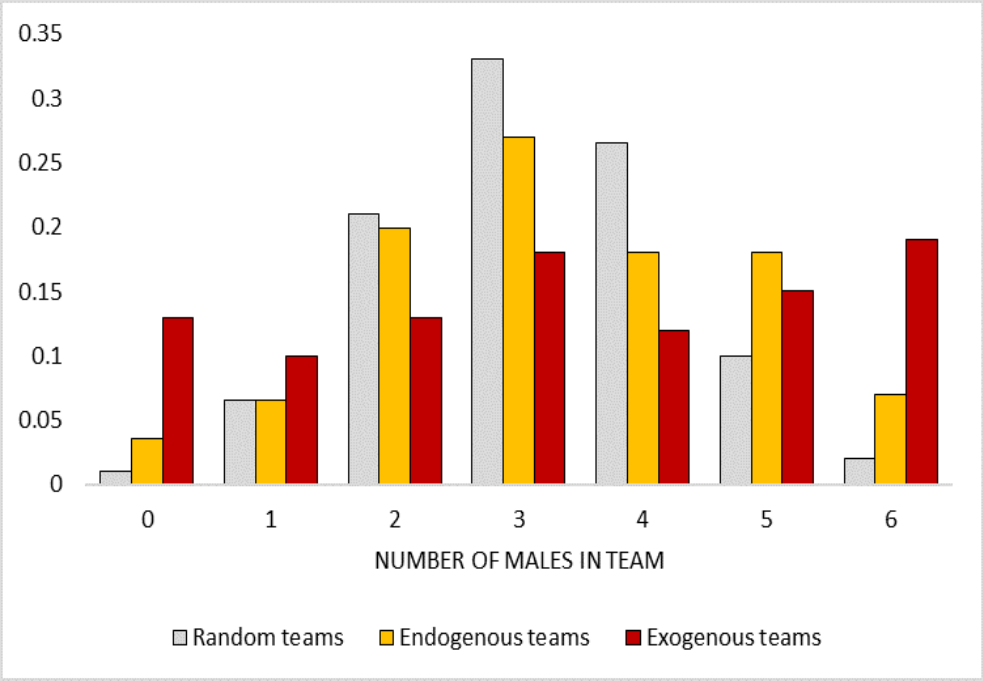
6 Results

We start by analyzing how giving the students the possibility to freely choose their teams shapes the distribution of teams' gender composition and how the resulting distribution differs from that of the teams exogenously formed and that of the teams that would have arisen under random assignment. In Figure 1 we observe the distribution of teams' gender composition for teams that we have formed (in red), for teams that students formed freely (in yellow), and for teams that would have arisen if students who formed

teams freely would have formed them randomly (in grey). When students form their teams freely, students' favourite gender combination is a balanced team. Still, there are more male-predominant teams than gender-balanced teams. Among male-predominant teams, the most common combination includes 5 males and 1 female. As a result of students' preferences, the distribution of teams' gender composition differs between endogenous and exogenous teams. In endogenous teams, gender-balanced or close to gender-balanced teams are more common than in exogenous teams. Also teams with 5 males are more common. However, the comparison between endogeneous teams and random teams shows that despite the higher incidence of gender-balanced teams in the group of freely formed teams, the distribution is still biased towards polarized gender mix (specially male-predominant teams) confirming the gender preferences play a role in the formation of teams.

Next, we study how students' satisfaction with their team's gender mix changes between endogenous and exogenous teams. We estimate Equation (1) using the answer to the following questions as dependent variables: (i) would you have preferred to have more males in your team?, (ii) were you satisfied with the gender mix in your team?, and (iii) would you have preferred to have more females in your team?. We show the result of these estimations in Table 5. The reference category is exogenous male-predominant teams. With respect to those, members of exogenous female-predominant teams would have preferred more males and less females. As compared to exogenous male-predominant teams, students in exogenous gender-balanced teams are more likely to be satisfied with the gender composition of their team and less likely to declare they would have preferred more females in their teams. Regarding differences between endogenous and exogenous teams, students who choose male-predominant teams are more likely to be satisfied with the gender composition of their team and less likely to want more females than students in exogenous male-predominant teams. Students in female-predominant endogeneous teams wanted less males and more females. Hence, gender-biased students reinforce their gender preferences after the camp. Finally, students in gender-balanced teams were less satisfied with the gender composition of their team and wanted more females if their team was endogenously formed.

Figure 1: Distribution of Team's Gender Composition



Notes: Data is from teachers' reports.

Table 5: Satisfaction with Team's Gender Mix

	More males	**As it was**	**More females**
	(1)	(2)	(3)
Female-predominant	0.303	0.189	-.493
	(0.045)***	(0.07)***	(0.053)***
Gender-balanced	0.024	0.436	-.459
	(0.024)	(0.06)***	(0.055)***
Endogenous teams	0.006	0.266	-.272
	(0.018)	(0.062)***	(0.061)***
Endogenous female-predominant	-.158	-.099	0.257
	(0.055)***	(0.084)	(0.065)***
Endogenous balanced	-.017	-.250	0.267
	(0.035)	(0.073)***	(0.067)***
Obs.	1038	1038	1038
R^2	0.174	0.12	0.273
F statistic	4.238	5.936	14.903

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. All regressions include indicators for each combination of grade and wave. Standard errors are clustered at team level. *** p<0.01, ** p<0.05, * p<0.1.

We are mainly interested in the impact of a team's gender composition on team performance for endogeneous and exogenous teams. We address this by estimating Equation (1) using different versions of the team's final score as the dependent variable. Table 6 shows the results of these estimations. In the first column, we use the team's final test score standardized by grade and wave to have a mean of zero and a standard deviation equal to one. The second column uses the position of the team in the ranking of the corresponding grade and wave as the dependent variable. Finally, we standardized the ranking position in column 3 by dividing it by the total number of teams to account for the different number of teams in each grade and wave. Results are consistent across the different measures of performance. We find that female-predominant teams underperform gender-balanced and male-predominant teams. The magnitude of the penalty associated to female-predominant teams equals 0.69 standard deviations of scores, almost 3.3 positions in the ranking, and 0.22 standard deviations of ranking position. These results are in line with findings in Apesteguia et al. [2012] who also found that female-predominant teams underperform other types of teams and thus different from Hoogendoorn et al. [2013a] who found that gender-balanced teams over-perform other types of teams. Interestingly the penalty associated with female-predominant teams disappears for endogenously formed female-predominant teams. Moreover, endogenous male-predominant teams perform worse than exogenous male-predominant teams. In other words, students who self-select into male-predominant teams perform worse than the average individual who was exogenously assigned to work in male-predominant teams. Hence, the opportunity to choose who to work with affects the individual differently depending on their gender preferences.

Table 7 shows the impact of the camp on individual performance in mathematics tests performed two weeks after the camp. Interestingly, results replicate the pattern found for team performance during the camp. Individual problem solving skills differ for individuals in endogenous versus exogenous teams. In particular, there is a penalty for female-predominant teams. Besides, students in male-predominant teams perform worse if their teams were endogenously formed while students in female-predominant teams perform better if their teams were endogenously formed. Hence, the effect of gender composi-

Table 6: Team Performance by Gender-Mix and Endogeneity of Team Formation

	Std score	Ranking	Std ranking
	(1)	(2)	(3)
Female-predominant	-.688	3.282	0.219
	(0.237)***	(1.090)***	(0.065)***
Gender-balanced	-.319	1.562	0.117
	(0.292)	(1.418)	(0.086)
Endogenous teams	-.376	1.930	0.148
	(0.205)*	(1.090)*	(0.061)**
Endogenous female-predominant	0.634	-3.017	-.213
	(0.346)*	(1.634)*	(0.098)**
Endogenous balanced	0.751	-3.532	-.254
	(0.353)**	(1.737)**	(0.106)**
Obs.	1038	1038	1038
R^2	0.079	0.191	0.176
F statistic	1.077	4.271	7.155

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. All regressions include indicators for each combination of grade and wave. Standard errors are clustered at team level. *** p<0.01, ** p<0.05, * p<0.1.

tion on performance and the difference in effects according to the team formation rule are consistent for team performance and individual performance.

In a previous study, we found positive effects of the camp on individuals' self-concept as measured by the big five personality traits (see Aparicio Fenoll et al. [2020]). We collected this information in the questionnaire we administered two weeks after the camp. We also explore differences in self-concept according to the gender mix of the team. Results in Table 8 shows that students exogenously placed in female-predominant teams declare to be less extroverted, more neurotic, and more open-minded than those in male-predominant teams. The same happens with students in gender-balanced teams but they also declare to be less agreeable. As before, differences by gender composition of the team disappear for endogenously-formed teams.

Apesteguia et al. [2012] show that their estimated differences in performance are explained by differences in decision-making. We explore whether teams with different gender compositions and different formation rules differ in their working styles. To test this, we use three different proxies of working style which correspond to the three columns in Table 9. In the first column, we use the question "did the members of your team specialize in different aspects of the work?" which is coded from one to ten where one is not at all and ten is totally. The second and third columns have dummies for "the student identifies

Table 7: Individual Performance by Gender-Mix and Endogeneity of Team Formation

	Score	**Std Score**	**Equations**	**Parabola**	**Geometry**	**Logic I**	**Logic II**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female-predominant	-.192	-.285	-.035	-.0007	-.010	-.083	-.064
	(0.063)***	(0.09)***	(0.014)**	(0.03)	(0.023)	(0.032)***	(0.027)**
Gender-balanced	-.031	-.036	-.002	0.009	-.027	-.009	-.002
	(0.078)	(0.105)	(0.007)	(0.033)	(0.026)	(0.037)	(0.034)
Endogenous teams	-.188	-.263	-.061	-.004	-.025	-.051	-.046
	(0.074)**	(0.111)**	(0.016)***	(0.035)	(0.022)	(0.031)	(0.03)
Endogenous female-predominant	0.268	0.384	0.066	0.044	0.011	0.097	0.049
	(0.106)**	(0.152)**	(0.026)**	(0.047)	(0.034)	(0.048)**	(0.046)
Endogenous balanced	0.092	0.108	0.018	0.015	0.047	-.012	0.024
	(0.113)	(0.167)	(0.024)	(0.045)	(0.036)	(0.057)	(0.045)
Obs.	860	860	860	860	860	860	860
R^2	0.058	0.038	0.029	0.047	0.023	0.055	0.024
F statistic	5.042	3.152	1.655	2.907	1.679	3.84	3.133

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. All regressions include indicators for each combination of grade and wave. Standard errors are clustered at team level. *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Individual Self-perception by Gender-Mix and Endogeneity of Team Formation

	Extrovert	**Agreeable**	**Conscientious**	**Neurotic**	**Open-minded**
	(1)	(2)	(3)	(4)	(5)
Female-predominant	-.560	-.190	0.17	1.212	0.449
	(0.197)***	(0.153)	(0.134)	(0.247)***	(0.142)***
Gender-balanced	-.443	-.344	0.126	0.618	0.346
	(0.186)**	(0.159)**	(0.148)	(0.314)**	(0.136)**
Endogenous teams	-.032	-.106	0.01	0.129	0.006
	(0.18)	(0.139)	(0.114)	(0.243)	(0.129)
Endogenous female-predominant	0.206	-.039	-.034	-.305	-.357
	(0.287)	(0.206)	(0.188)	(0.365)	(0.202)*
Endogenous balanced	0.562	0.348	-.111	0.418	-.288
	(0.272)**	(0.219)	(0.205)	(0.384)	(0.196)
Obs.	970	970	970	970	970
R^2	0.037	0.037	0.032	0.061	0.039
F statistic	2.698	2.51	2.414	3.966	2.758

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. All regressions include a male dummy, indicators for number of siblings, mother high-school and mother university education binary variables, father high-school and father university education dummies, the mathematics test score obtained in school prior to the camp, and indicators for each combination of grade and wave. Standard errors are clustered at team level. *** p<0.01, ** p<0.05, * p<0.1.

himself or herself as leader of his/her team" and "the student does not identify himself or herself as leader of his/her team". We study the two latter aspects separately because 34% of respondents declared that they do not know whether they are the leader of their teams. We find that female-predominant teams are less likely to specialize, which may explain their worse performance.

Table 9: Team's Working Style

	Specialization	**Leader**	**Follower**
	(1)	(2)	(3)
Female-predominant	-.735	-.045	0.0006
	(0.206)***	(0.03)	(0.045)
Gender-balanced	0.063	-.018	0.087
	(0.304)	(0.042)	(0.062)
Endogenous teams	0.004	-.017	-.047
	(0.236)	(0.035)	(0.049)
Endogenous female-predominant	0.13	-.042	0.031
	(0.383)	(0.042)	(0.069)
Endogenous balanced	-.534	-.033	-.050
	(0.467)	(0.057)	(0.088)
Obs.	1038	1038	1038
R^2	0.039	0.032	0.019
F statistic	2.053	2.41	1.116

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. All regressions include indicators for each combination of grade and wave. Standard errors are clustered at team level. *** p<0.01, ** p<0.05, * p<0.1.

The gender composition of the team and the team formation rules could also affect how students perceive themselves with respect to their group. We test this possibility using five different one to ten scores as outcomes: (1) whether the student considers that other team members had a positive influence on his or her individual performance, (2) the self-assessed contribution to the team's results, (3) how knowledgeable the student believes he or she is with respect to other team members, (4) student's opinion on how his/her brightness compares to other team members', and (5) how much effort the students believe to have exerted as compared to other team members. Results are presented in Table 10. We find three statistically significant results. Students in exogenous female-predominant and gender-balanced teams are less likely than those in exogenous male-predominant teams to declare that they are brighter than their team mates. For the subset of male-predominant teams, students in endogenously formed teams are less likely to declare themselves brighter than other team members as compared to students in exoge-

nously formed teams. These results shed light on the reduction in performance associated with exogenous female-predominant, exogenous gender-balanced, and endogenous male-predominant teams.

Table 10: Self-Perceived Performance

	Team Good Influence	Contribution	Knowledge	Talent	Effort
	(1)	(2)	(3)	(4)	(5)
Female-predominant	-.168	-.036	-.217	-.400	-.068
	(0.218)	(0.147)	(0.147)	(0.144)***	(0.125)
Gender-balanced	-.051	0.09	-.135	-.303	-.062
	(0.289)	(0.136)	(0.169)	(0.169)*	(0.138)
Endogenous teams	-.008	-.069	-.043	-.233	-.031
	(0.168)	(0.143)	(0.127)	(0.136)*	(0.12)
Endogenous female-predominant	0.125	-.103	0.064	0.27	0.048
	(0.292)	(0.217)	(0.205)	(0.192)	(0.194)
Endogenous balanced	0.101	0.044	-.011	0.121	-.064
	(0.332)	(0.254)	(0.246)	(0.242)	(0.235)
Obs.	1038	1038	1038	1038	1038
R^2	0.025	0.025	0.026	0.032	0.024
F statistic	1.511	1.746	2.213	2.103	2.039

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. All regressions include indicators for each combination of grade and wave. Standard errors are clustered at team level. *** p<0.01, ** p<0.05, * p<0.1.

In Table 5 we showed that the team's gender mix influences students satisfaction and that the level of satisfaction with the team's gender mix differs for endogenous teams. Thus, it is possible that students' perception of the entire camp experience and of their team changes according to the gender mix and the team formation rule. To study this possibility, we re-estimate Equation (1) using three different one to ten scores (with one being extremely bad and ten being extremely good) as outcomes: (1) student overall opinion about the camp, (2) student's opinion on his or her team's performance, and (3) student's assessment about the team's working environment. As shown in Table 11, we do not find significant effects of the team's gender composition on the team's working environment. Instead, we find very significant effects for overall opinion about the camp and about team performance. In the set of exogenous teams, female-predominant and gender-balanced teams have a better opinion of the camp. The same happens with endogenous male-predominant teams with respect to exogenous male-predominant teams. The gender-balanced penalty disappears for endogenous teams. Those teams appreciate the camp more even though they performed worse. Results on team performance

are highly consistent with the estimated effects for objective performance. We find that female-predominant and gender-balanced teams underperform male-predominant teams when teams are formed exogenously. These differences disappear when teams are formed endogenously.

Table 11: Perceived Experience

	Opinion Camp	**Opinion Team Performance**	**Team Environment**
	(1)	(2)	(3)
Female-predominant	0.251	-.416	0.126
	(0.15)*	(0.218)*	(0.19)
Gender-balanced	0.226	-.675	-.362
	(0.199)	(0.326)**	(0.391)
Endogenous teams	0.294	-.298	0.069
	(0.147)**	(0.192)	(0.188)
Endogenous female-predominant	-.185	0.586	0.072
	(0.204)	(0.301)*	(0.269)
Endogenous balanced	-.420	0.984	0.183
	(0.232)*	(0.384)**	(0.426)
Obs.	1038	1038	1038
R^2	0.061	0.05	0.056
F statistic	2.784	1.348	1.673

Notes: Data is from the questionnaire administered at the end of the camp and teachers' reports. All regressions include indicators for each combination of grade and wave. Standard errors are clustered at team level. *** p<0.01, ** p<0.05, * p<0.1.

Therefore, we find that the lower performance of exogenous female-predominant teams with respect to exogenous male-predominant teams is in line with the lower incidence of specialization and team members feeling less talented than the rest. The perception of being less talented can also explain the worse performance of gender-balanced with respect to male-predominant exogenous teams and the penalty of endogenous versus exogenous male-predominant teams. Our results indicate that women exogenously placed in female-predominant or gender-balanced teams suffer from lack of confidence but women who self-select in those teams do not. However, when including those variables in the regressions, we do not find evidence that these or other working style and satisfaction variables are mechanisms behind differences in performance.

7 Conclusion

We are interested in whether the impacts of team gender composition on performance, self-concept, team working style, and individual satisfaction change between endogenous and exogenous teams. We implement an experiment in the context of a mathematics camp where students work in teams of six members and compete in solving mathematical problems. We randomly divide students in two equally sized groups where one group works in teams designed by us (exogenous teams) while the other group is free to form teams (endogenous teams). We then estimate how teams' outcomes change according to the gender composition of the team and whether the team was endogenously or exogenously formed.

We find that students display a preference for male-predominant teams. We find that female-predominant teams underperform gender-balanced and male-predominant teams but these differences disappear when teams are formed endogenously. These differences are in line with differences in the effect of gender composition on team working style and self-perception between endogenous and exogenous teams. Our results can be explained if women exogenously placed in female-predominant or gender-balanced teams suffer from lack of confidence but women who self-select in those teams do not.

We conclude that the team formation rule is a key element to understand how the gender mix in teams affects performance, team working style, self-perception, and individual satisfaction at work. Managers, educators, and other decision-makers who want to maximize performance and reduce differences in performance across teams with various gender compositions should let individuals form their own teams. Further research is needed to explore environments in which individuals are aware of the productivity and characteristics of the other individuals before choosing their teams.

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Appendices

A Characteristics of teams

Table 12: Teams' Description

Wave	Class	Components	Exogenous teams	Total teams
1	1	6	7	14
1	2	5	0	2
1	2	6	4	6
1	3	5	1	1
1	3	6	7	12
1	4	5	4	7
1	4	6	4	6
2	1	5	3	3
2	1	6	7	13
2	2	6	8	13
2	2	7	1	3
2	3	5	2	4
2	3	6	7	12
2	4	6	8	15
2	4	7	2	2
3	1	5	7	8
3	1	6	1	9
3	2	5	2	5
3	2	6	6	14
3	2	7	1	1
3	3	5	4	7
3	3	6	2	7
3	3	7	0	1
3	4	5	3	3
3	4	6	4	9
3	4	7	0	2
4	1	2	0	1
4	1	5	0	1
4	1	6	9	15
4	1	7	1	1
4	2	6	11	17
4	2	7	0	1
4	3	5	2	2
4	3	6	7	13
4	4	6	7	14
4	4	7	1	1

Notes: Data is from teachers' reports.

B Camp questionnaire

QUESTIONNAIRE FOR STUDENTS

Instructions

Dear Student,

at the end of your experience in Bardonecchia, we ask you to answer the short questionnaire which we present below. As for the first questionnaire, all the information you provide us will be treated in full respect of your anonymity.

Thanks a lot for the collaboration!!

BASIC INFORMATION

1. **Name**

   .....

2. **Surname**

   .....

3. **Class**

   .....

4. **Section**

. . . . . .

5. **Type of school**

. . . . . .

6. **Name of school**

. . . . . .

7. **Starting date of the stage at Bardonecchia**

. . . . . .

8. **Working table (number)**

. . . . . .

EVALUATION OF THE CAMP EXPERIENCE

9. **How do you rate the internship experience? (from 1 - disappointing - to 10 - outstanding):**

. . . . . .

10. **What is the final score achieved by your group?**

    . . . . . .

11. **How do you rate your group's performance? (from 1 - disappointing - to 10 - outstanding):**

    . . . . . .

12. **What do you think was your contribution to solving the exercises proposed during the camp? (from 1 - nothing - to 10 - essential):**

    . . . . . .

13. **What do you think was your contribution to solving the exercises proposed during the camp? (from 1 - nothing - to 10 - essential):**

    . . . . . .

14. **How was the atmosphere within your group? (from 1 - conflictive - to 10 - cooperative):**

    . . . . . .

15. **Do you think working within your team has improved your performance compared to work alone? (from 1 - absolutely no - to 10 - absolutely yes):**

. . . . . .

16. **Do team members specialize in one activity during the three days? (from 1 - absolutely no - to 10 - absolutely yes):**

. . . . . .

17. **Regarding the composition of your group would you have preferred:**

    □ More females

    □ More males

    □ It was ok as it was

    NOW WE ASK YOU AN OPINION ABOUT YOU ...

    We specify that what you indicate in this section will not be disclosed to classmates or professors; nor will it be used to form any judgment about you. We only need the collected data to explore mechanisms within the working group in which you were inserted.

18. **What do you think is your level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

19. **What do you think your level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

20. **What do you think is your level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

21. **Would you identify yourself as leader of your work group at the camp?**

    □ Yes

    □ No

    □ I don't know

    NOW WE ASK YOU AN OPINION ABOUT THE MEMBERS OF YOUR TEAM

    We specify that what you indicate in this section will not be disclosed to classmates or professors; nor will it be used to form any judgment on people. We only need the collected data to exploremechanisms of operation of the working group in which you were inserted.

22. **Name of member 1:**

. . . . . .

23. **Surname of member 1:**

. . . . . .

24. **What do you think is her/his level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

25. **What do you think her/his level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

26. **What do you think is her/his level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

27. **Would you identify her/himself as leader of your work group at the camp?**

    □ Yes

    □ No

    □ I don't know

28. **Name of member 2:**

. . . . . .

29. **Surname of member 2:**

. . . . . .

30. **What do you think is her/his level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

31. **What do you think her/his level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

32. **What do you think is her/his level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

33. **Would you identify her/himself as leader of your work group at the camp?**

    □ Yes

    □ No

    □ I don't know

34. **Name of member 3:**

. . . . . .

35. **Surname of member 3:**

. . . . . .

36. **What do you think is her/his level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

37. **What do you think her/his level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

38. **What do you think is her/his level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

39. **Would you identify her/himself as leader of your work group at the camp?**

    □ Yes

    □ No

    □ I don't know

40. **Name of member 4:**

. . . . . .

41. **Surname of member 4:**

. . . . . .

42. **What do you think is her/his level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

43. **What do you think her/his level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

44. **What do you think is her/his level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

45. **Would you identify her/himself as leader of your work group at the camp?**

    □ Yes

    □ No

    □ I don't know

46. **Name of member 5:**

. . . . . .

47. **Surname of member 5:**

. . . . . .

48. **What do you think is her/his level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

49. **What do you think her/his level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

50. **What do you think is her/his level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

51. **Would you identify her/himself as leader of your work group at the camp?**

□ Yes

□ No

□ I don't know

52. **Name of member 6:**

. . . . . .

53. **Surname of member 6:**

. . . . . .

54. **What do you think is her/his level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

55. **What do you think her/his level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

56. **What do you think is her/his level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

57. **Would you identify her/himself as leader of your work group at the camp?**

□ Yes

□ No

□ I don't know

58. **Name of member 7:**

. . . . . .

59. **Surname of member 7:**

. . . . . .

60. **What do you think is her/his level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

61. **What do you think her/his level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

62. **What do you think is her/his level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

63. **Would you identify her/himself as leader of your work group at the camp?**

□ Yes

□ No

□ I don't know

64. **Name of member 8:**

. . . . . .

65. **Surname of member 8:**

. . . . . .

66. **What do you think is her/his level of mathematical knowledge compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

67. **What do you think her/his level of intelligence is compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

68. **What do you think is her/his level of commitment compared to the other members of the group? (from 1 - insufficient - to 10 - excellent):**

. . . . . .

69. **Would you identify her/himself as leader of your work group at the camp?**

□ Yes

□ No

□ I don't know

BIG FIVE QUESTIONS (scale 0-10)

70. **Do you consider yourself an extrovert and sociable person?**

. . . . . .

71. **Do you consider yourself a friendly person?**

. . . . . .

72. **Do you consider yourself a sociable and conscientious person?**

. . . . . .

73. **Do you consider yourself a neurotic person?**

. . . . . .

74. **Do you consider yourself an open-mind person?**

. . . . . .

Let us briefly make the point: to avoid losing pieces and not being able to adequately exploit all the information there you have provided. As part of the evaluation of the Mathematics Stage, this should be the second questionnaire you fill out. Think about it ...

75. **Did you fulfill the Pre-stage questionnaire?**

- □ Yes
- □ No
- □ I son't remember

If you answered no or I don't know, the test continues with some quick ones socio-demographic and attitudinal questions.

76. **Write your date of birth**

. . . . . .

77. **Are you male or female?**

- □ M
- □ F
- □ I don't want to answer

78. **Which is the Postal Code (CAP) of your home?**

. . . . . .

79. **Indicate your mother's education**

- □ Graduate or Post-graduate
- □ High-School
- □ Compulsory school
- □ Nothing

80. **Indicate your father's education**

- □ Graduate or Post-graduate
- □ High-School
- □ Compulsory school
- □ Nothing

81. **How many brothers/sisters do you have?**

. . . . . .

82. **Are your brothers/sisters younger or older than you?**

Brother/sister 1

- □ Older
- □ Younger

Brother/sister 2

□ Older

□ Younger

Brother/sister 3

□ Older

□ Younger

Brother/sister 4

□ Older

□ Younger

83. **Write name and surname of your math teacher**

. . . . . .

Information for scientific research (articles 1314 of the EU Reg 2016/679)

The test is finished, thanks for your help! Remember to click "submit / submit" before closing the page