

Variable descriptor of TeensLab dataset.

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March 16, 2024

This project describes the variables found in the Teenslab dataset (Vasco et al., 2024). This dataset contains 5,890 observations of students aged 10 to 23 from different educational stages (primary, secondary school, sixth form, and vocational training). It covers 33 different schools in Spain. The variables are grouped by topics. In bold we emphasize the name of the variable in the dataset.

1 Sample variables

A total of 5,890 individuals were collected. The sample variables include a unique identifier for each individual (***usuario_id***) and a designation for the network with which the individual is affiliated (***net_id***). In addition, the variable ***yeardone*** denotes the year during which the experiment took place, ranging from 2021 to 2023. The variable ***privacy*** specifies when the subject has accepted the data protection before starting the experiment and it allows us to record the answers of the subject. However, among those who did start the experiment, 10.34% of them did not complete the questionnaire (***dropout***).

In addition, another important issue in our study is that it has evolved over time, according to some of the results we observed. In other words, tasks have been included, withdrawn, or transformed over the period. However, most of the main variables remain the same and are comparable across the whole sample. Therefore, we have to take into account that for some specific tasks we only have a small subset of observations. Table A.1 shows the changes in the experiment and the data available for each study identifier in each school (***study***).

2 School variables

Available information is available for each center where data is collected. The unique identifier for each high school is ***school***. Although most of the high schools are public (65.89%), there are semi-public ones as well (***schooltype***: 1 = Public, 2 = Semi-public). The sample was collected in two regions of Spain, 65.53% in 5 different provinces of Andalusia (11 different towns in total) and the

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remaining 34.47% in 8 different locations in Barcelona. Table 1 shows that information corresponds to the variables *schoolprov* (Province of the school) and *schooltown* (Location of the school), respectively. Note that only one province belongs to the region of Catalonia (*schoolprov*=6), the rest are under the region of Andalusia.

Table 1: Distribution of observations by province and high school location

<i>Town where the school is</i>	<i>School province</i>						Total
	1	2	3	4	5	6	
1	904	0	0	0	0	0	904
2	169	0	0	0	0	0	169
3	237	0	0	0	0	0	237
4	0	404	0	0	0	0	404
5	0	89	0	0	0	0	89
6	0	619	0	0	0	0	619
7	0	419	0	0	0	0	419
8	0	0	167	0	0	0	167
9	0	0	0	238	0	0	238
10	0	0	0	0	463	0	463
11	151	0	0	0	0	0	151
12	0	0	0	0	0	1,079	1,079
13	0	0	0	0	0	52	52
14	0	0	0	0	0	399	399
15	0	0	0	0	0	149	149
16	0	0	0	0	0	157	157
17	0	0	0	0	0	54	54
18	0	0	0	0	0	44	44
19	0	0	0	0	0	96	96
Total	1,461	1,531	167	238	463	2,030	5,890

In addition, for each student, the *stage*, the year or *grade* (see Table 2), and also the *group* in which they are in are specified. In total, we get 255 classes in the whole sample. The size of each group can also be obtained with the variable *class_size*.

Table 2: Distribution of observations by stage and grade

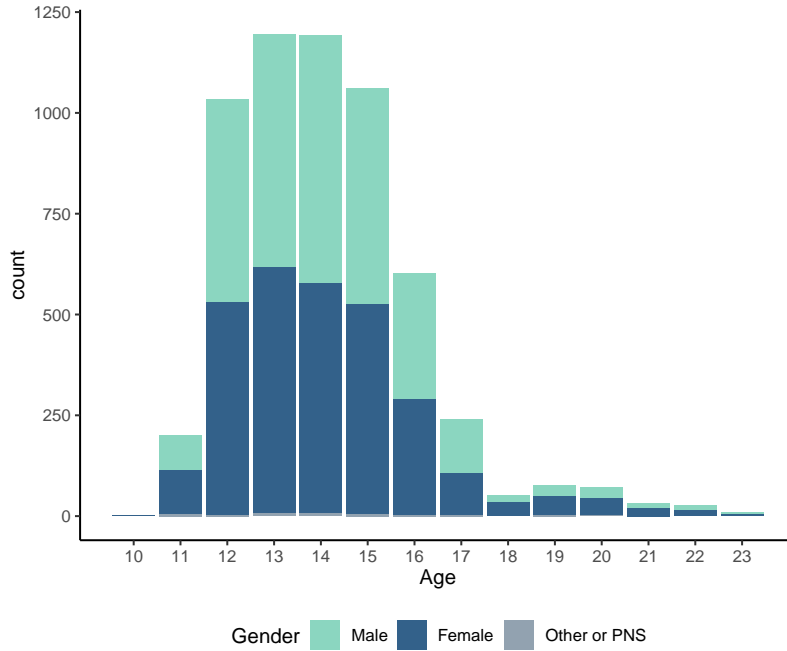
Stage	Year/Grade						Total
	1	2	3	4	5	6	
Elementary school	0	0	0	0	210	298	508
High school	1,373	1,464	1,208	958	0	0	5,003
Sixth form	112	0	0	0	0	0	112
Vocational training	166	101	0	0	0	0	267
Total	1,651	1,565	1,208	958	210	298	5,890

3 Sociodemographic and related variables of individuals

Regarding individual-level attributes, the gender of the participants is coded with the variables *gender* and *female* (0 = Male, 1 = Female). Actually, 49.68% of the sample is female and 49.68% male, the remaining part is unknown, (*gender* = 99).¹ Their *age* is given in years, we compute the missing ages, according to the mode of the class to which the student belongs. Figure 1 shows the distribution of age by gender.

¹Either because they did not want to answer or they selected another category.

Figure 1: Sample distribution by age and gender



Family. Information concerning their family is also included. Having siblings, as a dichotomous variable, and how many of them they have been reported, *siblings* and *nsiblings*, respectively.² For those who report siblings, we also ask about their position among their siblings with *ranksisb*. The immigrant origin is also collected with the variable *migrant*. They can report that they or their parents were not born in Spain. Indeed our sample shows 16.90% of cases with an immigrant origin. The variable *migrant_firstgen* takes 1 if the individual was born in a country different from Spain, and 0 in the case of Spain. For the second generation, the variable *migrant_secondgen* takes 1 if one of the subject's parents was born somewhere different from Spain, and 0 if both were born in Spain.

We also cover information on household income. To adapt it to the age of our sample, we asked it in a relative way: *Imagine a stairway with ten(five) steps, where on step 1 are the poorest families in Spain, and on step 10 (5) are the richest ones. On which step of the stairway would you place your family?* First, we use a 10-step version (*stairs10*) and then a 5-step version (*stairs5*).

Grade Point Average. To learn about their academic results, we asked them in which subjects they have received an A *nmark10_text* and a B *nmark8_text* among these three subjects: English, literature, and mathematics. We also included the option 'other'. Considering only the first three subjects, the *GPA* variable, is calculated, which indicates the total number of A and B grades. The values of this variable can be found in Table 3.

Table 3: GPA score

		Num. A			
		0	1	2	3
Num. B	0	0	2	5	9
	1	1	4	8	x
	2	3	7	x	x
	3	6	x	x	x

²Note that in the latest surveys there is also a sister (*nsister*) and brother (*nbrother*) split variables.

In addition, two-thirds of the studies included the question of whether they had repeated a year. The variable *repeater* is equal to 1 if they have repeated any year, 0 if they have not, or 99 if they do not want to answer. Moreover, some questionnaires also included a question on optional subjects, the answers are collected in the *optional* variable.

Mood. We included three items from the Kidscreen questionnaire about their mood regarding school and social relationships (Aymerich et al., 2005; Ravens-Sieberer et al., 2005).

Q1 Over the last week, have you been doing well at high school? (*moodgeneral*)

Q2 Over the last week, have you had fun with your friends? (*moodfun*)

Possible answer for both variables are: 0 = Never, 1 = Almost never, 2 = Sometimes, 3 = Almost always, 4 = Always.

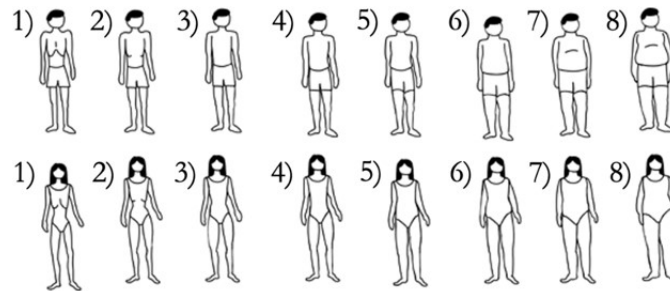
Q3 Over the last week, have you felt lonely? (*moodalone*)

Its possible answers are: 0 = Always, 1 = Almost always, 2 = Sometimes, 3 = Almost never, 4 = Never.

The variable *happy* is a total score (0-12) from these three variables.

Physical attributes. The *height* and *weight* variables include self-reported information in centimeters and kilograms respectively³. Given the lack of answers to these questions, we include a task that requires self-appearance by the Stunkard figure scale (Stunkard et al., 1986). Based on these figures (see Figure 2), the variable *obesity* takes values from 1 to 8.

Figure 2: Figures presented for self-perception



Expectations. We asked about their future expectations regarding going to university, traveling, and living in another country (on a scale from 0 to 100), as well as the profession they would like to become (from an eligible list).

Q1 On a scale from 0 to 100, please give a score on whether you would like to go to university in the future. (*uniwant*)

Q2 On a scale from 0 to 100, please give a score on whether you would like to do a round-the-world trip in the future. (*world*)

Q3 On a scale from 0 to 100, please give a score on whether you would like to live in another

³The option to not answer personal questions and continue forward was available.

country in the future. (*abroad*)

Q4 Among all the professions we suggest, which one would you like to become your future job?
(*willwork*)

For questions **Q1**, **Q2** and **Q3**, two randomized procedures are used, in the case of using a slider, the variable *wish_slider* takes value 1, while if the subjects have to enter the exact number directly, it takes value 0.

Self-assessed math abilities (SAMA). We asked about their own perceptions and preferences about mathematical calculations (Adamecz-Völgyi et al., 2023). Two types of questions: "How good are you ..." and "How much do you like ...":

Q1 How good do you feel you are at solving numerical and monetary problems? (*good1*)

Q2 How good do you feel you are at solving mathematical problems with mental arithmetic?
(*good2*)

Q3 How good do you feel you are at multiplying and dividing? (*good3*)

Possible answer for these variables are: 0 = Very bad, 1 = Bad, 2 = Normal, 3 = Good, 4 = Very good.

Q1 How much do you like solving numerical and monetary problems? (*like1*)

Q2 How much do you like solving mathematical problems with mental arithmetic? (*like2*)

Q3 How much do you like multiplying and dividing? (*like3*)

Possible answer for these variables are: 0 = Not at all, 1 = A little, 2 = Neither too much nor too little, 3 = Pretty much, 4 = A lot.

Both blocks of questions appear randomly but the three questions in each one appear in a fixed way. We control with the variable *goodbeforelike* if the self-perception block appears before the preferences block.

4 Time preferences

In order to elicit temporal preferences we use *the truck task*, a tool introduced by Alfonso et al. (2023). This task preserves the essence of Collier and Williams (1999) with a visual format which has been shown to give better results in terms of consistency in a young population. Students are asked to make 6 decisions within a fixed order, choosing between two options. In option A, the money is always delivered in one day, while in option B it is delivered in eight days. Both options start from the same initial payoff, but only option B increases.

For each decision, one variable is assigned starting with *money* and the number of the decision: *money1*, ..., *money6*; (0 = Option A, 1 = Option B). Table 4 shows the percentage of responses for each option, with respect to the subjects who do answer that task.

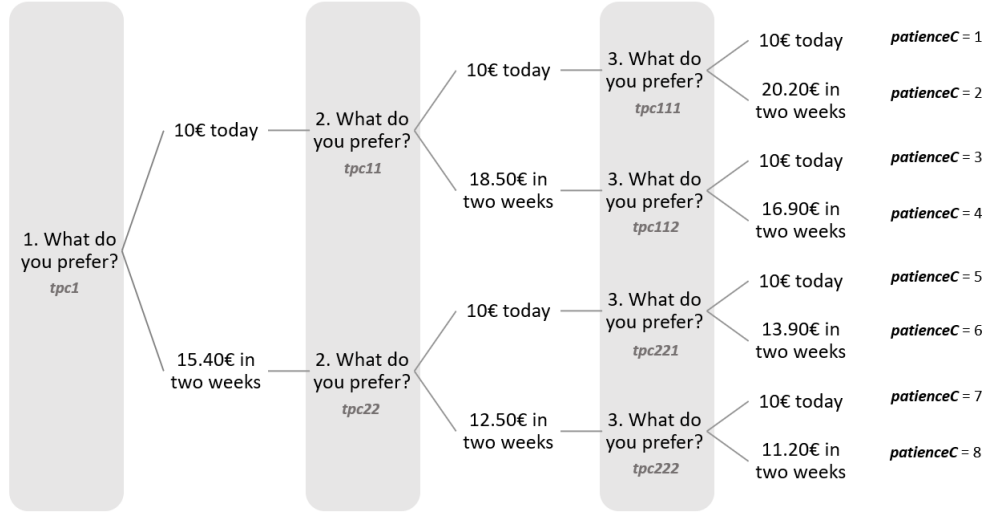
Table 4: Percentage of responses for each decision

	A	B	n
<i>money1</i>	83.63%	16.37%	5,691
<i>money2</i>	57.80%	42.20%	5,690
<i>money3</i>	46.93%	53.07%	5,687
<i>money4</i>	39.34%	60.66%	5,687
<i>money5</i>	36.67%	63.33%	5,686
<i>money6</i>	29.20%	70.80%	5,684

From these results, the variable *patienceN* is constructed as the total number of options B chosen by the individual divided by six to normalize it with values between 0 and 1. Furthermore, a variable called *cns_td* is also included to indicate which individuals show consistent behavior. We consider that an individual shows consistent behavior in time preference elicitation when, once she has chosen option B (receive in eight days instead of tomorrow), she does not choose option A in the following decisions. In other words, if they are consistent, they do not switch back.

In addition, we include an additional task on time preferences in a conditional setting that does not include figures. We use a version of a *staircase* procedure by Falk et al. (2023). They are informed that they will have to make three decisions (one per screen) on how they want to receive a hypothetical amount of money. Figure 3 shows the different options according to the previous answers of the subjects. The variable *patienceC* contains the level of patience measured with the task with values from 1 to 8.

Figure 3: Decision tree in conditional time preference task



Note: The staircase procedure worked in the same way as Falk et al. (2023). First, the leftmost decision node starts with the question of whether one would prefer to receive 10 euros today or 15.40 euros in 2 weeks. In case of choosing to receive it today, in the second question, the payment in 2 weeks was adjusted upwards to 18.5 euros. Alternatively, if 2 weeks is chosen, the payment is adjusted downwards to 12.5 euros. The procedure is repeated twice and follows the same logic. The name below each decision node is the name of the variable that records the response.

5 Risk preferences

Similar to eliciting preferences for time discount, we use a visual task to measure risk aversion based on Holt and Laury (2002). According to the results reported by Vasco and De Francisco (2023), this task (*The Gumball Machine*) is best suited in contexts with non-standard subjects.

In this shorter version, students have to make 6 decisions in a fixed order. Each decision has two options presented with gumball machines presenting different payoffs and different probabilities. Option A is the safer alternative and option B is the riskier one.

For each decision, a variable is associated with the name *prob* followed by the number of the decision: *prob1*,...,*prob6*; (0 = Option A, 1 = Option B). Table 5 shows the proportion of responses.

Table 5: Percentage of responses for each decision

	A	B	n
<i>prob1</i>	89.42%	10.58%	5,597
<i>prob2</i>	80.89%	19.11%	5,595
<i>prob3</i>	45.42%	54.58%	5,594
<i>prob4</i>	18.20%	81.80%	5,593
<i>prob5</i>	10.03%	89.97%	5,591
<i>prob6</i>	5.24%	94.76%	5,590

The level of risk-seeking is calculated by simply adding up all the decisions that option B has been chosen and dividing by six (*riskyN*). In order to differentiate individuals who show consistent behavior, the variable *cns_risk* identifies those subjects who do not exhibit any inconsistent behavior according to Vasco and De Francisco (2023).

In addition, to test whether the order of the tasks influences the answers, an alternative version was run in 12 schools, where the risk task is presented before the time task. About 30.53% of the responses are with this version which is identified with the binary variable *hlbeforetd*, it takes value 0 when the time task comes first and 1 when the risk task comes first. We also modified the order in which payoffs are presented in the gumball machine pictures with a new distribution in 19.58% of the sample. The binary variable *newdesignhl* takes a value of 1 when this new design is used and 0 otherwise

6 Social preferences

For testing inequality aversion in teenagers, we used two experimental designs. The variable *sp_version* refers to the version used, almost 85.26% of the sample has version 1 while the remaining 14.74% of the sample has version 2. The first one was based on Fehr et al. (2008). We built three decisions where subjects must decide between altruistic and individualistic choices. These decisions were presented in the same order for one part of the sample (56.57%), and it was randomized for another part of the subjects (43.43%) (*sp_randomized*).

This first experimental design included:

Q1 What do you prefer?

A) 10€ for you and 10€ for the other person; B) 10€ for you and 0€ for the other person
(*sp1_v1*)

Q2 What do you prefer?

A) 10€ for you and 10€ for the other person; B) 10€ for you and 20€ for the other person
(*sp2_v1*)

Q3 What do you prefer?

A) 10€ for you and 10€ for the other person; B) 20€ for you and 0€ for the other person
(*sp3_v1*)

The second experimental design was based on Corgnet et al. (2015) and Brañas-Garza et al. (2022). It was a version extended of the first one, where subjects must decide between two choices in six questions. These decisions were always presented in the same order, and it included:

Q1 What do you prefer?:

A) 1€ for you and 1€ for the other person; B) 0.8€ for you and 1.6€ for the other person
(*sp1_v2*)

Q2 What do you prefer?

A) 1€ for you and 1€ for the other person; B) 1.2€ for you and 0.4€ for the other person
(*sp2_v2*)

Q3 What do you prefer?

A) 1€ for you and 1€ for the other person; B) 1€ for you and 1.8€ for the other person
(*sp3_v2*)

Q4 What do you prefer?

A) 1€ for you and 1€ for the other person; B) 1€ for you and 0.6€ for the other person
(*sp4_v2*)

Q5 What do you prefer?

A) 1€ for you and 1€ for the other person; B) 1.6€ for you and 0.4€ for the other person
(*sp5_v2*)

Q6 What do you prefer?

A) 1€ for you and 1€ for the other person; B) 1.1€ for you and 1.9€ for the other person
(*sp6_v2*)

The answers are included in binary variables where they take the value 0 if they choose A and 1 in the case of B. Table 6 shows the proportion of responses.

Table 6: Percentage of responses for each decision

	A	B	n
<i>sp1_v1</i>	86.84%	13.16%	4,477
<i>sp2_v1</i>	65.04%	34.96%	4,499
<i>sp3_v1</i>	63.25%	36.75%	4,498
<i>sp1_v2</i>	85.56%	14.44%	859
<i>sp2_v2</i>	73.75%	26.25%	857
<i>sp3_v2</i>	74.91%	25.09%	857
<i>sp4_v2</i>	81.10%	18.90%	857
<i>sp5_v2</i>	70.83%	29.17%	857
<i>sp6_v2</i>	70.36%	29.64%	857

Note: The ending name of the variable refers to the version used: version 1 (v1) and version 2 (v2).

7 Probabilistic knowledge

We test their probability knowledge with an adaptation of Estepa et al. (2021) based on the approach of Delavande and Kohler (2009). The task involves specifying a value from 0 to 100 the probability of an event actually occurring.⁴ We include the following questions:

⁴Values outside this range are denoted by 999

- Q1** Imagine I have a basket with 5 apples: 1 green and 4 red. If I ask you to pick one of the apples without looking at the inside of the basket, how likely (from 0 to 100) do you think you will pick the green apple? (*delavande_apple20*)
- Q2** Imagine I have a basket with 10 apples: 1 green and 9 red. If I ask you to pick one of the apples without looking at the inside of the basket, how likely (from 0 to 100) do you think you will pick the green apple? (*delavande_apple10*)
- Q3** How likely (from 0 to 100) do you think you will eat rice in the next week (including today)? (*delavande_riceweek*)
- Q4** How likely (from 0 to 100) do you think you will eat rice in the next month (including today)? (*delavande_ricemonth*)
- Q5** How likely (from 0 to 100) do you think you are not going to attend school during the entire next month (including today)? (*delavande_sch0*)
- Q6** How likely (from 0 to 100) do you think you are going to take a shower at least once in the next month (including today)? (*delavande_bath100*)
- Q7** How likely (from 0 to 100) it is that you will go to university? (*delavande_uni*)
- Q8** How likely (from 0 to 100) do you think you will continue your education next year? (*delavande_study*)⁵

We check the consistency of their responses to three extents. First, let Q1 be greater than Q2, then let Q3 be less than or equal to Q4 and finally let Q5 be less than Q6. Therefore, *delavande_total* takes values from 0 to 3. Table 7 displays the main statistics of the related variables.

Table 7: Summary statistics of Delavande variables

	Obs	Mean	Std. Dev.	Min	Max
<i>delavande_apple20</i>	5446	29.548	46.078	0	999
<i>delavande_apple10</i>	5445	20.37	44.706	0	999
<i>delavande_riceweek</i>	5434	59.732	51.675	0	999
<i>delavande_ricemonth</i>	5434	80.407	64.308	0	999
<i>delavande_sch0</i>	5424	19.467	51.14	0	999
<i>delavande_bath100</i>	5424	84.024	82.137	0	999
<i>delavande_uni</i>	5417	65.837	46.719	0	999
<i>delavande_study</i>	2720	88.014	30.899	0	999
<i>delavande_slider</i>	2746	0.502	0.5	0	1
<i>delavande_total</i>	5424	2.361	0.762	0	3

For about 46% of the sample, we also tested these questions with two treatments: numerical values and sliders. In the first one subjects must answer by typing the number they thought, while in the second one, they must move a slider to the value they wanted to answer (*delavande_slider*=1).

8 Abilities

We included two tasks to measure skills: the Cognitive Reflection Test (CRT) and some mathematical-financial questions (FinAb). Subjects always answered both tasks in the same order: First, they

⁵Only included in the latest versions

responded to the CRT and then to the FinAb. Both tasks were included in that fixed order, although the questions in each task were displayed randomized.

On the one hand, in the same vein as Thomson and Oppenheimer (2016), we include three adapted CRT questions:

Q1 Emily's father has three daughters. The first two are named April and May. What is the third daughter's name?

- Intuitive answer: June, Correct answer: Emily
- Reflective variable *crt1*: 0 = Other , 1 = Emilia

Q2 In a library, the number of books doubles every month. If the library takes 48 months to fill, how long will it take to fill it halfway?

- Intuitive answer: 24, Correct answer: 47
- Reflexive variable *crt2*: 0 = Other, 1 = 47

Q3 If you are running a race and you pass the person in second place, what place are you in?

- Intuitive answer: 1, Correct answer: 2
- Reflexive variable *crt3*: 0 = Other, 1 = 2

On the other hand, FinAb includes basic operations and interest rates:⁶

Q1 If there are 5 people holding a winning lottery ticket and the price to be distributed is 2 million euros, how much money will each person receive?

- Correct answer: 400,000
- *fin1*: 0 = Incorrect, 1 = Correct

Q2 Imagine you have 100 euros in a savings account. The account is earning interest at an annual rate of 10%. How much will you have in the account after two years?

- Correct answer: 121
- *fin2*: 0 = Incorrect, 1 = Correct

Q3 Imagine you have 100 euros in a savings account and the annual interest rate you earn on your savings is 2%. If you keep the money in the account for 5 years, how much money will you have at the end of 5 years?

Multiple choice answer: A) Less than 102 €, B) Exactly 102 €, C) More than 102 €, D) I don't know (99).

⁶Those who refused to answer or did not know the answer could enter 99

- Correct answer: C) More than 102 €
- *fin3*: 0 = Incorrect, 1 = Correct

The total number of correct answers per task is collected in the normalized variable *crtN* and *finN*, respectively, taking values from 0 to 1.

Table 8: Distribution of total correct answers per ability task.

	CRT	FinAb
0	14.36%	31.07%
1	32.44%	41.00%
2	46.38%	24.56%
3	6.81%	3.36%
	100.00%	100.00%

9 Strategic thinking

Developing a game to assess strategic thinking posed significant challenges from the outset. This aspect of the research demanded a persistent cycle of trial and error, gradually refining the mechanisms to yield more consistent results with each new design. To evaluate strategic thinking, three different tasks with different approaches were developed. First, with dominant strategies, the Uno cards game was created. Secondly, considering Cournot-Nash equilibria, we worked with Piggy Banks. Finally, a coordination game with the task of colored buttons was adopted. Each new task replaced the previous one, so participants only performed one of them during their session. Indeed, around 50% of the sample used the Uno cards game, 15% the Piggy Banks and 35% the button game.

- Dominant strategies: The card game contains four questions differentiated by color and increasing in difficulty as subjects progress, so the questions are fixed and supported by pictures of the cards.

Q1 *Blue*: You will be randomly paired with another participant, but you will not know who it is. You both see the same cards and choose at the same time but without talking. If you both DO pick the same card, YOU get the number of points on that card and THE OTHER PERSON gets 0 points. If you both do not pick the same card, EACH of you gets the number of points on that card. Which card do you pick? (*st_cards1*)

Q2 *Yellow*: Now, rules change. If you both pick the same card, YOU get 0 and THE OTHER PERSON gets the number of points on that card. If you both DO NOT pick the same card, you EACH get the number of points shown on that card. You both see the same cards, you pick one at the same time and without talking. Which card do you choose? (*st_cards2*)

Q3 *Red*: Next, you will be randomly paired with another participant. You both see the same cards and each of you picks one at the same time but without talking. If you both pick the same card, you EACH get the number of points on that card DIVIDED BY 2. If you both DO NOT pick the same card, the person with the LOWEST card gets the number of points on that card and the person with the HIGHEST card gets 0 points. Which card do you choose? (*st_cards3*)

Q4 Which card do you think the other person has chosen in the previous decision? (*st_cards4*)

- Cournot-Nash games: A gif of a piggy bank was displayed where coins were accumulated every second from 0 to a maximum of 15. The task included two scenarios (0 and 15) but their order was randomly assigned. In each scenario, participants were first asked to click when they wanted to stop adding coins to the piggy bank. Next, they were asked about their beliefs about the actions of their partner.

Q1 The money will be kept by whoever presses the piggy bank FIRST, with the euros they have at that moment. You can click anywhere in the piggy bank to stop. (*st_piggy_0_sec*)

Q2 What do you think the other participant did? (*st_piggy_belief0*)

Q3 The money will be kept by whoever presses the piggy bank in the SECOND PLACE, with the euros they have at that moment. You can click anywhere on the piggy bank to stop. (*st_piggy_15_sec*)

Q4 What do you think the other participant did? (*st_piggy_belief15*)

- Coordination games: The Buttons task consisted of two coordination games. In each game, participants were presented with two buttons: one for a payoff-dominated scenario (PayD or yellow) and one for a risk-dominated scenario (RiskD or white). After each game, participants answered two questions. The order of presentation of the buttons was first fixed and then randomized.

Q1 *Yellow*: Here are the potential outcomes in this case:

- If you click red and he red you win 5 euros each.
- If you click red and he yellow you win 0 euros each.
- If you click yellow and he red you win 0 euros each.
- If you click yellow and he yellow you win 10 euros each.

Which button do you press? (*st_buttons_game1*)

Q2 Why did you choose the previous button? (*st_buttons_argument1*)

- Because I earned more
- Because I earned less
- Because I liked the color
- I chose one randomly

Q3 *White*: Here are the potential outcomes in this case:

- If you click white and he white you win 10 euros each.
- If you click white and he blue you earn 5 euros and he 0 euros.
- If you click blue and he blue you win 10 euros each.
- If you click blue and he white you earn 0 euros and he 5 euros.

Which button do you press? (*st_buttons_game2*)

Q4 Why did you choose the previous button? (*st_buttons_argument2*)

- Because I earned more
- Because I earned less
- Because I liked the color
- I chose one randomly

10 Honesty

In order to measure honesty, we used two tasks with visual support. In the first one, we showed two images to identify the differences. On the next screen, we show different answer alternatives with different hypothetical payments: we indicate that if they report 0 differences they will get 0€, 1 difference 1€, 2 differences 2€, and so on until 6 differences 6€ *honest_pictures*. The correct answer is only 1 difference. Therefore, *honesty* variable takes the value 1 if the individual has been honest, 0 otherwise.

In the following experiments we use another task that is based on numbers and colors. In the same way, on the first screen, a number and a color are shown. On the next screen, answer alternatives are displayed with possible combinations of numbers and colors together with an associated hypothetical payment (*honest_numbers*). There is always an alternative which is another number different from the previous ones and another color – this is the correct answer. Therefore, *honesty* variable also takes the value 1 if the individual has been honest, 0 otherwise. Moreover, in this version, we also differentiate four treatments where the correct answer is incentivized with a higher payout. The treatments are randomized and balanced in the sample (around 25% of the sample per treatment). The *treatment_numbers* variable captures the treatment of this task. The options shown for each treatment are:

Treatment 1: A red one and you win 30€. Two in blue and you win 15€. Three in red and you win 25€. Four in green and you win 35€. Five in green and you win 5€. Six in blue and you win 20€. Another one and you win 0€.

Treatment 2: A red one and you win 15€. Two in blue and you win 30€. Three in red and you win 20€. Four in green and you win 5€. Five in green and you win 35€. Six in blue and you win 25€. Another one and you win 0€.

Treatment 3: A red one and you win 30€. Two in blue and you win 15€. Three in red and you win 25€. Four in green and you win 35€. Five in green and you win 5€. Six in blue and you win 20€. Another one and you win 10€.

Treatment 4: A red one and you win 15€. Two in blue and you win 30€. Three in red and you win 20€. Four in green and you win 5€. Five in green and you win 35€. Six in blue and you win 25€. Another one and you win 10€.

11 Creativity

In order to measure creativity we used Guilford’s Alternative Uses Task (AUT) (Guilford, 1967). We designed a task with two versions. In the original version, we asked the students for all the alternative uses they could imagine using a brick, allowing their responses in free-text format. Whereas in the second version, we changed the object to a rope and we added a screen where several uses could be selected from a list, these uses were randomly ordered. We focus on a component defined by Dippo and Kudrowitz (2013) as the number of uses mentioned by a learner for the object in Guilford (1956) alternative uses task. The sum of these uses provides the fluency score of the student (*creativityf*).

Screen 1: "In the following screen, you will find an object. We ask you to *list* in your response **ALL the uses** that come to your mind with it. **Separate** each use you mention with a semicolon (;).

*This IS AN EXAMPLE of the question we are going to ask you. Imagine we ask you: **List all the alternative uses you can think of with a paperclip.** Your answers could be: make a hook; make a bracelet; make a fishing hook."*

Screen 2: "You can take 5 minutes for the following question."

Screen 3: "Write down all the alternative uses you can imagine for a brick. Remember to separate each idea you write with a semicolon (;)".

Note: The third screen of the task in the second version only changed in the text from "brick" to "rope".

In the rope task, we had two randomized paths. On the first path the order of the screens was: example, time, task and multiple-choice screen, while the order of the second path was: example, multiple-choice, time and task screen. For the example screen of the second path the instruction was modified removing the phrase "Separate each use you mention with a semicolon (;)."

Screen 4: Multiple choice screen:

"Select all the options that you consider as a use for a rope.

I can use the rope to: measure the earth; jump rope; make a bracelet; build a bridge; move the moon; make a rescue in a fire; write; take a picture; act as a ladder; "

Note: This screen only appears in the second version of the task ("rope"). This screen does not always appear in the last place, it is randomized with the third screen.

The original answers are contained in the variable **brick** and **rope** respectively. In addition, for the second version, **ropeuse** includes the uses that are selected from the selection list and the variable **rope_order** takes value 1 when the uses are presented second and 2, when they are presented first.

12 Other variables

- We control the dominant hand of each student, **left_hand** is a binary variable, where 1 is left-handed (8.89%) and 0 is right-handed (91.11%).
- The **device** variable refers to how students complete the experiment.
- Questions about the Covid-19 situation:

Q1 Do you believe that the situation caused by Covid-19 has negatively affected your educational and learning performance? (**covid1**)

Q2 When in 2020 you had to follow classes online, which device did you use most frequently? (**covid2**)

Q3 The device marked above, were you the only one using it? (*covid3*)

Q4 How did you manage to connect to online classes with your device during 2020? (*covid4*)

- Perception of time in future actions at three levels:

Q1 This weekend - *I will go / I am going to go / I am going* - to the cinema (*ftr1*)

Q2 This summer - *I will go / I am going to go / I am going* - on holiday (*ftr2*)

Q3 In 15 years - *I get / I will get / I am going to get* - a job (*ftr3*)

Nonetheless, this version was run in only 2 schools. There is a reduced version with only the first and last questions included in the last 10 schools (*ftr_short* = 1).

- Questions about climate change.

In the first screen of this task we informed them about climate change: *You may have noticed that climate change has recently received some attention in the media. Climate change refers to the idea that the global average temperature has increased over the past 150 years and that it may increase further in the future.*

In the following screens, we present the questions which need to be answered on a scale from "not at all" to "very much" using a slider control, except for **Q4** where the number is input directly and the last three questions which are true or false:

Q1 Personally, how much does climate change affect you? (*clima1*)

Q2 How much do you think climate change affects...

- your city? (*clima2*)
- the world? (*clima3*)
- your country? (*clima4*)
- your continent? (*clima5*)

Q3 How much do you think climate change will affect ...

- your generation? (*clima6*)
- you personally? (*clima7*)
- your grandchildren's generation? (*clima8*)
- your children's generation? (*clima9*)

Q4 How likely do you believe we are able to stop climate change? Please give a value between 0

and 100 (100: sure we can; 0: sure we can't). (*clima10*)

Q4 Please indicate whether the following statements are true or false:

- Climate change is mainly caused by natural phenomena (such as shifts in solar radiation and volcanic eruptions). (*clima11*)
- Climate change will cause the weather conditions to change in the same way all over the world. (*clima12*)
- Consumption of food, clothing and technology is associated with CO2 emissions that contribute to climate change. (*clima13*)

References

- Adamecz-Völgyi, A., Jerrim, J., Pingault, J.-B., & Shure, D. (2023). Overconfident boys: The gender gap in mathematics self-assessment. *IZA Discussion Paper*.
- Alfonso, A., Brañas-Garza, P., Jorrat, D., Lomas, P., Prissé, B., Vasco, M., & Vázquez-De Francisco, M. J. (2023). The adventure of running experiments with teenagers. *Journal of Behavioral and Experimental Economics*, 102048. <https://doi.org/10.1016/j.socec.2023.102048>
- Aymerich, M., Berra, S., Guillamón, I., Herdman, M., Alonso, J., Ravens-Sieberer, U., & Rajmil, L. (2005). Desarrollo de la versión en español del kidscreen: Un cuestionario de calidad de vida para la población infantil y adolescente. *Gaceta Sanitaria*, 19(2), 93–102.
- Brañas-Garza, P., Cabrales, A., Espinosa, M. P., & Jorrat, D. (2022). The effect of ambiguity in strategic environments: An experiment. *arXiv preprint*. <https://doi.org/10.48550/arXiv.2209.11079>
- Coller, M., & Williams, M. B. (1999). Eliciting individual discount rates. *Experimental Economics*, 2(2), 107–127. <https://doi.org/10.1023/A:1009986005690>
- Corgnet, B., Espin, A. M., & Hernán-González, R. (2015). The cognitive basis of social behavior: Cognitive reflection overrides antisocial but not always prosocial motives. *Frontiers in Behavioral Neuroscience*, 9, 287. <https://doi.org/10.3389/fnbeh.2015.00287>
- Delavande, A., & Kohler, H.-P. (2009). Subjective expectations in the context of hiv/aids in malawi. *Demographic Research*, 20, 817.
- Dippo, C., & Kudrowitz, B. (2013). Evaluating the alternative uses test of creativity. *2013 NCUR*.
- Estepa, L., Jorrat, D., Orozco-Olvera, V., & Rascon Ramirez, E. (2021). *Beans vs slider: Eliciting probabilities in the field* (tech. rep.). Mimeo.
- Falk, A., Becker, A., Dohmen, T., Huffman, D., & Sunde, U. (2023). The preference survey module: A validated instrument for measuring risk, time, and social preferences. *Management Science*, 69(4), 1935–1950.
- Fehr, E., Bernhard, H., & Rockenbach, B. (2008). Egalitarianism in young children. *Nature*, 454(7208), 1079–1083.
- Guilford, J. P. (1967). Creativity: Yesterday, today and tomorrow. *The Journal of Creative Behavior*, 1(1), 3–14.
- Guilford, J. P. (1956). The structure of intellect. *Psychological Bulletin*, 53(4), 267.
- Holt, C. A., & Laury, S. K. (2002). Risk aversion and incentive effects. *American Economic Review*, 92(5), 1644–1655. <https://doi.org/10.1257/000282802762024700>
- Ravens-Sieberer, U., Gosch, A., Rajmil, L., Erhart, M., Bruil, J., Duer, W., Auquier, P., Power, M., Abel, T., Czemy, L., et al. (2005). Kidscreen-52 quality-of-life measure for children and adolescents. *Expert Review of Pharmacoeconomics & Outcomes Research*, 5(3), 353–364.
- Stunkard, A. J., Sørensen, T. I., Hanis, C., Teasdale, T. W., Chakraborty, R., Schull, W. J., & Schulsinger, F. (1986). An adoption study of human obesity. *New England Journal of Medicine*, 314(4), 193–198.
- Thomson, K. S., & Oppenheimer, D. M. (2016). Investigating an alternate form of the cognitive reflection test. *Judgment and Decision Making*, 11(1), 99–113. <https://doi.org/10.1017/S1930297500007622>
- Vasco, M., & De Francisco, M. J. V. (2023). Holt-laury as a gumball machine. *Available at SSRN* 4491386.
- Vasco, M., Alfonso, A., Arenas, A., Cabrales, A., Cuesta, J. A., Espín, A. A., Espinosa, M. P., García-Muñoz, T., Izquierdo Nofuentes, À., Jorrat, D., Kovářík, J., Lomas, P., Martínez-Estudillo, A. C., Montolio, D., Ramos-Sosa, M. P., Román, P., Sánchez, Á., Vázquez-De Francisco, M. J., & Brañas-Garza, P. (2024). Teenslab dataset: Economic preferences and cognitive abilities among teenagers. *Mimeo*.

Appendix A

Table A.1: Changes in tasks by section

Study	Num. obs.	Socio-demographic	Time preferences	Risk preferences	Social preferences	Probabilistic beliefs	Abilities	Strategical thinking	Honesty	Creativity	Others
337	60	gender, age, gpa, optional, mood, weight and height	truck task	GBM	version 1 of 3Q	-	CRT and finance	Cards	Pictures	Brick	left, nutrition
391 400 411	642	gender, age, siblings, ranksib, gpa, optional, mood, weight and height	truck task	GBM	version 1 of 3Q	Delavande	CRT and finance	Cards	Pictures	Brick	left, nutrition
441	124	gender, age, siblings, ranksib, gpa, optional, mood, weight and height	truck task	GBM	version 1 of 3Q	Delavande	CRT and finance	Cards	Pictures	Brick	left, nutrition, money perception
460 469 470 471 472 475 476 477 478 479 480 483 484 485 486 608 609 610 611 612 615 616 618 620 621	2720	gender, age, siblings, nsiblings, ranksib, migrant, stairs10, gpa, optional, mood, weight and height, obesity	truck task	GBM	version 1 of 3Q	Delavande	CRT and finance	Cards	Pictures	Brick	left, nutrition, money perception
1112 1113 1114 1115	170	gender, age, siblings, nsiblings, ranksib, migrant, stairs10, gpa, optional, repeater, mood, weight and height, obesity, expectations	truck task	GBM	version 2 of 6Q	Delavande (slider randomly)	CRT and finance	Piggy bank	Number and color	Brick	left, nutrition, money perception (randomly), covid-19
1321 1322 1323 1324 1623 1624 1625 1626	958	gender, age, siblings, nsiblings, ranksib, migrant, stairs10, gpa, optional, repeater, mood, weight and height, obesity, expectations, good at and likes	truck task (after risk) and conditional	GBM (before time)	version 2 of 6Q	Delavande (slider randomly)	CRT and finance	Piggy bank	Number and color	Brick	left, nutrition, money perception (randomly), covid-19, ftr

Study	Num. obs.	Socio-demographic	Time preferences	Risk preferences	Social preferences	Probabilistic beliefs	Abilities	Strategical thinking	Honesty	Creativity	Others
3139 3140	170	gender, age, siblings, nsister and nbrother, ranksib, migrant, stairs10, gpa, optional, repeater, mood, obesity, expectations, good at and likes (randomly)	truck task and conditional	GBM (new design)	version 1 of 3Q (randomly)	Delavande (slider randomly)	CRT and finance	Buttons	-	Rope	left, covid-19, ftr (short version), climate change
2094 2181 2245 2246 2247 2248 2249 2250 2296 2297 2298 2299 2300 2373 2374 2375 2376 2377 2432 2433 2434 2435 2436 2437 2465 2466 2467	1097	gender, age, siblings, nsister and nbrother, ranksib, migrant, stairs5, gpa, optional, repeater, mood, good at and likes (randomly)	truck task (after risk) and conditional	GBM (before time)	version 1 of 3Q (randomly)	Delavande (slider randomly)	CRT and finance	Buttons	-	Brick	-
2513 2514 2553	80	gender, age, siblings, nsister and nbrother, ranksib, migrant, stairs5, gpa, optional, repeater, mood, good at and likes (randomly)	truck task (after risk) and conditional	GBM (before time and new design)	version 1 of 3Q (randomly)	Delavande (slider randomly)	CRT and finance	Buttons	-	Brick	climate change
2614 2615 2634 2635 2645 2673 2674 2675 2740	423	gender, age, siblings, nsister and nbrother, ranksib, migrant, stairs5, gpa, optional, repeater, mood, good at and likes (randomly)	truck task and conditional	GBM (new design)	version 1 of 3Q (randomly)	Delavande (slider randomly)	CRT and finance	Buttons	-	Brick	climate change, ftr (short version)
2870 3001 3002 3003 3004 3005 3099 3100 3435 3436	656	gender, age, siblings, nsister and nbrother, ranksib, migrant, stairs5, gpa, optional, repeater, mood, good at and likes (randomly)	truck task and conditional	GBM (new design)	version 1 of 3Q (randomly)	Delavande (slider randomly)	CRT and finance	Buttons	-	Rope	climate change, ftr (short version)