Does upward mobility harm trust?

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Keywords:
Trust, trustworthiness, social mobility, social identity, experiment

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1 Introduction

Social mobility, defined as the movement from a given social level to a higher level, is considered as a cornerstone of modern democracies because it is a fundamental component of justice (Sen, 1980). Moreover, the perspective of upward mobility has motivational effect on individuals. On the opposite, the lack of social mobility in a society may be detrimental to economic efficiency, as individuals without any hope of social mobility have little incentive to provide effort (Phelan, 2006). Within organizations, internal promotions are a fundamental source of motivation (Prendergast, 1999; Lazear and Gibbs, 2014; Kuhn, 2017). Systematically hiring on the external labor market for filling higher positions might be met with resent by incumbents and reduce their willingness to cooperate.

However, social mobility may also have less positive side effects, in particular when it affects negatively the interpersonal relationships of upwardly mobile individuals with others. For example, females who achieve top positions in male dominated organizations face sometimes difficulties integrating the informal networks of leaders because these networks are usually composed of males (e.g., the "Old Boy Networks", Oakley, 2000); when they succeed, they are not always willing to help other females to reach the same positions (this has been described as the "Queen-Bee effect" Ellemers et al., 2012). The upwardly mobile individuals are also sometimes rejected by left behinds in the process of social mobility. This can be illustrated by the interactions between natives and migrants (Derks et al., 2015) and by black-white interactions. For example, Fordham and Ogbu (1986) described the difficulties faced by black students in the U.S. who, because they perform well at school, are accused of "acting white". The socially mobile individuals may no longer be considered as in-groups by the left behinds, while not being treated yet by higher status individuals as one of them.

Our research question is to understand whether and to which extent trust and trustworthiness are affected by individual social mobility in the presence of group identities. Since mobile individuals distantiate from their group of origin to reach a higher status group, are they still trusted by the left behinds? Are higher status individuals willing to trust and reciprocate to upwardly mobile individuals as they would do for their natural in-groups or do they still consider them as out-groups? How does climbing the status ladder impact trusting behavior and trustworthiness vis-a-vis both left behinds and high status individuals? We focus on trust because of its ubiquity in economic relationships and its importance in promoting efficient economic interactions (Arrow, 1972). Trust is a major component of social capital, which in turn determines economic development and growth (Knack and Keefer, 1997). Within organizations, interpersonal trust is a substitute to costly monitoring and it can alleviate the problem of incomplete contracting (Fukuyama, 1995; LaPorta et al., 1997). Crucially to our study, identity is an utterly important determinant of trust. Indeed, the empirical literature has shown that individuals consistently discriminate by trusting members from other groups less than people from their own group (Fershtman and Gneezy, 2001; Heap and Zizzo, 2009; Falk and Zehnder, 2013). But what does happen when identity is considered in a dynamic perspective?

The combined effects of upward social mobility and group identity are difficult to identify with observational data. A first difficulty is that in real settings social mobility does not only change the status of a person, it comes usually with changes in relative income. Disentangling the effect of each dimension is not trivial. A second difficulty is that individuals' identity is multi-dimensional and the affiliation of the same person to multiple groups is not easily observable directly in real settings.[1] Yet, the ability to identify these multiple affiliations is crucial, as the characterization of social mobility and its impact on trust may involve these multiple sources of group identity.

Indeed, individuals can be affiliated at the same time to a group defined by gender, ethnicity, school, etc. (the "background group"), and to a group defined by a relative position in the society (the "status group"). These different sources of group identity are usually correlated: the background group predicts to some extent the probability for an individual to reach a given status. Social mobility combines a background identity and the access to a status that was ex-ante unlikely

[1]Note that in the original conceptualization of group identity in social psychology by Tajfel and Turner (1979) the identity of an individual is defined by many potentially overlapping group affiliations.

because of the background identity. Following up on the previous example, the identity of female leaders in male dominated organizations is defined both by their background (their gender) and their achieved status (provided by the leadership position); accessing the status of leaders in such organizations represents a social mobility since their background identity made it less likely ex ante. Encompassing both the backward group identity and the achieved status identity, social mobility raises the question of whether upwardly mobile individuals feel closer to those who share the same background identity or to those who share the same status identity and who are more likely to come from a different background. It also raises the question of how these socially mobile individuals are treated both by those who share the same background identity and by those who share the same status.

To study the impact of social mobility on interpersonal trust and trustworthiness, we designed a controlled laboratory experiment based on a standard trust game (Berg et al., 1995) and in which trustors and trustees were identified both by their affiliation to a background group and by a status. The background identity was conferred by natural group identities: subjects were identified by their school, either the local business school or the local engineering school. These two very selective schools have a specific cultural identity and students from each school have a very strong feeling of belonging. In the first part of the experiment, we reinforced these natural identities and in the second part, we used dictator games to test the existence of in-group favoritism.

Status was induced by asking subjects to answer to a math quiz in the third part of the experiment. Relative performance in that task was used to assign positions of "experts" and "agents" to the subjects that determined the task people had to do in the last part of the experiment. The experts were the subjects who gave the higher number of correct answers. This introduced a hierarchy between schools since the curricula in the engineering school are naturally more math-oriented: it was more likely for the students from this school to achieve the higher status of experts. A critical feature of our design is that the school affiliation predicts performance in the math quiz and thus, predicts the achieved status, but imperfectly. Indeed, we represent upward social mobility by assigning the higher status of expert also to the best performers from the business school: these subjects achieved the status of expert although their school curricula made it ex ante unlikely. This was controlled by inviting 60% of the subjects from the business school and by having 60% of experts in each session. Our design also disconnects status from payoffs: as experts and agents have different roles but receive the same payoff, this allows us to isolate the pure effect of status and identity on trust and trustworthiness, independently of wealth effects.

Then, in the fourth part of the experiment subjects played a trust game under the strategy method. They made decisions both as trustor and as trustee, being informed of the school and the status of expert or agent of their counterpart in all possible combinations. Comparing the transfers of the upwardly mobile subjects (the experts from the business school) to the transfers of the left behinds (the agents from the business school) is informative of the impact of social mobility on the propensity to trust others and to be trustworthy. Comparing the transfers directed at the upwardly mobile subjects to those directed at the left behinds informs us on the impact of upward mobility on the propensity of others to trust and to be trustworthy to upwardly mobile subjects.

Our results show that social mobility reduces trust toward subjects from the same school who did not achieve the status of experts (the left behinds). This cannot be explained by social preferences, risk aversion or beliefs about trustee's trustworthiness. An interpretation is that the impact of upward mobility is mediated by emotion regulation and more particularly betrayal aversion: socially mobile individuals become less willing to be vulnerable to betrayal by subjects from the same natural group. This echoes previous studies linking higher status to greater betrayal aversion (Hong and Bohnet, 2007). We also found that social mobility does not affect trustworthiness: upwardly mobile individuals reciprocate as much as left behinds, irrespective of the trustor's identity. Finally, we show that subjects from either school transfer similar amounts as trustor and as trustee to upwardly mobile individuals and to left behinds. Thus, social mobility in itself does not attract a discriminatory behavior, possibly because by design social mobility does not result from self-selection on such traits as greed or competitiveness.

The remaining of the paper is organized as follows. Section 2 reviews briefly the related economic literature. Section 3 presents the experimental design, the procedures and our behavioral conjectures. Section 4 displays our results and section 5 discusses these results and concludes.

2 Related literature

Our study contributes to advance two main strands of the literature. First, it relates to the literature on the impact of social mobility on social preferences. In particular, this literature has shown that the prospect or experience of upward mobility weakens the support for redistribution (Piketty, 1995; Alesina and Ferrara, 2005; Acemoglu et al., 2017; Alesina et al., 2017). Our approach is different. This previous literature focuses mostly on inter-generational income mobility whereas we consider social mobility in terms of status and hold income equal across statuses. Moreover, it considers individual support for redistribution, while we study interpersonal trust. More directly connected to our research are the studies of Austen-Smith and Fryer (2005) and Fryer and Torelli (2010) that analyze the relationships between social mobility and social preferences in the context of the racial gap in educational achievements. Students who achieve more than what was expected, given their race, tend to be rejected by those who are lagging behind. Heap and Zizzo (2009) and Tsutsui and Zizzo (2013) report on experiments in which subjects are split into groups, play trust games between and within groups and can periodically trade group membership on a market place. In Tsutsui and Zizzo (2013), groups have different statuses and subjects can pay to quit a low-status group and join a high-status group, which reveals a demand for upward mobility. In these studies, the mechanism behind mobility is self-selection: in equilibrium, mobility concerns those who identify less ex-ante to their background group. Our design is different since subjects cannot choose to join the high-status group.

Second, our study contributes to the large literature on the impact of group identity on economic behavior, as pioneered in economics by Akerlof and Kranton (2000). Group identity leads to in-group favoritism (e.g. Charness et al., 2007; Chen and Li, 2009) and parochial exclusion (e.g., Bowles and Gintis, 2004), influences norm enforcement (e.g., Bernhard et al., 2006), and fosters cooperation (e.g., Goette et al., 2006) and coordination (e.g., Chen and Chen, 2011). In this literature group identity is usually uni-dimensional: individuals are affiliated to a single group. In contrast, in our experiment identity is conferred by two dimensions that overlap partially: a natural group identity (school affiliation) and a lab-induced identity conferred by assigning a status of expert or agent to the subjects.

Very few papers have considered multi-dimensional group identities. Klor and Shayo (2010) induce status on top of natural group affiliations to test the impact of group identity on redistribution. Kranton et al. (2016) compare within-subjects the impact of natural identity (political affiliation) and arbitrary minimal group identity on allocation choices. They show a new type of heterogeneity of preferences between subjects who do not care about group identities and others who change their preferences according to the affiliation of their counterparts. Chen et al. (2014) play coordination and cooperation games with subjects from the same school with different ethnic identities. They show that priming school fosters cooperation and coordination, while priming ethnic identities is harmful. We differ in several respects from these papers. In our experiment, status and material payoffs are uncorrelated ex ante, our subjects are identified by both group affiliations when they interact, natural identity is predictive of status, and there is a notion of hierarchy between groups. Hong et al. (2016) also introduce a hierarchy between groups by introducing both horizontal group identities, determined randomly or by preferences, and vertical group identities, determined by performance or luck. In contrast to them, we use natural identities, we keep income constant across groups, and we do not study redistributive allocations but interpersonal trust.

3 Design, Procedures and Conjectures

In this section, we first detail the experimental design (3.1). Then, we present the procedures (3.2). Last, we introduce our conceptual framework and behavioral conjectures (3.3)

3.1 Experimental Design

Before our subjects played trust games, we first reinforced natural group identities, then we measured the subjects' social preferences and we induced status. Figure 1.1 in Appendix 1 summarizes the timeline of the experiment.

Natural Group Identities

Our experiment uses natural group identities conferred by school membership. We recruited subjects from the local engineering school (Ecole Centrale de Lyon) and the local business school (Ecole de Management de Lyon). In the French higher education system, these schools are defined as "Grandes Ecoles", considered as providing education for elites, independently from Universities. Grandes Ecoles are relatively small in size (generally less than 4000 students, compared to more than 20 000 for universities) and they have very high educational requirements. The selection of students at entry is based on very competitive exams prepared intensively during two years. Each Grande Ecole has its own culture and traditions and belonging to such schools generates a strong group identity. In the instructions, it was made clear that the session was exclusively composed of students from these two schools.

We reinforced natural group identities by several means. Upon arrival, each computer screen displayed the logo of the subject's school. Then, the first part of the experiment consisted of a quiz about one's school. Subjects had four minutes to answer to six questions relative to their own school, including its year of creation, the expected wage after graduation, or famous alumni (see Appendix 3). Before submitting their individual answers, subjects could communicate with their schoolmates in the session via an anonymous chatbox and discuss about the answers to the quiz. This procedure aims at reinforcing group identity (as in Chen and Li, 2009). The quiz was incentivized both at the individual and at the school level. Each correct answer yielded 1 Experimental Currency Unit (ECU, with 1 ECU = €0.2) to the subject. Moreover, each subject from the school who performed the best at the quiz earned an extra 5 ECU. This collective bonus aimed at activating both cooperation between schoolmates and competition between schools. No feedback about the absolute or the relative performance was provided to the subjects before the end of the session, to avoid creating wealth effects.

Social Preferences

In the second part, we elicited the subjects' social preferences toward in-groups from the same school and toward out-groups from the other school, using a dictator game. Subjects received a 10 ECU endowment and they had to decide how much to transfer to another subject, conditional on whether this subject is from the business school or from the engineering school. Subjects were informed that they would be randomly matched at the end of the session with a subject from each school. For one match (randomly drawn), their decision as dictator would be implemented, and for the other match, they would receive the transfer decided by the other subject. Behavior in these games is used to check whether school identity generates in-group favoritism. Moreover, social preferences are used as a control variable when analyzing trust and trustworthiness.

Status: Agents and Experts

Math Quiz In the third part we introduced status by means of two positions that were assigned to the subjets based on their relative performance at a mathematical quiz: "Agents" and "Experts". It is usually admitted that status is conferred by performance feedback, ranking, and public recognition.

At the beginning of the third part, the program randomly formed anonymous groups of five subjects, with three subjects from the business school and two from the engineering school; this was made common knowledge. Subjects had 15 minutes to solve 17 problems. The same problems were displayed in the same order on all the subjects' screens. For each problem, four possible solutions were proposed and subjects had to pick one (see Appendix 4). The difficulty of the problems increased gradually to maximize the variance of performance. Before performing this task, subjects were informed that their performance would impact their role in the remaining of the experiment, but with no more detail at this stage. The objective was to avoid self-selection into roles on traits such as preference for status, power or competitiveness. Once the 15 minutes had elapsed, subjects were informed that their performance would be used to award the position of Expert to the three subjects who performed the best in the quiz among the five players, while the position of Agent was assigned to the two remaining subjects.[2]

The math quiz was incentivized. At the end of the session, the program selected randomly one subject in each sub-sample of five, and for each correct answer of the selected subject, each of the five subjects earned 1 ECU in addition to a fixed payoff of 5 ECU. This payment scheme ensures that each subject's expected payoff is equal within the sub-sample of five and that payment is kept independent from the position of expert or agent. Using instead an individual incentive scheme would have introduced payoff inequality between players and it would have been impossible to disentangle the effect of inequality from the effect of status in the trust game.

Using a math quiz to assign positions and introducing the notions of experts and agents aimed at generating a hierarchy in status associated with these positions. First, subjects from these schools are likely to acknowledge that math induces status because, in their studies, being good at math allowed them to enter famous schools. Second, curricula at the engineering school are more math oriented, then subjects from this school are likely to perform better on average than those from the business school, and then achieve the position of experts more often.[3] There is an implicit hierarchy between schools in terms of math skills. Finally, the notions of experts and agents reinforce the feeling of a hierarchy in status independent from income.

[2]We chose to award status within each sub-sample of five subjects rather than at the session level for two reasons. First, because the school is expected to be predictive of success at the quiz. Second, because in each group of five there are two subjects from the engineering school for three positions of experts; this maximizes the chance that at least one subject from the business school will have the status of expert. Finally, it provides some randomness in the attribution of status. Indeed, if we had awarded status at the session level, the subjects who performed the most at the session level would always have achieved the high status and it would have been hard to disentangle the effect of social mobility from that of abilities on behavior in the subsequent trust game.

[3]Studying the selection technology of the French "Grandes Ecoles"Menger and Marchika (2014) shows that the schools that are ranked higher in their specialty put a greater coefficient on mathematics at the entrance exam. Math grades account for slightly more than one third of the total grades at the entrance exam in top engineering schools, and for around one fourth at the entrance exam in top business schools.

At the end of the quiz, subjects received the instructions for the rest of the experiment, namely an expertise task and the trust game. The expertise task was performed after playing the trust game to avoid contaminating behavior in the trust game, but subjects learned their status at the beginning of this part.

Expertise Task This task was designed to reinforce the statuses of experts and agents when the task was explained to the subjects, without generating payoff inequality. The agents had to answer to three more multiple choice math questions. Then, being informed of the distribution of the agents' answers at the session level, the experts had to vote to select the question to be used to determine payoffs. The question that received the most votes determined a payoff for all the subjects in the session, regardless of their school or position. This payoff was 10 times the mean rate of correct answers given by the agents in response to this question (e.g., if the rate was 0.8, each subject in the session earned 8 ECU). The position of expert is expected to provide higher status since the experts have to evaluate the work of the agents who execute the task, and take responsibility for a choice that determines the payoff of everyone.

Trust and Trustworthiness

We are chiefly interested in behavior in the trust game played in the fourth part, conditional on school, status and social mobility. In this game, both the first and the second movers receive a 10 ECU endowment. The first mover (the trustor, hereafter) has to choose an integer amount M between 0 and 10 ECU, inclusive, that will be sent to the second mover (the trustee, hereafter) and deducted from his payoff. This amount is multiplied by three. The trustee receives $3M$ and has to choose an integer amount $R \leq 3M$ to send back to the trustor. The amount sent by the trustor is a standard measure of trust, while the amount returned by the trustee is a measure of trustworthiness.

In each group of five, each subject first made four decisions as a trustor, interacting successively with each of the other four players in the role of trustees. Subjects had also to guess the proportion of the amount received each trustee would send back to them; they were rewarded for accuracy, as explained below.

Finally, each subject had to make four decisions as a trustee, interacting successively with each of the four other players in the role of trustors. We used the strategy method: the trustees had to decide how much to return to the trustors for each of the ten possible transfers. Using the strategy method allows us to collect more data for each subject and to define a more accurate profile of the trustees' preferences. For each decision as trustor and as trustee, subjects were informed about the school and the status of their counterpart (expert or agent). At this moment, they could observe whether one or more players from the business school achieved the status of experts.

At the end of the experiment, the computer program randomly selected one decision in each role for each subject and the sum of payoffs in these two decisions determined the payoff for the trust game.[4] The program also randomly selected for each individual one guess made in the role of a trustor. If this guess was equal to the actual proportion returned by the trustee more or less 5 percent, the subject earned an extra 5 ECU.

Finally, at the end of the session subjects had to answer to several questions about socio-demographic characteristics, risk attitudes (using the procedure of Dohmen et al. (2011)), and perceptions about the experiment. In particular, they had report their opinion about the statement *"It is very important to have good math skills"* on a five point likert-scale. No subject strongly disagreed with the statement and 87 subjects out of 100 agreed to some extent.[5] They also had to report which school they believe have the best students in math. Answers strongly support that math induces a hierarchy between schools, since all the subjects from the engineering school and 9 out of 10 subjects from the business school reported

[4]The software generated two random numbers for each subject. These numbers were used to generate two rankings of subjects within each group of five. The first ranking was used to determine which decision was used to compute payoffs as trustor and the second ranking was used to determine which decision was used to compute payoffs as trustee. In both cases, the decision used for payment was the one in which the counterpart was next in the corresponding ranking.

[5]Subjects acknowledge the importance of math skills irrespective of their school or status. The distribution of opinions between "Strongly disagree", "Disagree", "Somewhat agree", "Agree", "Strongly Agree" differs neither across schools ($\chi^2(3) = 1.438$, $p = 0.696$), nor across statuses ($\chi^2(3) = 2.507$, $p = 0.474$).

that the students from the engineering school were the best at math.

The total payoff in the experiment was the sum of the payoffs made in the quiz about schools, in the dictator game, in the math quiz, in the trust game and in the expertise task.

3.2 Procedures

The experiment was developed using z-Tree (Fischbacher, 2007). All sessions were conducted at GATE-LAB, Lyon, France. We ran six sessions with 10 to 20 subjects each that were recruited using Hroot (Bock et al., 2014). In total, 100 subjects took part in the experiment: 60 from the Business school (Ecole de Management de Lyon) and 40 from the Engineering school (Ecole Centrale de Lyon). 46% of the subjects are females (42% of the subjects from the engineering school and 48% of those from the business school; proportion test, $p = 0.566$). The average age is 21.46 years (21.77 for the subjects from the engineering school and 21.25 for those from the business school; Mann-Whitney test, $p = 0.103$).

Upon arrival, subjects drew a tag from one of two opaque bags (one for each school) assigning them to a cubicle. The instructions for each part were distributed and read aloud by the same experimenter after completion of the previous part, except the instructions for the trust game and the expertise task that were distributed together (see Appendix 2). Before playing the trust game, subjects had to fill out a comprehension questionnaire. Questions were answered in private.

The average duration of sessions was 80 minutes. The average payoff was €14.35 (Min: €9.10, Max: €21.60, standard deviation, S.D. hereafter: 2.43). Payments were made in cash, in a separate room and in private.

3.3 Conceptual Framework and Conjectures

In the trust game, without social preferences there is a unique subgame perfect Nash equilibrium. The trustee has no incentive to return any amount to the trustor and the trustor anticipates this. Hence, both the trustor and the trustee send nothing. Empirically, however, behavior usually deviates from the SPNE, as trustors and trustees typically send non trivial amounts.[6] Moreover, studies using either artificial (e.g., Buchan et al., 2006) or natural identities (e.g., Etang et al., 2011) have shown that in-group favoritism affects both trust and trustworthiness. [7]

In our experiment, each subject is characterized both by the natural group identity confered by his school and by the status confered by the position of agent or expert, conditional on his relative performance at the math quiz. Hence, these two sources of group identity allow us to define four combinations. For the following two categories, the achieved status is consistent with the natural group identity. The "left behinds" are the subjects from the business school who have been assigned the status of agents, and the "expected experts" are the subjects from the engineering school who are experts. The two other categories capture two opposite forms of social mobility. We identify as "upwardly socially mobile individuals" ("upwardly mobile", hereafter) the subjects from the business school who have achieved the status of expert. Indeed, due to their education, they were less likely ex-ante to reach this status compared to the students from the engineering school. We assume that assigning them the position of experts captures the idea of a symbolic promotion to the higher status position. Last, "downwardly socially mobile individuals" are the subjects from the engineering school who have unexpectedly achieved the status of agents.[8] These denominations were not mentioned in the instructions. Table 1 characterizes the four categories obtained by the combination of the two sources of group identity.

To establish our conjectures, we refer to the notion of *similarity*. We define the similarity between two individuals as the number of group affiliations they share (0, 1, or 2), assuming for simplicity that school affiliation and status have the same impact on the definition of distance. A subject A who shares more affiliations with a subject B than with a subject C is said to be more similar to B than to C. Two

[6]In a meta-analysis, Johnson and Mislin (2011) found that trustors send almost half of their endowment and trustee return about 35% of the amount they received.

[7]Behavior in the trust game depends on social preferences and on the expectations about the counterpart's social preferences. For instance, Chen and Li (2009) showed that people are kinder to in-groups, and Goette et al. (2006) found that people expect more kindness from in-groups than from out-groups.

[8]Our experiment was designed to study upward social mobility. We only have nine downwardly mobile individuals. Thus, we leave the study of the impact of downward mobility for further research.

Natural identity / Status	Agent	Expert
Engineering school	Downwardly mobile (DM)	Expected expert (EE)
Business school	Left behind (LB)	Upwardly mobile (UM)

Table 1: The two sources of group identity

subjects who share both group affiliations are said totally similar. The notion of similarity allows us to rank the subjects: for instance, the left behinds are more similar to the upwardly mobile individuals than to the expected experts. The upwardly mobile individuals are more similar to the expected experts than are the left behinds.

We hypothesize that social mobility affects trust and trustworthiness through its impacts on the similarity between subjects. Based on most results in the literature using the dichotomy between in-groups and out-groups reviewed in section 2 and on studies on social distance (e.g., Charness and Gneezy, 2008) or parochialism (e.g., Bowles and Gintis, 2004; Bernhard et al., 2006), we conjecture that subjects who interact with a *totally similar* counterpart will exhibit a greater empathy for this counterpart and transfer more to him than to less similar subjects. We also conjecture that trustors matched with a *totally similar* counterpart expect more trustworthiness from him than from less similar subjects. Accordingly, we conjecture that subjects interacting with others who are not *totally similar* discriminate among them based on their level of similarity. This leads us to the four following conjectures.

Conjecture 1: Compared to left behinds, the upwardly mobile individuals send less to left behinds, both as trustors and as trustees.

The upwardly mobile individuals share their natural identity with the left behinds, but they achieved a different status. Conjecture 1 echoes the results from survey studies showing that upwardly mobile individuals, while still acknowledging their links with their background community, tend to have low concerns for left behinds (e.g., Kulich et al., 2015).

Conjecture 2: Compared to left behinds, the upwardly mobile individuals send more to expected experts, both as trustors and as trustees.

Because they share the same status with the expected experts, the upwardly mobile individuals are more similar to them than are the left behinds. Conjecture 2 is consistent with studies in social psychology showing that individuals who feel at risk relative to their inclusion in a given social group tend to behave more prosocially toward the members of this group (Derfler-Rozin et al., 2010).

Conjecture 3: Compared to left behinds, the upwardly mobile individuals receive higher amounts from expected experts, both as trustors and as trustees.

Conjecture 3 reflects the fact that the expected experts are more similar to upwardly mobile individuals than to left behinds.

Conjecture 4: Compared to left behinds, the upwardly mobile individuals receive lower amounts from left behinds, both as trustors and as trustees.

Conjecture 4 is consistent with the fact that the left behinds might express lower concerns for upwardly mobile individuals and infer that upwardly mobile individuals are less likely to be trustworthy (Branscombe et al., 1993).

4 Results

We first present summary statistics about status, social preferences, trust and trustworthiness (4.1). Then, we expose our results on the behavior of upwardly mobile subjects (4.2) and on behavior towards upwardly mobile subjects (4.3).

4.1 Summary statistics

Status Status was assigned via the math quiz. The average number of correct answers in the math quiz is 5.92 (Min: 1, Max: 13, S.D.: 2.40). As expected, this number is significantly higher for the subjects from the engineering school

(7.35) than for those from the business school (4.96) (t-test: $p < 0.001$).[9] The lowest performance for an expert from the engineering school (the business school, respectively) is 5 (4, resp.), and the best performance is 13 (7, resp.). On average, the number of correct answers is 7.26 for the experts and 3.9 for the agents (t-test: $p < 0.001$).

By design, 60 subjects achieved the status of experts. The probability to reach this status is 0.77 for a subject from the engineering school and 0.48 for a subject from the business school (Fisher's exact test: $p = 0.004$). Among the 40 subjects from the engineering school, 31 became experts (expected experts) and 9 failed to do so (downwardly mobile individuals). Among the 60 subjects from the business school, 29 became experts (upwardly mobile individuals) and 31 did not (left behinds). In eight groups out of 20, there is more than one mobile subject (one with three mobile subjects and seven with two mobile subjects).[10]

Social preferences We elicited social preferences by letting subjects play dictator games with a receiver either from the same school or from the other school. On average, dictators transfer 2.46 to a receiver from the same school and 1.55 to a receiver from the other school (Wilcoxon signed-rank test, W hereafter: $p < 0.001$). In-group favoritism is observed in both schools (these numbers are respectively 2.47 and 1.58 for the dictators from the business school (W: $p < 0.001$), and 2.45 and 1.5 for the dictators from the engineering school (W: $p < 0.001$)). The transfers to a receiver from the same school do not differ across schools (Kolmogorov-Smirnov test, KS hereafter: $p = 0.979$, Mann-Whitney, M-W hereafter: $p = 0.997$)). Transfers do not differ either when the receiver is from the other school (KS: $p > 0.999$, M-W: $p = 0.895$). Finally, we checked that upwardly mobile individuals and left behinds do not differ before status is awarded in terms of social preferences. Their transfers do not differ, regardless of whether the receiver is from the same school (KS: $p > 0.999$, M-W : $p = 0.975$), or from the other school (KS: $p > 0.999$, M-W

[9] All the tests are two-sided and take each individual as one independent observation.

[10] Note that the distributions of performance of experts and agents from the business school overlap. Figure 5.1 in Appendix 5 depicts the distribution of performances in the math quiz of the subjects from the business school, by status. This is due to the fact that status was awarded within the sub-samples of five subjects and not at the session level. The advantage is that performance at the task is not a perfect predictor of status, which is interesting for identification purposes.

: $p = 0.614$).

Trust and Trustworthiness Table 2 displays summary statistics about trust, trustworthiness and beliefs, for the whole sample of subjects, by school and by status. The average transfer by trustors is 3.17 ECU (S.D.: 2.96). Transfers do not differ across schools (2.75 for the engineering school and 3.45 for the business school. K-S: $p = 0.223$, M-W: $p = 0.199$).[11] Regarding beliefs, trustors guess that the trustees will return on average 21.65% of what they received. Beliefs do not differ across schools (23.30% for the engineering school and 21.74% for the business school. K-S: $p = 0.911$, M-W: $p = 0.809$). Trustees return on average 16.91% of what they received (S.D.: 19.03). Trustworthiness does not differ across schools either (15.89% for the engineering school and 17.60% for the business school. K-S: $p > 0.999$, M-W: $p = 0.582$). Table 2 also indicates that there is no significant difference in trust, beliefs and trustworthiness between agents and experts from either school.

Let us now consider in-group favoritism. Pooling both schools, the average amount sent to a trustee from the same school is 3.37 ECU and the average amount sent to a trustee from the other school is 3.11 ECU (W: $p = 0.135$). Considering each school separately shows evidence of an asymmetrical in-group bias in trust: trustors from the engineering school send more to trustees from the engineering school than to out-groups (3.30 ECU *vs.* 2.56, W: $p = 0.011$), whereas trustors from the business school send similar amounts to in-group and out-group trustees (3.42 ECU *vs.* 3.47, W: $p = 0.929$). The same asymmetry is found in beliefs. Trustors from the engineering school expect a higher return from their in-group trustees than from their out-group trustees (28.62 ECU *vs.* 21.53, W: $p = 0.005$), whereas trustors from the business school expect similar returns from both types of trustees (20.15 ECU *vs.* 23.33, W: $p = 0.896$).[12]

In contrast, the in-group favoritism in trustworthiness is symmetric across

[11] For this non-parametric test we average for each individual all his decisions of a trustor, so that each subject gives one independent observation.

[12] Note that this asymmetry is not problematic for our analysis since we focus on the comparison between the upwardly mobile subjects and the left behinds. The specific structure of the in-group bias is irrelevant from that respect.

	Aggregate (1)	Agents (2)	Experts (3)	$p - value$ (2)-(3)
Trust (mean amount sent)				
Business school	3.45 (3.00)	3.74 (2.83)	3.13 (3.20)	0.244
Engineering school	2.75 (2.89)	2.91 (2.61)	2.70 (3.01)	0.646
$p - value$	0.199	0.426	0.647	-
Trustworthiness (mean % of the tripled amount received that is returned)				
Business school	17.60 (19.52)	16.58 (16.61)	18.69 (22.46)	0.957
Engineering school	15.89 (18.65)	14.06 (14.95)	16.42 (19.78)	0.826
$p - value$	0.582	0.655	0.742	-
Beliefs (mean % of the tripled amount expected in return)				
Business school	21.74 (21.95)	20.32 (21.95)	23.25 (22.24)	0.665
Engineering school	23.30 (21.43)	25.33 (24.86)	22.71 (20.75)	0.908
$p - value$	0.809	0.732	0.976	-

Notes: Standard deviations are in parentheses. The $p - values$ in the last column are from M-W tests comparing agents and experts. The $p - values$ in lines are from M-W tests comparing subjects from the two schools. The average of decisions of each subject gives one independent observation.

Table 2: Summary statistics on trust, trustworthiness and beliefs, by school and status

schools: trustees from both schools return more to trustors from the same school than to trustors from the other school (18.62 ECU *vs.* 15.80, W: $p < 0.001$).

4.2 Behavior of the Upwardly Mobile Individuals

In this section, we focus on the behavior of the upwardly mobile subjects in the trust game. We introduce our first result:

Result 1: Compared to left behinds, upwardly mobile individuals trust less left behind trustees. They do not trust more expected experts than left behind trustors do.

Result 1 supports Conjecture 1, but not Conjecture 2.

Support for Result 1: Figure 1 plots the average amount sent by the trustors from the business school, depending on whether the trustor is upwardly mobile or not. The left panel focuses on the matches with trustees from the business school and the right panel on the matches with trustees from the engineering school. On average, the left behind trustors send 3.83 ECU (S.D.: 2.94) to trustees from the business school, while the upwardly mobile trustors send 2.98 ECU (S.D.: 3.40, M-W: $p = 0.123$). On average, the left behinds send 3.64 ECU to trustees from the engineering school (S.D.: 3.25), and the upwardly mobile individuals send 3.29 ECU (S.D.: 3.41, M-W: $p = 0.497$). These differences are not significant. The pattern does not change if we only consider the transfers to expected experts: on average, the left behind trustors send 3.79 ECU to expected expert trustees (S.D.: 3.41), while the upwardly mobile trustors send them 3.00 ECU (S.D.: 3.47) (MW: p=0.223).

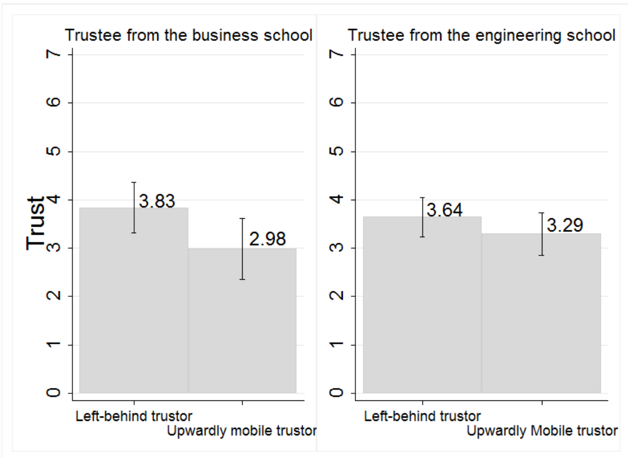

Figure 1: Average amount sent by trustors from the business school, by trustor's status and trustee's school.

Note: The vertical lines represent standard errors.

The non-parametric tests are inconclusive but these comparisons do not control for beliefs and individual characteristics. Table 3 reports marginal effects from Tobit regressions explaining the trusting decisions of subjects from the business school. We use Tobit models since data are censored, and robust standard errors are clustered at the individual level since each trustor makes several decisions.

Model (1) pools the observations of all possible matches. The independent variables include dummy variables for each category of match, taking the left behind trustors matched with a left behind trustee as the reference category. They include the amount the trustor expects to receive in return, social preferences toward in-groups and out-groups, risk attitudes, and gender. We include the performance in the math quiz as a proxy for higher intellectual abilities, because previous studies have suggested that more intelligent people trust more (e.g., Corgnet et al., 2016). We add a dummy variable indicating that the trustor somewhat or strongly disagrees with the statement about the importance of math skills, as it could capture a negative perception of the legitimacy of the selection of experts. Finally, session fixed effects are included.

In model (2), we restrict the observations to the cases in which the trustor is matched with a trustee who is also from the business school. We drop from the independent variables the categories of matches involving trustees from the engineering school. In model (3), we restrict the observations to the cases in which the trustor is matched with a trustee from the engineering school. We also drop from the independent variables the categories including upwardly mobile trustees. In this model, the reference category is the left behind trustors matched with an expected expert trustee.

Overall, these regressions show that upward social mobility reduces trust, but only toward left behind trustees.[13] Indeed, upwardly mobile trustors trust significantly less (at the 5% level) when matched with a left behind trustee, compared to left behind trustors (see models (1) and (2)). Model (3) indicates that they do not trust more the expected expert trustees from the engineering school than the left behind trustors.[14] We also observe that trustors send more when they expect a higher return, which replicates previous findings in the literature. Most

[13]Additional Tobit regressions, reported in Table 6.1 in Appendix 6, in which the dependent variable is the trustors' belief about the percentage returned by the trustee indicate that the effect of upward mobility on trust is not driven by differences in beliefs. Indeed, the beliefs of the upwardly mobile individuals do not differ significantly from those of the left behinds. Differences in risk attitudes cannot explain either the differences in trust. The mean measure of risk attitudes is 5.06 (S.D.: 2.44) for the left behinds and 5.48 for the upwardly mobile individuals (S.D.: 2.16); the difference is not significant ($t - test$, $p = 0.48$).

[14]Models (1) and (3) indicate that left behind trustors trust significantly less downwardly mobile trustees but this corresponds to only seven observations.

Table 3: Trust by subjects from the business school.

	Tobit models					
	(1)		(2)		(3)	
	Trust		Trust		Trust	
Beliefs about the amount returned	0.057***	(0.015)	0.058***	(0.018)	0.058***	(0.016)
UM trustor and UM trustee	-1.382	(1.398)	-1.345	(1.360)	-	-
UM trustor and LB trustee	-2.584**	(1.218)	-2.632**	(1.203)	-	-
UM trustor and EE trustee	-2.515**	(1.144)	-	-	-1.892	(1.167)
UM trustor and DM trustee	-1.009	(1.344)	-	-	-0.456	(1.448)
LB trustor and UM trustee	-0.509	(0.690)	-0.536	(0.638)	-	-
LB trustor and EE trustee	-0.540	(0.684)	-	-	-	-
LB trustor and DM trustee	-2.358**	(0.927)	-	-	-1.834**	(0.777)
Transfer in the DG, same school	0.120	(0.313)	0.214	(0.318)	0.026	(0.330)
Transfer in the DG, other school	0.675**	(0.341)	0.532	(0.338)	0.798**	(0.360)
Female	0.149	(0.835)	-0.178	(0.872)	0.549	(0.914)
Risk attitude[a]	-0.187	(0.178)	0.054	(0.197)	-0.440**	(0.212)
Math quiz performance	0.010	(0.301)	0.013	(0.312)	0.028	(0.363)
Perception math[b]	1.095	(0.889)	1.090	(0.877)	1.132	(0.955)
Session F.E.	YES		YES		YES	
N	240		120		120	
Pseudo R^2	0.118		0.131		0.122	
Log pseudolikelihood	-499.255		-246.741		-247.473	
F	3.62		3.72		3.97	
$p > F$	< 0.001		< 0.001		< 0.001	

Notes: Marginal effects are reported. Robust standard errors clustered at the individual level are in parentheses. ** $p < 0.05$, *** $p < 0.01$. (1) Trustees from the business school and from the engineering school pooled, (2) Trustees from the business school only, (3) Trustees from the engineering school only.

The reference category in models (1) and (2) corresponds to left behind trustors matched with a left behind trustee; in model (3), it is a left behind trustor matched with an expected expert trustee. UM for upwardly mobile (business school), LB for left behind (business school), EE for expected experts (engineering school), and DM for downwardly mobile (engineering school). (a) For risk attitudes, a higher number indicates less risk aversion. (b) Dummy indicating that the trustor chose "strongly disagree" or "disagree" about the statement *"It is important to have good mathematical skills"*.

of the other independent variables are not significant, except that more generous subjects in the dictator game when matched with an out-group trust also more when matched with an out-group.

Result 2: Upward mobility does not impact trustworthiness, regardless of the trustor's identity.

Support for Result 2: Compared to left behind trustees, the upwardly mobile trustees do not return less to left behind trustors and more to expected expert trustors. This result rejects Conjectures 1 and 2. Figure 2 displays the average percentage of the transfer received that is returned by trustees from the business school, depending on whether the trustee is upwardly mobile or not. The left panel focuses on the matches with trustors from the business school, the right panel on the matches with trustors from the engineering school. On average, the left behind trustees return 18.43% of the amount received to trustors from the business school (S.D.: 17.71) and the upwardly mobile trustees return 19.55% (S.D.: 23.07, M-W: $p = 0.945$). On average, the left behind trustees return 14.72% (S.D.: 17.13) to trustors from the engineering school and the upwardly mobile trustees return 17.84% (S.D.: 22.03, M-W: $p = 0.737$). No difference is significant. Again, the pattern is similar if we only consider the returns to expected expert trustors: on average, the left behind trustees return 14.69% to the expected expert trustees (S.D.: 17.15), while the upwardly mobile trustees return 17.81% (S.D.: 22.49) (MW: p=0.798).

In Appendix 6, Table 6.2 presents the results of regressions that estimate Tobit models in which the dependent variable is the percentage of the amount received that is returned by the trustee, for trustees from the business school. For each interaction, we average the percentages returned for the different possible amounts received. The independent variables are the same as in the regressions on trust, except that we replaced the beliefs about returns by the amount transferred by the subject when acting as a trustor with the same counterpart. These regressions show that even when controlling for covariates, the trustee's upward mobility does not impact his trustworthiness.

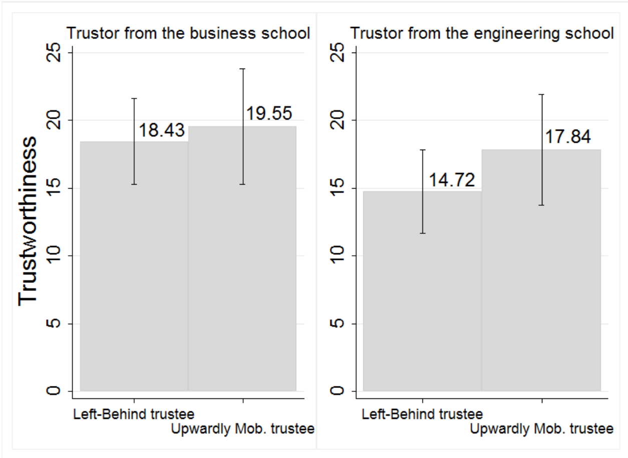

Figure 2: Average percentage of the transfer that is returned by trustees from the business school, by trustee's status and trustor's school.

4.3 Attitudes Toward Upwardly Mobile Individuals

In this section we compare the behavior of subjects when they are matched with upwardly mobile individuals or with left behinds from the business school. This analysis leads to the following result:

Result 3: Subjects from either school do not condition their decision on whether their counterpart is upwardly mobile. This is observed for both trustors and trustees.

Conjectures 3 and 4 predicted that upwardly mobile individuals would receive more trust and trustworthiness from expected experts, and less trust and trustworthiness from left behinds. We find no evidence supporting these conjectures.

Support for Result 3: On average, upwardly mobile trustees receive 3.10 ECU (S.D. : 3.44), while left behinds receive 3.09 ECU (S.D.: 3.14, Wilcoxon test - W, hereafter: $p = 0.771$). Figure 3 displays the average trust directed to trustees from the business school and separates upwardly mobile and left behind trustees. The left panel focuses on the matches with trustors from the business school. On average, the upwardly mobile trustees receive 3.72 ECU from trustors from the business school (S.D.: 3.47) and the left behind trustees receive 3.29 ECU (S.D.: 3.80, W: $p = 0.575$). The right panel focuses on the matches with trustors from the engineering school. On average, the upwardly mobile trustees receive 2.56 ECU (S.D.: 3.11) and the left behinds receive 2.55 ECU (S.D.: 2.74, W: p = 0.802). No pairwise difference is significant. The conclusion is similar if we restrict the analysis to the expected expert trustors: on average, they send 2.54 ECU (S.D.: 2.81) to left behind trustees and 2.45 (S.D.: 3.19) to upwardly mobile trustees (W: p=0.521).

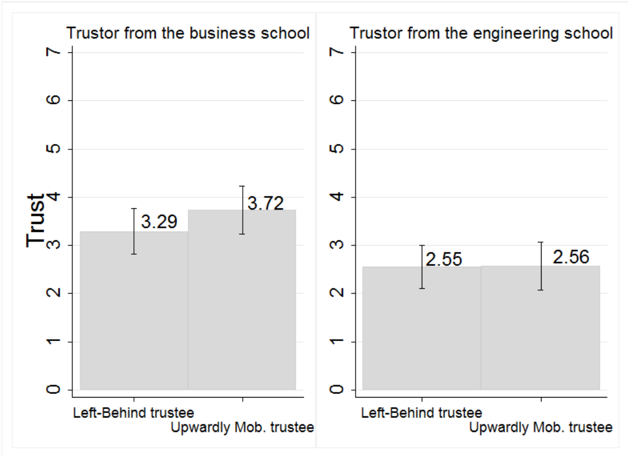

Figure 3: Average transfers to trustees from the business school, by trustee's status and trustor's school.

The same holds for trustworthiness. Figure 4 represents the average percentage of the amount received from trustors of the business school that is returned by the tustees. While, on average, left behind trustors receive back 15.69% of the tripled amount sent (S.D.: 18.12), upwardly mobile trustors receive 16.16% of this amount (S.D.: 18.4, W: p = 0.544). The left panel focuses on the matches with trustees from the business school. On average, the left-behind trustors receive 18.37% (S.D.: 20.86) from trustees from the business school, and the upwardly mobile trustors receive 17.66% (S.D.: 17.99, W: p = 0.685). The right panel focuses on the matches with trustees from the engineering school. On average, the left-behind trustors receive 15.09% (S.D.: 18.46) from trustees from the engineering school, and the upwardly mobile trustors receive 15.57% (S.D.: 19.23, W: p = 0.615). Again, no pairwise comparison reaches standard levels of significance and the conclusion remains the same if we only consider the expected expert trustees who, on average, return 15.25% (S.D.: 19.36) to left-behind trustors and 16.20% (S.D.:

16.20) to upwardly mobile trustors (W: p=0.767)

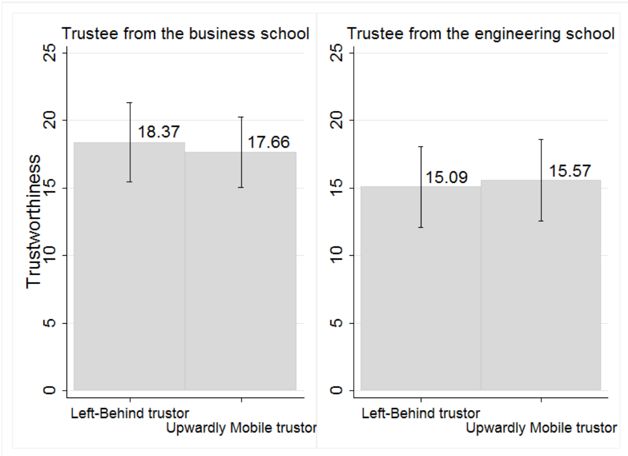

Figure 4: Average percentage of the amount received returned to trustors from the business school, by statuts of the trustor and school of the trustee.

In Appendix 6, Table 6.3 presents the estimates of Tobit models in which the dependent variable is either the amount sent by the trustor or the percentage returned by the trustee. They show that, even when controlling for covariates, the attitudes toward upwardly mobile subjects, either in the position of trustor or in the position of trustee, do not differ from the attitudes toward left behinds.

5 Discussion and Conclusion

In this paper, our objective was to test experimentally the effect of upward social mobility on the trust and trustworthiness of socially mobile individuals and of others toward these individuals. We found very limited evidence that trust and trustworthiness are affected by upward social mobility, defined in our experiment by the assignment of a position of expert to members of a natural group that is ex ante less likely to access this position compared to another natural group. The socially mobile individuals who reached the status of expert are as trustworhty and are not treated differently, in terms of trust or trustworthiness, than the other members of their natural group.

The only statistically significant effect identified is that the upwardly mobile subjects tend to trust less left behinds from their natural group, controlling for risk attitudes, beliefs and social preferences. This is not consistent with the interpretation in terms of similarity or social distance that we developed in our predictions section. Indeed, if upwardly mobile subjects become less similar to left behinds when they climb the status ladder, upward mobility does not impact trustworthiness: upwardly mobile individuals are as trustworthy as left behinds toward the left behinds. An alternative interpretation is in terms of betrayal aversion (Aimone and Houser, 2012; Bohnet et al., 2008): although they hold the same beliefs about the return to trust, the upwardly mobile individuals may expect to suffer more than the left-behinds if their trust in their natural in-groups is betrayed, and thus they trust them less, all else equal. This explanation echoes previous findings linking higher status to stronger betrayal aversion (Hong and Bohnet, 2007). Betrayal aversion is relative to emotion regulation. Thus, emotional experience rather than social preferences (since trustworthiness is not affected) could mediate the effect of upward mobility on interpersonal trust.

To sum up, the good news is that in our setting socially mobile individuals are still trusted by in-groups and out-groups who did not benefit from this mobility, and they remain as trustworthy as their in-groups. The bad news is that socially mobile individuals become less trusting. If our interpretation in terms of betrayal aversion is correct, this suggests the importance of accompanying social mobility by interventions to increase trusting behavior.

Of course, we must remain cautious before extrapolating our findings. Our design of social mobility is specific. First, being only based on performance in a quiz, the assignment of the status of expert is fair and transparent, whereas in real settings promotion processes are sometimes fuzzy or discretionary. This may potentially alter the relationships of the socially mobile individuals with others, as procedural fairness impacts social preferences (e.g., Bolton et al., 2005). Second, in our experiment, when subjects were performing the quiz, they could not anticipate that their relative performance would be used to assign positions of experts and agents. The purpose was to limit selection into mobility on traits such as greed or preference for status, and to identify the causal effect of upward mobility on trust. In contrast, in real settings those who achieve social mobility are more likely to be attracted by competition, power and status compared to others. These preferences might affect the way upwardly mobile individuals treat others. For instance, Bartling et al. (2009) show that more competitive individuals are less egalitarian. These preferences may also affect how upwardly mobile individuals are perceived and thus, how much trust they inspire. Last, in contrast to our experiment which abstracts from income inequality, in real settings status inequality often comes with income inequality, which can also impact behavior toward mobile individuals (e.g. Lei and Vesely, 2010). The anecdotal evidence showing that socially mobile individuals face sometimes the risk of being rejected by their in-groups could result from these other considerations associated with upward mobility.

From a methodological point of view, we can also discuss about the procedures that was used to induce social mobility in the lab. Our subjects had both a natural affiliation and a lab-induced status. It could be that the school affiliation is so strong (which is supported by the in-group favoritism revealed by the dictator games) that the status induced was comparatively weak, and thus had a negligible impact on behavior. We doubt that this is the explanation of the observed behavior since we confirmed the importance of math for the students and we found that upward social mobility reduced trust in non-mobile in-groups. However, we cannot exclude that our design may have induced status asymmetrically: upwardly mobile individuals may have perceived their status as specific, but others did not.

Several interesting research directions could be explored. In particular, it would be important to study the impact of downward mobility on trusting behavior since social demotion is a rising concern in modern democracies. Moreover, upward and downward mobility are often intertwined: one's promotion leads to someone else's demotion: how does this affect behavior toward upwardly and downwardly mobile individuals? It would be also interesting to allow subjects to opt-in or opt-out of the promotion process to measure how selection into mobility affects trust toward mobile individuals. This opens an avenue for a new research program.

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Appendix 1 Timeline of the experiment

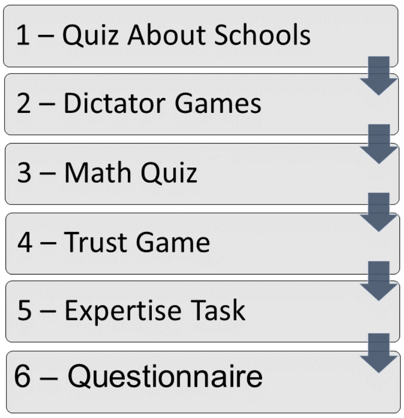


Figure 1.1: Timeline of the experiment

Appendix 2 Instructions *(Translated from French)*

We thank you for participating in this experiment on decision-making. Please switch off you cellphone and put it away. You are not allowed to communicate with the other participants, unless otherwise instructed by an experimenter.

During the session, if you have any question you can press the red button on the side of your cubicle. An experimenter will come and answer to your questions in private. During the session, you will have to make several decisions anonymously. These decisions can earn you money. Your earnings will be expressed in Experimental Currency Units (ECU) and converted into Euros at the following rate:

5 ECU = €1

You will be paid in private, in a separate room and in cash. Other participants will not be informed of your earnings.

The session consists of several parts. At the end of each part, you will receive the instructions for the next part. In this experiment, participants are students from the Ecole Centrale de Lyon and from the Ecole de Management de Lyon. We call participants from the Ecole Centrale "Centraliens" and participants from the Ecole de Management "Emiens". Please make sure that the logo displayed on your computer screen corresponds to your school.

2.1 Part 1

In the first part, you have to answer individually to a quiz about your school. 6 multiple choice questions will be displayed on your screen. For each question, you have to choose an answer and validate by pressing the OK button. Once you have pressed the ok button, your answer is recorded and you proceed to the next question. You have 4 minutes to answer to the 6 questions.

In order to get help to answer to the questions, you can use a chatbox, displayed on the right part of the screen. You can communicate only with the participants from the same school as you and exclusively through the chatbox. Communication is anonymous. You can send any message, provided that these messages do not identify you and are not offensive.

In this part, you will earn a fixed payoff of 5 ECU and a variable payoff that depends on your answers. Each correct answer pays you 2.5 ECU. In addition, each participant from the school whose participants in the session gave the highest number of correct answers earns an extra 5 ECU.

You will be informed of your number of correct answers, of the school which participants gave the highest number of correct answers and of your payoff in this part at the end of the session.

***** Please read these instructions again. If you have any question, press the call button on the side of your cubicle *****

2.2 Part 2

This part involves person A and person B.

Person A receives an endowment of 10 ECU. He has to decide which amount, between 0 and 10 ECU inclusive, he is willing to transfer to person B. He keeps for himself the amount he did not transfer.
Person B does not receive any endowment. He earns the amount that person A transfers to him. He has no decision to make.
Each participant makes two decisions successively as a person A : in one decision, person B is a student from Ecole Centrale de Lyon; in the other decision, person B is a student from Ecole de Management de Lyon.

At the end of the session, the computer program will randomly match you to two other participants. For one of these matches, you will be paid for your decision as person A; for the other match, you will be payed in the role of person B. The program selects randomly the match for which your decision as person A determines your payoff.

1. As a person A, it is your decision that determines your payoff and the payoff of the person B.
2. As a person B, it is the decision of the person A you are matched with that determines your payoff and his payoff.

You will be informed of your payoff in this part at the end of the session.

***** Please read these instructions again. If you have any question, press the call button. *****

2.3 Part 3

In this part, the computer program forms randomly groups of five participants. In each group, two participants are from Ecole Centrale de Lyon and three participants are from Ecole de Management de Lyon.

You have to answer individually to multiple choice mathematical questions. You have to select an answer and validate it by pressing the OK button. Validation is definitive. You can use the paper sheets and pen that have been provided to you. You are not allowed to use your cellphone to help you solve the questions, otherwise you expose yourself to exclusion from the session and from the payoffs. Every participants in the session receive the same questions in the same order.

You have 15 minutes to answer to the questions.

For your participation in this part, you earn a fixed payoff of 5 ECU and a variable payoff. The computer program will randomly select one participant in each group of five participants. The number of correct answers of this participant will determine the variable payoff of each member of his group. Each correct answer of this participant increases the payoff of every member of his group, including himself, by 1 ECU.

You will be informed of your number of correct answers and of your payoff in this part at the end of the session. In addition, your relative performance in this part will condition your role in the next part.

***** Please read these instructions again. If you have any question, press the call button. *****

2.4 Part 4

The previous part was used by the computer program to identify two types of participants who will have different roles in what follows.

1. Experts are participants who gave the highest number of correct answers in the third part within their group of five participants. In each group of five, there are three experts.
2. Agents are the participants who are not experts. In each group of five persons, there are two agents.

You are informed whether you are an agent or an expert at the beginning of the fourth part. This part consists in two stages.

2.4.1 Stage 1

In this stage, the composition of the groups of five is the same as in the third part. This stage consists in eight successive games. In each game, you are paired with a different member of your group. You are informed of the school and role (expert or agent) of the other member of the pair.

In each pair, a participant is a participant A and the other one is a participant B. The sequence in each game is the following :

1. Participant A makes a decision.
2. When making his decision, participant B does not know the decision made by participant A. Participant B has to make a decision for each potential decision made by participant A.

In the first four games, you have the role of person A and you interact with the four other members of the group in the role of person B.

In the last four games, you have the role of person B and you interact with the four other members of the group who will have the role of person A.

At the end of the session, the computer program will randomly select one of your decisions in the role of person A and one of your decision in the role of person B. Your payoff in each of these two games will be added-up to determine your payoff in this part.

Description of each game:

1. Participant A and participant B receive an endowment of 10 ECU each.
2. Participant A chooses the amount he is willing to send to participant B. Participant A can send from 0 to 10 ECU, inclusive.
3. Each ECU sent to participant B is multiplied by 3 by the computer program. For example, if participant A sends 2 ECU, participant B receives 2x3=6 ECU ; if he sends 4 ECU, participant B receives 4x3=12 ECU.
4. Then, participant B chooses the amount he is willing to return to participant A. This amount is between 0 and three times the amount sent by participant A, inclusive.

When choosing the amount to return to participant A, participant B does not know the amount sent by participant A. Participant B has to choose the amount he is willing to send back to participant A for each amount participant A potentially sent to him. For each amount potentially sent by participant A, participant B can return any amount between 0 and 3 times this amount (because he received this amount multiplied by 3). For example, if participant A sent 2 ECU, participant B can send back any amount, between 0 and 6 ECU, inclusive. If participant A sent 5 ECU, he can send back any amount, between 0 and 15 ECU, inclusive.

When choosing which amount to send to participant B, participant A has to indicate which proportion of the amount received by participant B he expects to receive in return. A guess equal to the actual amount more or less 5 percents pays an extra 5 ECU.

Determination of payoffs For each game selected for payment, the computer program takes into account the decision of Participant A. Then, the program selects among participant B's return decisions the one that corresponds to the amount actually sent by participant A.

For each game selected for payment in this stage, participant A's payoff is computed as follows:

Payoff of participant A = 10 - amount sent to participant B + amount sent back by participant B

Participant B's payoff is computed as follows:

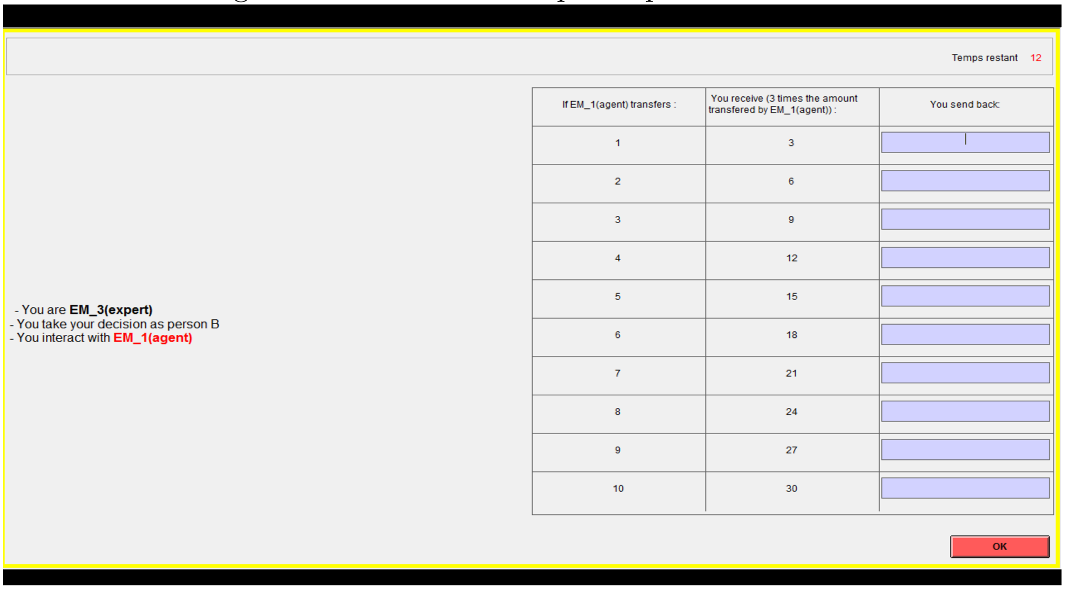
Payoff of participant B =10 + 3*amount sent by A - amount sent back to A

The following figure represents the screenshot for the decision of a participant A. On this screen, you have to indicate the amount you are willing to send to participant B and the proportion of the amount received you guess you will receive in return.

Figure 2.2: Screenshot of participant A's decision.

The following figure represents the screenshot for the decisions of a participant B. The first column indicates each amount potentially sent by A. The second column displays each corresponding tripled amount you can potentially receive. In the third column you have to enter on each line the amount you decide to send back to participant A, between 0 and the tripled amount indicated in the second column.

Figure 2.3: Screenshot of participant B's decisions.



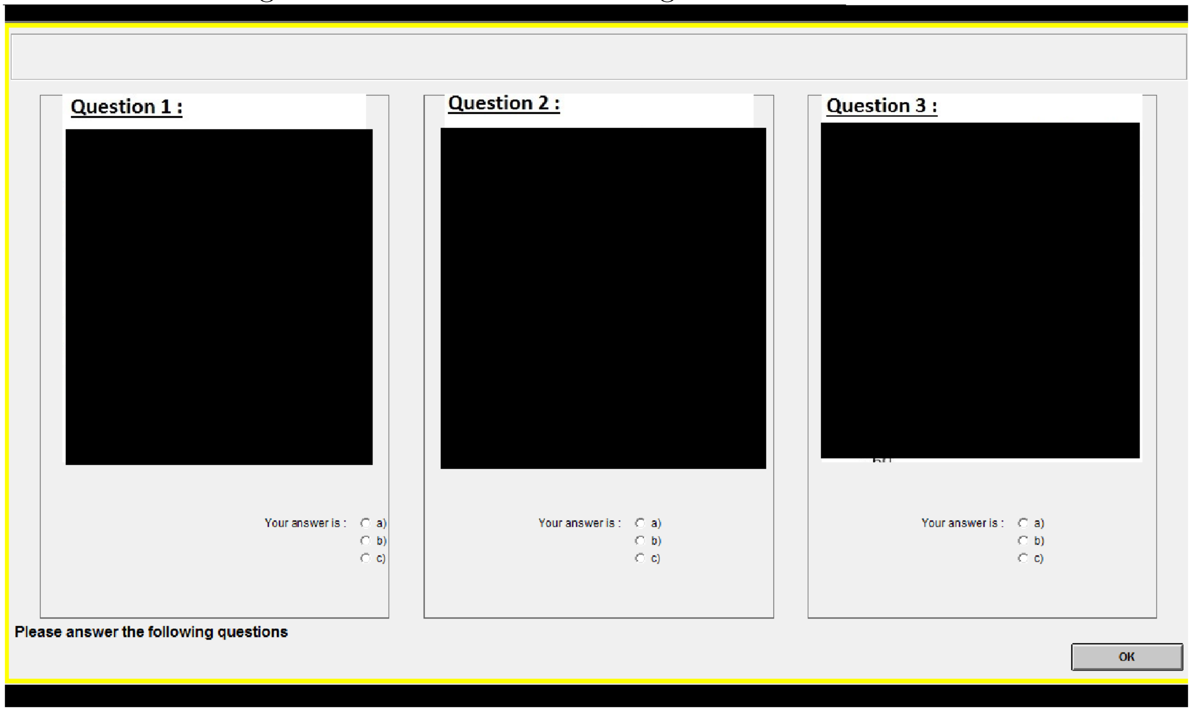
2.4.2 Stage 2

In the second stage, decisions are no longer made within the five person group, but at the session level.

Agents and experts have different roles. Agents have to answer to three multiple choice maths questions. Each agent receives the three same questions. Experts are informed of the distribution of the agents' answers; then, they have to decide which question will be used to determine everybody's payoff in this part.

The following screenshot represents the agents' decision screen.

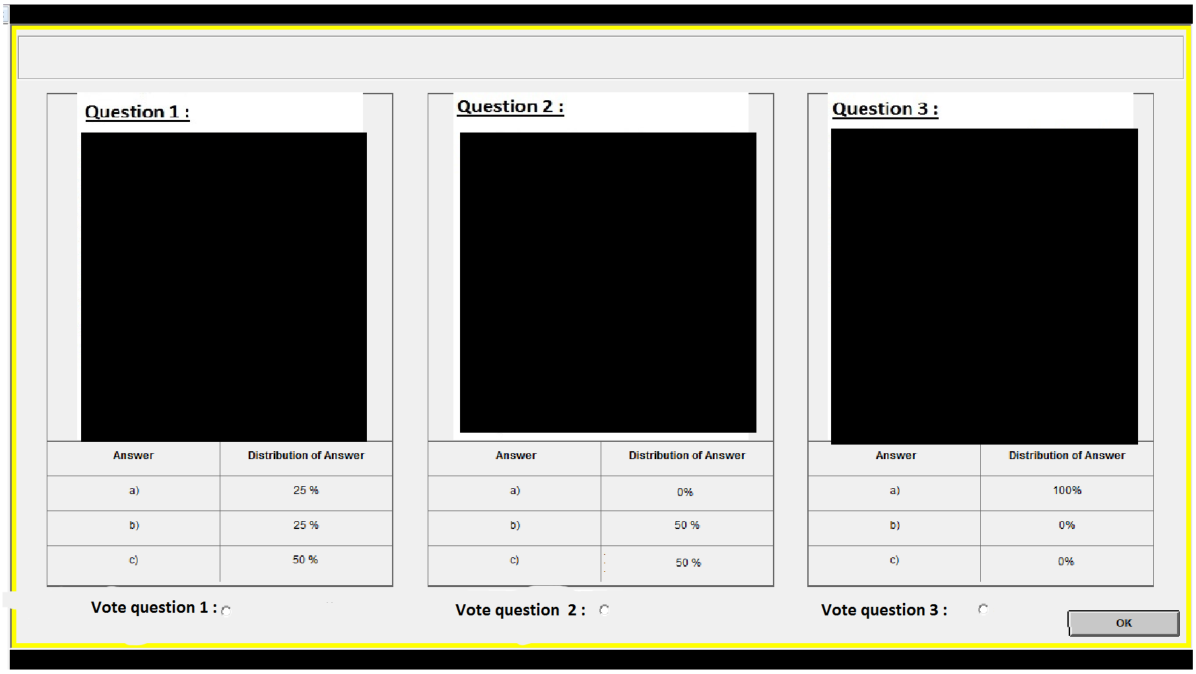
Figure 2.4: Screenshot of the Agents' decisions



Once all the agents have submitted their answers, the experts can see the questions and the distribution of the answers for each question. Experts have to chose which question will be used to determine the payoff of each participant in the session for this stage, regardless of their role of agent or expert. To do so, they vote for one of the questions. The number of correct answers to the question that has received the highest number of votes from the experts in the session determines each participant's payoff in this stage.

The following screenshot represents the experts' decision screen.

Figure 2.5: Screenshot of the Experts' decision



The payoff in ECU of each participant in this stage is equal to the percentage of correct answers to the selected question, multiplied by 10. For instance, if the experts choose question 1 and that 50% of the agents gave the correct answer to this question, each participant in the session earns 5 ECU (50%*10 =5).

***

At the beginning of this part, you will be informed on whether you are an expert or an agent. You will receive a unique identifier in your group of five persons in the form: School_i(expert) or School_i(agent). Then, you will have to fill out a check questionnaire that will be displayed on your screen, then stage 1 will start.

***

At the end of this part, you will be informed of your performance and of your payoffs in the different parts of the experiment. At the end of the session, several questionnaires will be displayed on your screen. We remind you that your answers are anonymous. Once you have filled these questionnaires, please remain seated and silent. When you are called to the payment room, bring with you only your computer tag and your payment receipt. Please, leave the instructions, pen and papers on your desk.

** Please read these instructions again and if you have questions, press the call button. **

Appendix 3 Quiz relative to schools used in Part 1 *(Translated from French)*

Business school

Question 1 How many students are there at EM Lyon?

1. Around 1000
2. Around 2000
3. Around 3000
4. Around 4000

Question 2 According to the ranking by "L'etudiant",[15], what is the rank of EM Lyon among the French business schools?

1. Third rank
2. Fifth rank
3. Tenth rank
4. Beyond tenth rank

Question 3 Among the following famous people, which one is an alumni from EM Lyon?

1. Nagui
2. Stéphane Bern
3. Christophe Dechavanne
4. Julien Courbet

Question 4 When was EM Lyon founded?

1. 1753
2. 1872
3. 1917
4. 1932

Question 5 What is the average grade at Baccalaureat[16] of the students at EM Lyon?

1. 15
2. 15.5
3. 16.5
4. 17.5

Question 6 What is the average yearly salary of the students from EM Lyon in their first position after graduation?

1. Less than €30 000
2. Between €30 and €35 000
3. Between €35 and €40 000
4. More than €40 000

[15] L'Etudiant is a magazine about higher education that is widely read by students.
[16] In France, Baccalaureat is the exam passed at the end of the high school.

Engineering school

Question 1 How many students are there at ECL?

1. Less than 1000
2. About 1500
3. About 2000
4. About 2500

Question 2 According to the ranking by "L'etudiant", what is the rank of ECL among the French engineering schools?

1. Less than tenth
2. Between tenth and fifteenth
3. Between fifteenth and twentieth
4. Beyond twentieth

Question 3 Among the following famous people, which one is an alumni from ECL?

1. Jean Mermoz
2. Paul-Emile Victor
3. Jacques-Yves Cousteau
4. Nicolas Hulot

Question 4 When was ECL founded?

1. 1753
2. 1857
3. 1912
4. 1934

Question 5 What is the average grade at Baccalaureat of the students at ECL?

1. 15
2. 16
3. 17
4. 18

Question 6 What is the average yearly salary of the students from ECL in their first position after graduation?

1. Less than 27 000€
2. Between 27 and 30 000€
3. Between 30 and 33 000€
4. More than 33 000€

Figure 3.1 shows a screenshot of the quiz about schools.

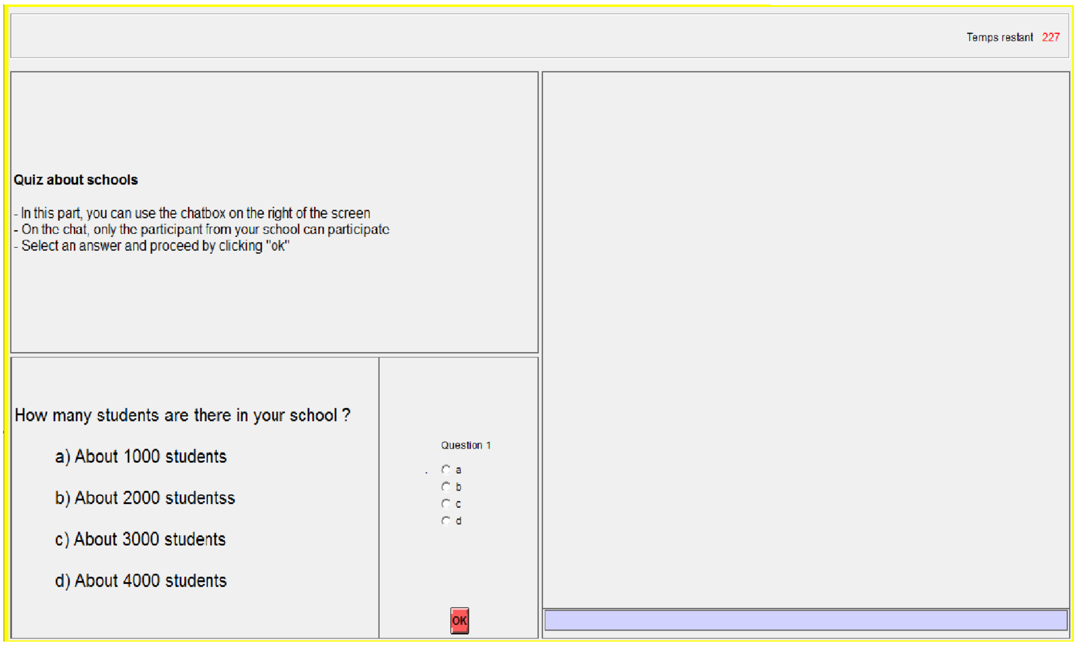


Figure 3.1: Example of a screenshot of the quiz about schools. The right panel is the chatbox.

Appendix 4 Math quiz used to assign positions of Agents and Experts in Part 3 *(Translated from French)*

1. a and b are two even integers. Which of the following is also an even integer?
   (a) $ab + 2$
   (b) $a(b - 1)$
   (c) $a(a + 5)$
   (d) $3a + 4b$
   (e) $(a + 3)(b - 1)$

2. $(x + 2)^2 = -4 + 10x$. What can be a value of x?
   (a) 2
   (b) 1
   (c) 0
   (d) -1
   (e) -2

3. Approximately, what percentage of the forest across the world is in Finland, knowing that Finland has 53.42 millions hectares of forest for a total of 8.076 billions hectares of forest worldwide?
   (a) 0.0066%
   (b) 0.066%
   (c) 0.66%
   (d) 6.6%
   (e) 66%

4. Figure 4.1 is a square. This square has sides that are 4 units long. What is the best approximation of the area of the circle?
   (a) π
   (b) 4
   (c) 8
   (d) 13
   (e) 16

5. An individual invests his money in stocks in the financial market. During the first year, the value of his stocks increases by 50%. During the second year, the value of his stocks decreases by 30%. What is the total variation of the value of his stocks in the period?
   (a) -5%
   (b) 5%
   (c) 15%
   (d) 20%
   (e) 80%

6. Assume that A, B, C are three statements such that C is true if exactly one of A or B is true. If C is false, then which of the following statement is necessarily true?
   (a) If A is true, then B is false
   (b) If A is false, then B is false
   (c) If A is false, then B is true
   (d) A and B are both true
   (e) A and B are both false

7. $(1 + i)^{10} =?$
   (a) 1
   (b) i

(c) 32

(d) $32i$

(e) $32(i+1)$

8. f is a real value function continuously differentiable, defined on the open interval $(-1,4)$ such that $f(3) = 5$ and $f'(x) \leq -1$ for all x. What is the greatest possible value of $f(0)$?

(a) 3

(b) 4

(c) 5

(d) 8

(e) 11

9. A drawer contains 2 pairs of blue socks, 4 pairs of red socks, 2 pairs of yellow socks. If we draw randomly two pairs of socks from this drawer, what is the probability that those two pairs are of the same color?

(a) $\frac{2}{7}$

(b) $\frac{2}{5}$

(c) $\frac{3}{7}$

(d) $\frac{1}{2}$

(e) $\frac{3}{5}$

10. If $F(x) = \int_e^x ln(t)dt$ for all x, then $F'(x) =?$

(a) x

(b) $\frac{1}{x}$

(c) $ln(x)$

(d) $xln(x)$

(e) $xln(x) - 1$

11. $F(1)$ and $F(n) = F(n-1) + \frac{1}{2}$ for all integer $n > 1$, then $F(101) =?$

(a) 49

(b) 50

(c) 51

(d) 52

(e) 53

12. $lim_{x \to 0} \frac{cos(3x)-1}{x^2} =?$

(a) $\frac{9}{2}$

(b) $\frac{3}{2}$

(c) $\frac{-2}{3}$

(d) $\frac{-3}{2}$

(e) $\frac{-9}{2}$

13. Assume that f is differentiable, with $lim_{x\to\infty} f(x)$ and $lim_{x\to\infty} f'(x)$ both existing and finite. Which of the following statement MUST be true?

(a) $lim_{x\to\infty} f'(x) = 0$

(b) $lim_{x\to\infty} f''(x) = 0$

(c) $lim_{x\to\infty} f(x) = lim_{x\to\infty} f'(x)$

(d) f is constant

(e) f' is constant

14. What is the $19th$ derivative of $\frac{x-1}{e^x}$?

(a) $(18-x)e^{-x}$

(b) $(19-x)e^{-x}$

(c) $(20-x)e^{-x}$

(d) $(x-19)e^{-x}$

(e) $(x-20)e^{-x}$

15. How many positive numbers satisfy $cos(97x) = x$?

(a) 1

(b) 15

(c) 31

(d) 49

(e) 96

16. $\Sigma_{k=1}^{\infty} \frac{k^2}{k!} = ?$

(a) e

(b) $2e$

(c) $(e+1)(e-1)$

(d) e^2

(e) ∞

17. The first derivative of $\phi(t) = f(t^2, 2t)$ is:

(a) $(2+2t)\frac{\partial f}{\partial x}(t^2, t2)+(2+2t)\frac{\partial f}{\partial y}(t^2, 2t)$

(b) $\frac{\partial f}{\partial x}(t^2, 2t) + \frac{\partial f}{\partial y}(t^2, 2t)$

(c) $2t\frac{\partial f}{\partial x}(t^2, 2t) + 2\frac{\partial f}{\partial y}(t^2, 2t)$

(d) $2\frac{\partial f}{\partial x}(t^2, 2t) + 2t\frac{\partial f}{\partial y}(t^2, 2t)$

(e) None of the previous is correct

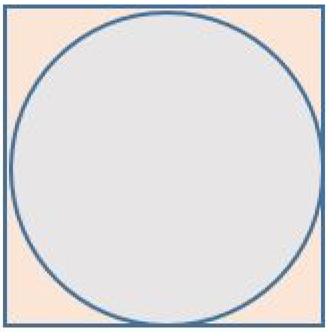


Figure 4.1: Square and circle

Figure 4.2 shows a screenshot of the math quiz.

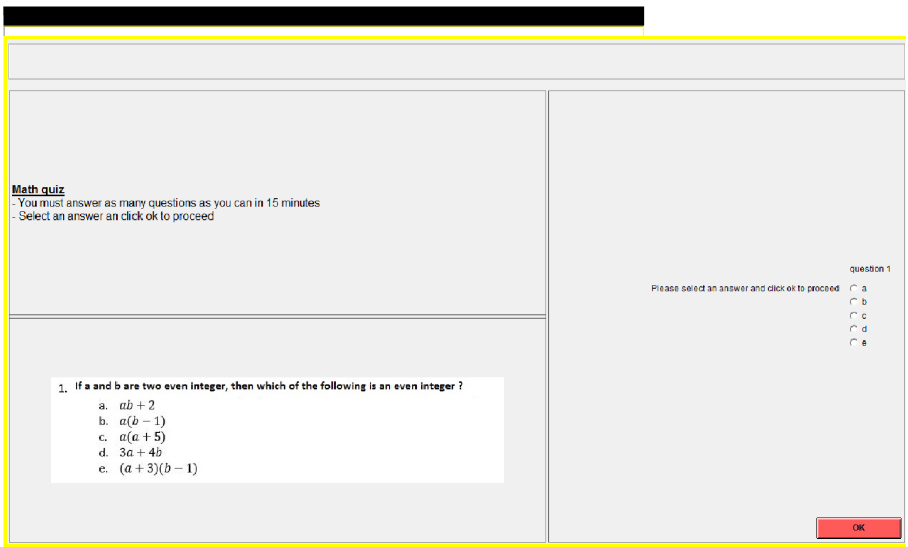


Figure 4.2: Example of a screenshot of the math quiz

Appendix 5 Distribution of Performance at the Math Quiz and Status

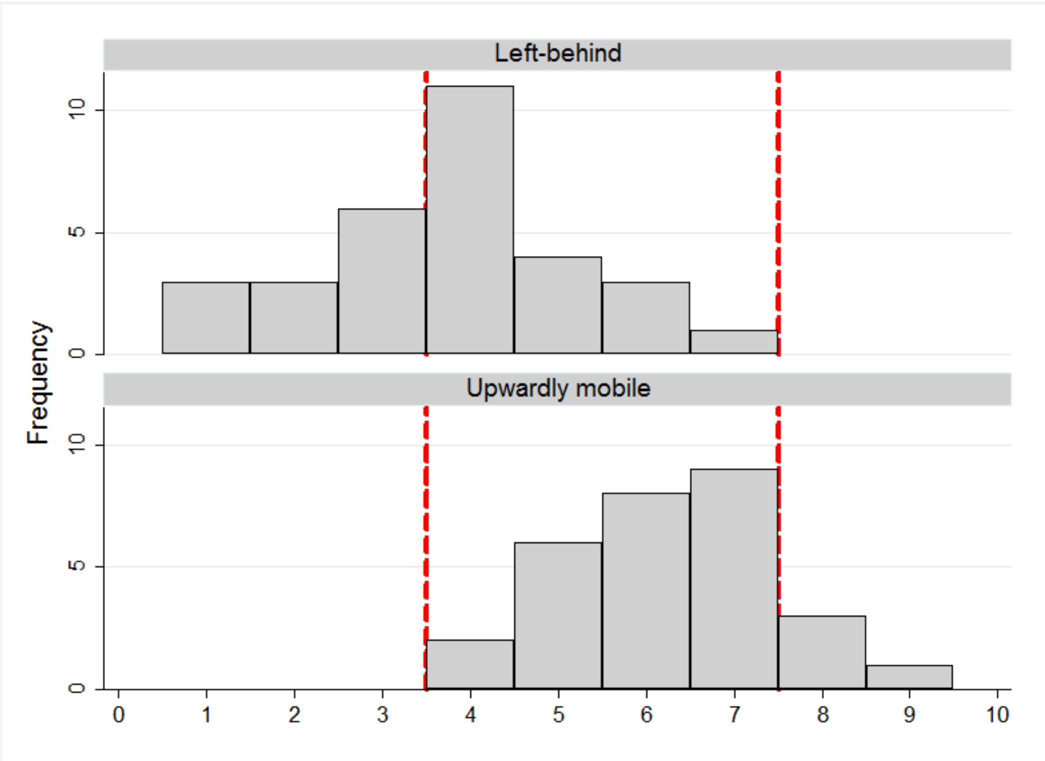


Figure 5.1: Distribution of performance of the subjects from the business school in the math quiz, by status

Appendix 6 Additional Regressions

Table 6.1: Beliefs of the Trustors from the Business School about the Percentage Returned by the Trustee

	Tobit models					
	(1) Beliefs		(2) Beliefs		(3) Beliefs	
UM trustor and UM trustee	-5.846	(14.51)	-5.032	(15.04)	-	-
UM trustor and LB trustee	-5.201	(14.98)	-1.304	(13.82)	-	-
UM trustor and EE trustee	10.15	(15.24)	-	-	6.058	(15.04)
UM trustor and DM trustee	-4.034	(14.21)	-	-	-4.944	(14.96)
LB trustor and UM trustee	5.259	(5.018)	5.094	(4.875)	-	-
LB trustor and EE trustee	0.788	(6.439)	-	-	-	-
LB trustor and DM trustee	18.86	(15.36)	-	-	18.63	(14.40)
Transfer in the DG, same school	0.308	(2.534)	1.114	(2.651)	-0.476	(2.695)
Transfer in the DG, other school	5.808**	(2.581)	6.069**	(2.731)	5.494**	(2.706)
Female	-10.45	(8.959)	-9.054	(9.707)	-11.79	(10.11)
Risk attitude[a]	1.069	(2.115)	1.782	(2.167)	0.215	(2.418)
Math quiz score	-0.583	(4.558)	-1.766	(5.037)	0.479	(4.752)
Perception math[b]	1.069	(9.376)	-0.372	(9.899)	2.525	(10.17)
Session F.E.	YES		YES		YES	YES
N	240		120		120	
Pseudo R^2	0.031		0.039		0.031	
Log pseudolikelihood	-818.079		-390.934		-423.222	
F	1.92		2.68		1.58	
$p > F$	0.015		0.002		0.097	

Notes: Marginal effects are reported. Robust standard errors clustered at the individual level are in parentheses. ** $p < 0.05$. (1) Trustees from the business school and from the engineering school pooled, (2) Trustees from the business school only, (3) Trustees from the engineering school only.

The reference category in models (1) and (2) corresponds to left behind trustors matched with a left behind trustee; in model (3), it is a left behind trustor matched with an expected expert trustee. UM for upwardly mobile (business school), LB for left behind (business school), EE for expected experts (engineering school), and DM for downwardly mobile (engineering school). (a) For risk attitudes, a greater number indicates less risk aversion. (b) Dummy indicating that the trustor chose "strongly disagree" or "disagree" about the statement *It is important to have good mathematical skills.*

Table 6.2: Trusworthiness of Trustees from the Business School

	Tobit models					
	(1)		(2)		(3)	
	Trustworthiness		Trustworthiness		Trustworthiness	
Trust as trustor	1.860**	(0.869)	1.540	(1.051)	2.337**	(0.920)
UM trustee and UM trustor	-3.110	(10.94)	-4.465	(11.47)	-	-
UM trustee and LB trustor	1.407	(10.80)	-1.384	(11.50)	-	-
UM trustee and EE trustor	-0.571	(10.62)	-	-	7.426	(9.589)
UM trustee and DM trustor	-6.949	(11.12)	-	-	-0.261	(10.51)
LB trustee and UM trustor	-0.049	(4.025)	-0.267	(3.972)	-	-
LB trustee and EE trustor	-4.981	(3.969)	-	-	-	-
LB trustee and DM trustor	-3.951	(10.00)	-	-	2.496	(8.281)
Transfer in the DG, same school	0.884	(1.638)	0.284	(1.932)	1.488	(1.486)
Transfer in the DG, other school	5.679***	(2.149)	6.161**	(2.502)	5.085**	(2.001)
Female	-5.905	(5.861)	-5.427	(6.500)	-6.712	(5.612)
Risk attitude[a]	-0.238	(1.662)	-0.722	(1.777)	0.554	(1.665)
Math quiz score	-0.119	(2.446)	0.704	(2.759)	-1.005	(2.300)
Perception math[b]	6.780	(6.182)	9.915	(6.563)	3.345	(6.088)
Session F.E.	YES		YES		YES	
N	240		120		120	
Pseudo R^2	0.070		0.064		0.081	
Log pseudolikelihood	-715.627		-367.219		-346.308	
F	4.07		3.06		4.13	
$p > F$	0.000		0.000		0.000	

Notes: Marginal effects are reported. Robust standard errors clustered at the individual level are in parentheses. ** $p < 0.05$, *** $p < 0.01$. (1) Trustors from the business school and from the engineering school pooled, (2) Trustors from the business school only, (3) Trustors from the engineering school only.

The reference category in models (1) and (2) corresponds to left behind trustees matched with a left behind trustor; in model (3), it is left behind trustees matched with an expected expert trustor. UM for upwardly mobile (business school), LB for left behind (business school), EE for expected experts (engineering school), and DM for downwardly mobile (engineering school). (a) For risk attitudes, a greater number indicates less risk aversion. (b) Dummy indicating that the trustee chose "strongly disagree" or "disagree" about the statement *It is important to have good mathematical skills.*

Table 6.3: Trust and Trustworthiness Toward Upwardly Mobile Counterparts

	Tobit models							
	(1) Trust		(2) Trust		(3) Trustworthiness		(4) Trustworthiness	
Beliefs about the amount returned	0.058***	(0.018)	0.074***	(0.020)	-	-	-	-
Trust as trustor	-	-	-	-	1.524	(1.059)	3.735***	(1.418)
UM sender and UM receiver[a]	-1.345	(1.360)	-	-	-4.465	(11.47)	-	-
UM sender and LB receiver	-2.632**	(1.203)	-	-	-1.384	(11.50)	-	-
LB sender and UM receiver	-0.536	(0.638)	-	-	-0.267	(3.972)	-	-
EE sender and UM receiver	-	-	-0.286	(0.310)	-	-	2.060	(1.946)
DM sender and UM receiver	-	-	0.541	(1.641)	-	-	-4.682	(11.25)
DM sender and LB receiver	-	-	0.572	(1.613)	-	-	-0.646	(10.75)
Transfer in the DG, same school	0.214	(0.318)	0.224	(0.399)	0.284	(1.932)	-2.087	(2.158)
Transfer in the DG, other school	0.532	(0.338)	0.455	(0.440)	6.161**	(2.502)	7.981***	(2.915)
Female	-0.178	(0.872)	1.474	(0.995)	-5.427	(6.500)	17.54**	(7.582)
Risk attitude[b]	0.054	(0.197)	-0.299	(0.343)	-0.722	(1.777)	-2.748	(2.972)
Math quiz score	0.013	(0.312)	0.260	(0.253)	0.704	(2.759)	-0.706	(1.826)
Perception Math[c]	1.090	(0.877)	1.243	(0.960)	9.915	(6.563)	-12.09*	(6.487)
Session F.E.	YES		YES		YES		YES	
N	120		120		120		120	
Pseudo R^2	0.131		0.230		0.064		0.149	
Log pseudolikelihood	-246.741		-189.088		-367.026		-292.353	
F	3.72		10.21		2.83		4.63	
$p > F$	0.000		0.000		0.000		0.000	

Notes: Marginal effects are reported. Robust standard errors clustered at the individual level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In models (1) and (2), the dependent variable is trust. Model (1) restricts observations to matches in which both the trustor and the trustee are from the business school. The reference category corresponds to left behind trustors matched with a left behind trustee. Model (2) restricts observations to matches in which the trustor is from the engineering school and the trustee is from the business school. The reference category corresponds to expected expert trustors matched with a left behind trustee. In models (3) and (4), the dependent variable is trustworthiness. Model (3) restricts observations to matches in which both the truster and trustee are from the business school. The reference category corresponds to left behind trustees matched with a left behind trustor. Model (4) restricts observations to matches in which the trustee is from the engineering school and the trustor is from the business school. The reference category corresponds to expected expert trustees matched with a left behind trustor. UM for upwardly mobile (business school), LB for left behind (business school), EE for expected experts (engineering school), and DM for downwardly mobile (engineering school). (a)“Sender” refers to the trustor for the trust decision and to the trustee for the return decision. “Receiver” refers to the trustee for trust decision and the trustor for trustworthiness decision. (b) For risk attitudes, a greater number indicates less risk aversion. (c) Dummy indicating that the trustor chose ”strongly disagree” or ”disagree” about the statement *It is important to have good mathematical skills.*