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# "When to Pay More: Incentives, Culture and Status in Principal-Agent Interactions"

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# When to Pay More: Incentives, Culture and Status in Principal-Agent Interactions*

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**Abstract**

We study the role of status in an experimental Principal-Agent game. Status is awarded to subjects based on either talent or luck. In each randomly matched principal-agent pair, the principal chooses the agent's status-contingent piece rate for a task in which talent matters for performance (an IQ test). We perform the experiment in Cambridge (UK) and in HCMV (Vietnam). We find that in Cambridge piece rate offers are significantly higher for high-status agents (only) when status signals talent. However, these higher offers are not payoff-maximizing for the principals. In contrast, Vietnam piece rate offers are significantly higher for high-status agents (only) when status is determined by luck. We explore possible explanations, and the implications for status and incentives.

**Keywords**: incentives, status, identity, piece rate, principal-agent, signaling, culture.

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## 1. Introduction

A large literature, theoretical and empirical, highlights the importance of status concerns: individuals generally care about their standing in society, and strive to achieve social recognition and esteem. They also behave differently towards people they perceive as having more or less status. Indeed, one reason why people care so much about social status is that higher status can result in more favorable treatment by others[1]. For example, in trust game experiments Glaeser et al. (2000) find that high-status first movers tend to receive back more, and earn more, while Falk and Zehnder (2013) find that high-status second movers tend to be trusted more, and be sent more. Ball et al. (2001) allocate status randomly to participants in market game ("box design") experiments: they find that higher status subjects earn *more* when the status allocation is observed by all participants, and *less* when status is allocated privately. They conclude that "deference by the low-status group is at least as important as confidence on the part of the higher-status group".

These two examples suggest quite different underlying mechanisms for the effect of status on behavior. The findings by Glaeser et al. (2000) and Falk and Zehnder (2013) are consistent with a *signaling* mechanism: an individual's status can signal personal characteristics that are relevant to other individuals' optimal strategy when interacting with him/her. For example, if high status signals greater trustworthiness, high-status individuals will tend to be trusted more. If high status signals a greater ability to punish unfavorable treatment, high-status individuals will tend to be treated more favorably. The results obtained by Ball et al. (2001), on the other hand, are hard to reconcile with such a signaling explanation, since status is allocated randomly. One possibility is that, once a role has been allocated to them very explicitly by the experimenters, subjects to some extent *identify* with that role, expect others to do the same, and behave accordingly. Thus if subjects perceive high status as being associated with greater confidence, we should not be surprised to find, in the words of Ball et al. (2001), that "the higher-status side of the market appears to be marginally more "stubborn" than the lower-status side, and lower-status players are marginally more willing to defer to the higher-status players". Such an identification mechanism would imply a *direct* effect of status on behavior, quite distinct from the role of status as simply conveying information about an individual's (exogenous) characteristics.

Understanding the significance of any direct effect of status on behavior is

[1] See, for example, the discussions in Weiss and Fershtman (1998), Heffetz and Frank (2011).

important for the design of incentives. To this end, we designed an experiment in which the nature of the game to be played is held constant, but we vary the extent to which status can signal personal characteristics, and the status allocation rule is made transparently clear to participants. The game itself is a Principal-Agent game, so as to capture some key features of many everyday social and economic interactions. Participants are randomly and anonymously matched in pairs, and assigned either the role of Principal or the role of Agent. Complete anonymity (relative to the experimenters as well) is used to reduce concerns over potential "experimenter demand" effects, and to isolate the effects of our status allocation. Each Agent completes a task, consisting of an IQ test with 12 questions. The game works as follows: the Agent's Principal receives an amount $y$ for each correct answer given by the Agent. Before the test, the Principal chooses the amount $x$ that he will pay the Agent for each correct answer, and this is communicated to the Agent.

The key step for studying the effects of status occurred before our experimental subjects learned about the Principal Agent game. Student volunteers for an experiment on decision-making were told they had to first complete a questionnaire in order to participate in the experiment. This questionnaire contained 21 questions, including questions about age, gender, own education and parents' education. It also contained a question taken from an IQ test (different from the IQ test used as the Agent's task), and a question asking the respondent to guess the experiment director's favorite color out of 11 possible choices. We refer to these as the "intelligence" question and the "color" question in what follows. All our participants answered these questions; they were then randomly allocated to either the "intelligence" condition or the "color" condition. In the intelligence condition, they were reminded of the intelligence question in the questionnaire, and told that participants who had given the correct answer would receive a gold-coloured ribbon at the end of the experiment. Principals were then asked to choose their Agent's piece rate $x$. They had to specify two piece rates, contingent on whether the Agent would be receiving a gold ribbon at the end of the experiment. The relevant amount was communicated to the Agent (without feedback on whether they had given the correct answer in the questionnaire). The same applied in the color condition, using the color question in this case, with one difference: the "right" answer was revealed to participants before Agents took the test. Thus Agents knew when performing the task whether they would receive a gold ribbon at the end or not. In each condition, the exact procedure was common knowledge to all participants.

The gold ribbon is analogous to the gold star used in Ball et al. (2001) as a symbol of status. Our color condition can be viewed as analogous to their random condition in one respect: status is essentially allocated randomly, since guessing the "right" color is a matter of luck[2], and this is made clear to participants.[3] However, our manipulation is much weaker than theirs since there is no ceremony (we maintain complete anonymity), and no differential treatment by the experimenters of subjects who are given gold ribbons. We can therefore investigate whether the random allocation of symbolic awards is sufficient to generate a significant difference in treatment by the participants (even in the absence of a ceremony and strong clues by the experimenter that award recipients should receive favorable treatment). Our intelligence condition differs from Ball et al. (2001), since receipt of a gold ribbon is informative about the individual's talent. As we show in section 3, there is no presumption that this should lead to different piece rates being offered to agents in a standard Principal-Agent setting, absent status considerations. Comparing results for the two conditions enables us to study whether there are any direct effects of status on behavior, and how such effects differ depending on whether status is based on talent or luck.

In a nutshell, the *signaling hypothesis* in this context predicts *no difference* in the piece rates offered to agents with and without gold ribbons. The *identification hypothesis*, on the other hand, requires a definition of status, and of the expectations associated with it. We follow Ball et al. (2001), who define status as a "ranking in a hierarchy that is socially recognized and typically carries with it the expectation of entitlement to certain resources". In our setting, this can plausibly be translated into an expectation of *higher piece rates for agents with higher status.*

Our experiment was conducted in two very different locations, England and Vietnam, with student participants from the University of Cambridge and the Vietnam National University in Saigon. It is sometimes claimed that concern over status is particularly strong in Asian countries[4], and recent work by Huberman, Loch and Őnçűler (2004) found stronger reactions to status in Hong Kong than in Europe or the United States. We therefore expected our results to show a more

[2]The experiment director took care not to signal any color preference through her choice of clothing or in any other way.

[3]Ball et al. (2001) also have an "awarded" status condition. This too is essentially random, but this is not made clear to participants, who are simply not told the status allocation rule. In our experiment participants are told exactly how gold ribbons are allocated, in both conditions.

[4]See, for example, Ball and Eckel (1996) and the references therein.

important role for status in Saigon than in Cambridge.

We did find striking differences between the two locations. In Cambridge, subjects assigned to the role of principal in the *color* condition did not offer significantly different piece rates to high-status versus low-status agents (the mean offer was *lower* for high-status agents, while the difference was not statistically significant). In the *intelligence* condition, on the other hand, principals offered significantly *higher* piece rates to high-status agents. This pattern was completely reversed in Vietnam: principals in the *intelligence* condition did not offer significantly different piece rates to agents, contingent on their status, but principals in the *color* condition offered significantly *higher* piece rates to high-status agents.

These results suggest that status does have a direct effect on behavior. Moreover, what confers status appears to depend on (local) social and cultural norms: among Cambridge University students, talent confers status, while luck does not. Among students of the Vietnam National University, we find the opposite pattern.

These results were, to us, surprising. We were able to discount experimenter demand effects as the explanation, partly because we had been very careful to minimize these through our design, but also, most importantly, because they cannot account for the different patterns observed across treatments and locations. We then checked whether performance on the IQ test was increased more by offering a higher piece rate to higher-status agents than to lower-status agents. In other words, were principals maximizing their expected payoff? This check was only possible for the intelligence condition, since in the color condition very few participants guessed the right color. We found quite the opposite: in the Cambridge sample, increasing the piece rate only increased performance for lower-status agents, while in the Vietnam sample, the piece rate had no effect on performance. Thus offering higher piece rates to higher-status agents did not maximize the principal's expected payoff. We discuss in section 4 why we believe the identification hypothesis offers a plausible interpretation of our findings.

The paper is organized as follows. The remainder of this section discusses the related literature. Section 2 describes the experimental design and procedures, as well as the two samples. Section 3 outlines a simple Principal-Agent model as a benchmark without status effects, yielding predictions concerning the principal's choice of piece rate, and the agent's effort and performance as functions of the piece rate. Section 4 presents and discusses our experimental results. Section 5 concludes.

### 1.1. Relationship to the literature

Our work is clearly related to the growing literature on the economics of status[5]. Kosfeld and Neckermann (2011) study the impact of symbolic awards on performance in a field experiment. Students were hired to work on a project for a fixed wage. In the award treatment, they were promised an award (a congratulatory card) for the best performance. Average performance increased by about 12% with the award. Our study also explores the impact of symbolic awards (the gold ribbons). However, we are mainly interested in distinguishing between awards that reward talent and awards that reward luck, and their implications for subsequent interactions between principals and agents. Thus our approach is complementary to the one by Kosfeld and Neckermann: we show that one reason for individuals to be motivated by symbolic awards is the effect these may have on subsequent interactions. Indeed, it is quite common for people to "display" symbolic awards they have received in the past (e.g. prizes are often listed in a person's *curriculum vitae*, or exhibited in offices or living rooms, depending on the nature of the prize).

Ball et al. (2001) allocate status randomly to individuals in the lab, and then conduct market ("box design") experiments in which the sellers or the buyers are the high-status group. As discussed earlier, one of their key findings is that the high-status group earns more when the allocation of status is observed by all participants. We find a similar effect for our Vietnam sample, even though the setting is very different, involving a Principal-Agent game rather than a market game. However, we do not find this effect for our Cambridge sample: when status is essentially allocated randomly (on the basis of the color question), there is no significant difference in piece rates for the high-status group and the low-status group (and the average is lower for the high-status group). Thus our Cambridge participants do not appear to view the symbolic award of a gold ribbon (analogous to the gold star in Ball et al. (2001)) as conferring status when the allocation of awards is based on luck. They do, on the other hand, when the allocation of awards is based on intelligence.

Our paper is also related to a number of other experimental studies that allocate status in the lab, either exogenously or endogenously, and explore the effects on behavior. Several papers allocate status on the basis of answers to a trivia

[5]For some reviews and discussions, see Ellingsen and Johannesson (2007), Frey (2007), Heffetz and Frank (2011), Postlewaite (1998), Weiss and Fershtman (1998). Recent theoretical contributions exploring the implications of preferences for social status include Auriol and Renault (2008), Besley and Ghatak (2008), Dubey and Geanakoplos (2006), Ederer and Patacconi (2010), Moldovanu, Sela and Shi (2007).

quiz, and then examine the impact on behavior in different settings: Ball and Eckel (1996, 1998) study ultimatum games; Eckel, Fatas and Wilson (2010) public good contribution games played in "star" networks; Eckel and Wilson (2007) coordination games; Kumru and Vesterlund (2008) sequential voluntary-contribution games. Charness, Masclet and Villeval (2010) investigate instead how feedback about relative performance affects behavior.

Our distinction between awards based on talent and those based on luck relates our work to Vostroknutov, Tobler and Rustichini (2012). They induce experimental subjects to play a sequence of trials in either skill or luck games. Subjects receive feedback on their performance and the performance of others at the end of each trial, and then have an opportunity to reduce the payoffs of others. A key finding is that, everything else being equal, the probability that subjects reduce the payment of others is higher in the luck game. Although the setting is completely different, we find a related result for our Cambridge sample, where subjects are treated more favorably when their status is due to good performance in a skill task than a luck task.

Our identification hypothesis is clearly related to the notion of identity developed by Akerlof and Kranton (2000). In their work, identity is associated with social categories and how individuals in these categories should behave: departure from these prescriptions causes anxiety and discomfort for the individuals concerned and for those interacting with them. We study how social categories generated in the lab, based on status, affect behavior.

Finally, we are only aware of one other experimental paper studying the impact of status which carries out the *same* experiment in countries with quite different cultural norms. Huberman, Loch and Önçüler (2004) perform their experiment in five countries: Finland, Germany, Hong Kong, Turkey, and the United States. The experiment has two stages: subjects choose how much to invest in the first stage; a winner is then picked; the winner can go on to participate in a lottery in the second stage. Higher investment increases the probability of becoming the winner in the first stage, but reduces the expected payoff from participation in the lottery. The "status" manipulation in the treatment condition involves a public announcement of the first-stage winner, who is given a "Winner" tag, and applauded by the other participants. The authors find that investments are significantly higher in the status condition for the samples from Hong Kong, Turkey and the United States. Moreover, comparing these three countries, the impact of status is highest in Hong Kong and lowest in the United States.

## 2. Description of the experiment

This was a pen and paper experiment, with the following structure.

### 2.1. Questionnaire

In order to participate in the experiment, subjects first complete a questionnaire (see Appendix B) with a number of questions, including questions about age, gender, field of study, and parents' education. The last two questions are given below: one is taken from an IQ test (Q1), and the other is designed so that giving the right answer is a matter of luck (Q2).

(Q1) *Four years ago, John was twice as old as James. In four years' time, James' age will be 75% of John's age. How old is John now?*

(Q2) *Which color do you believe to be the experiment director's favorite color, out of the following? Red, yellow, black, gold, green, white, pink, blue, brown, grey, orange.*

### 2.2. Experiment

In the experiment, subjects are randomly allocated to the "intelligence" treatment or the "color" treatment. In each treatment, subjects are randomly assigned to role "A" (Principal) or role "B" (Agent) and matched randomly and anonymously in A-B pairs[6]. The timing of the game is presented in Figure 1.

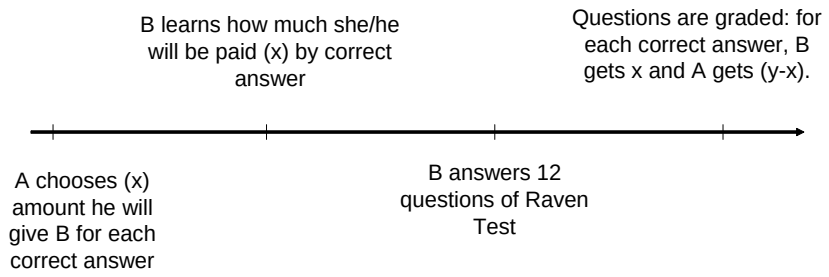


Figure 1: Timing of the game

Subjects learn that the Agent will be given an IQ test consisting of 12 questions (taken from Raven's Advanced Matrices Test[7]). They also learn that the Principal

[6]The words "Principal" and "Agent" are never used in the instructions, just "A" and "B".

[7]Raven's Advanced Progressive Matrices is an IQ test in which figures sharing a logical

will receive a payment of value $y$ (see below) for each correct answer given by the Agent, and that the Principal has to decide the amount $x$ to pay the Agent for each correct answer. All participants are told that those who answered correctly Q1 or Q2 (depending on treatment) will receive a gold-colored ribbon at the end of the experiment. In the color treatment, they also learn the "correct" answer to Q2. The Principal then chooses the Agent's piece rate $x$ contingent on whether the Agent is going to obtain a gold ribbon or not (using the strategy method[8]). Agents learn their piece rate and take the test. The procedures just described are common knowledge to Principal and Agent (full details of the experimental instructions are given in Appendix A). Meanwhile, principals are asked to guess agents' performance (again, using the strategy method). After the test, agents guess their own performance. Earnings are revealed privately at the end.

The experiment is performed in two different locations: University of Cambridge and Vietnam National University - Pôle Universitaire Français (Ho Chi Minh City). In both cases, experimental subjects are student volunteers. They receive a £3 - 30000 VDN (Viet Nam Dong) participation fee, and £1 - 10000 VDN to be shared for each correct test answer. Given that all participants are university students, equivalence has been calculated in terms of the price of a lunch at the university cafeteria.

### 2.3. The samples

Table 1 presents the statistics for both samples.

For the Cambridge sample, we have 112 students from the University of Cambridge (56 principal-agent pairs), both undergraduates and graduates. They study a wide variety of subjects: 33.9% Economics and Business, 37.5% Sciences, Maths, Medicine and Engineering; 27.68% Humanities. Approximately 39% are UK students, and the remainder come from all over the world.

From VietNam University in Ho Chi Minh City (Saigon) we have 95 students. They are all students at the Pôle Universitaire Français (PUF), first and second year Economics undergraduate students. Approximately 50% of the students come from HCMV, the remainder from neighboring regions (Mekong Delta, Nha Trang, Da Lat). The Pôle Universitaire Français is a cooperation program between the Vietnam National University and different universities in France, and

pattern are presented, with one missing; the task is to choose the missing figure in a set of feasible options.

[8]For evidence as well as discussion of the advantages and disadvantages of the strategy method, see Brandts and Charness (2011).

**Table 1: Vietnam and Cambridge samples**

| | Vietnam | | | Cambridge | | |
|---|---|---|---|---|---|---|
| | All | Intelligence | Color | All | Intelligence | Color |
| Number of pairs | 47 | 24 | 23 | 56 | 26 | 30 |
| Age | 19,24 | 19,02 | 19,45 | 23.34*[1] | 22,82 | 23,8 |
| Female | 58% | 57% | 60% | 57% | 51% | 61% |
| Moved (in country) | 61% | 51% | 71%*[2] | 97%*[1] | 94% | 100%*[2] |
| Moved (between countries) | 4% | 2% | 6% | 66%*[1] | 75% | 60%*[2] |
| Father's Education | 2,96 | 3 | 2,93 | 2,96 | 2,86 | 3,05 |
| Mother's Education | 2,79 | 2,86 | 2,71 | 2,81 | 2,82 | 2,81 |
| 1 = primary school | | | | | | |
| 2 = secondary education | | | | | | |
| 3 = university | | | | | | |
| 4 = technical education | | | | | | |

*1 Difference between Vietnam and Cambridge samples, significant 5%

*2 Difference between Intelligence and Color samples, significant 10%

for economics in Ho Chi Minh City the agreement is with Université de Toulouse 1. Courses in the program are taught by faculty of the Université de Toulouse 1, and the experiment director had been part of the program for two years at the time of the experiment. Students belong to both branches of the program, Anglophone and Francophone, and the experiment was performed in English and French respectively for each of the groups.

Students from both locations completed the same questionnaire. To know more about the environment in which the students grew up, we asked them about their birthplace and other places where they had lived. For the Cambridge sample, we find that an important share of participants are born outside the UK, while in the Vietnam sample mobility is mainly between cities.

## 3. Benchmark Model

This section outlines our benchmark Principal-Agent model and obtains its predictions concerning the principal's choice of piece rate, as well as the agent's effort and performance as functions of the piece rate. The principal is awarded one unit of income for each correct answer given by the agent. The agent decides how much effort to exert in answering each question, knowing the piece rate per correct answer.

Let $N$ be the number of questions in the agent's test, and $w$ the piece rate per

correct answer. Denote by $e$ the agent's effort on each question, by $\theta$ the agent's talent/ability, and by $p(e,\theta)$ the probability of answering correctly. The agent's expected utility is then given by

$$U_a(\theta, w) = N\left[wp(e,\theta) - c(e)\right]$$

where $c(e)$ represents the cost of effort. The Agent's problem is given by:

$$\max_e N\left[wp(e,\theta) - c(e)\right]$$

and the first order condition is

$$c'(e) = w\frac{\partial p(e,\theta)}{\partial e}$$

If we assume that $p(e,\theta) = \theta e$, implying that effort and ability are complements, and that $c(e) = \frac{\gamma e^2}{2}$, we obtain

$$e = \frac{w\theta}{\gamma}$$

Thus effort and performance should both increase with the piece rate and with ability.

The principal's expected utility is given by

$$\begin{aligned} U_p(e,\theta) &= (1-w)Np(e,\theta) \\ &= (1-w)N\frac{\theta^2 w}{\gamma} \end{aligned}$$

The principal's problem is

$$\max_w U_p = (1-w)w\frac{N\theta^2}{\gamma}$$

from which it is easy to see that he will never choose a corner solution ($w = 0$ or $w = 1$). The first order condition yields the interior solution

$$w = \frac{1}{2}$$

The model gives two sharp predictions: (1) the piece rate does not depend on ability or luck, and (2) both effort and performance increase with the piece rate. These predictions will be our starting point in the next section, where we analyze participants' behavior in the experiment.

**Table 2: Answers to the 'intelligence' and 'color' questions**

| | Vietnam | | | Cambridge | | |
|---|---|---|---|---|---|---|
| | All | Intelligence | Color | All | Intelligence | Color |
| Number of pairs | 47 | 24 | 23 | 56 | 26 | 30 |
| Correct answer | | 36,84% | 5,26% | | 44,64% | 6,25% |

## 4. Experimental Results

We begin by describing the data. Table 2 summarizes the questionnaire responses to the "intelligence" question and the "color" question: we see that a substantial proportion of participants in both locations gave the correct answer to the intelligence question, while very few individuals managed to guess the correct color.

Figures 2 and 3 show the piece rate offers for "ribbon" and "no ribbon" agents, conditional on treatment and location, while Figures 4 and 5 depict agent performance (test score) as a function of the piece rate.We note that in Vietnam no agent scored less than 7 correct answers out of 12 on the test, irrespective of the piece rate. In Cambridge there were three subjects who scored exactly zero on the test, while the remainder all scored at least 9 (and the majority scored 12 correct answers). We believe the three zero test scores were a deliberate reaction to relatively low piece rate offers[9]. As such, we do not view them as "outliers" to be excluded in the standard sense. However, we perform robustness checks for our regression results below, to see what happens when we remove these three observations.

[9]Indeed, one of the three subjects had duly answered the test questions, and then deliberately crossed them out so as to achieve a zero score.

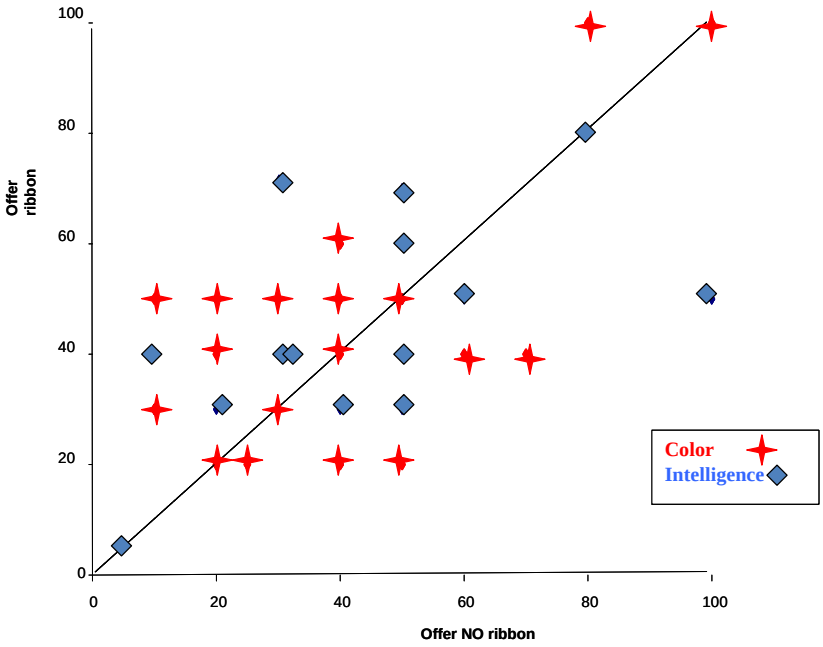


Figure 2: Principal's offers Vietnam

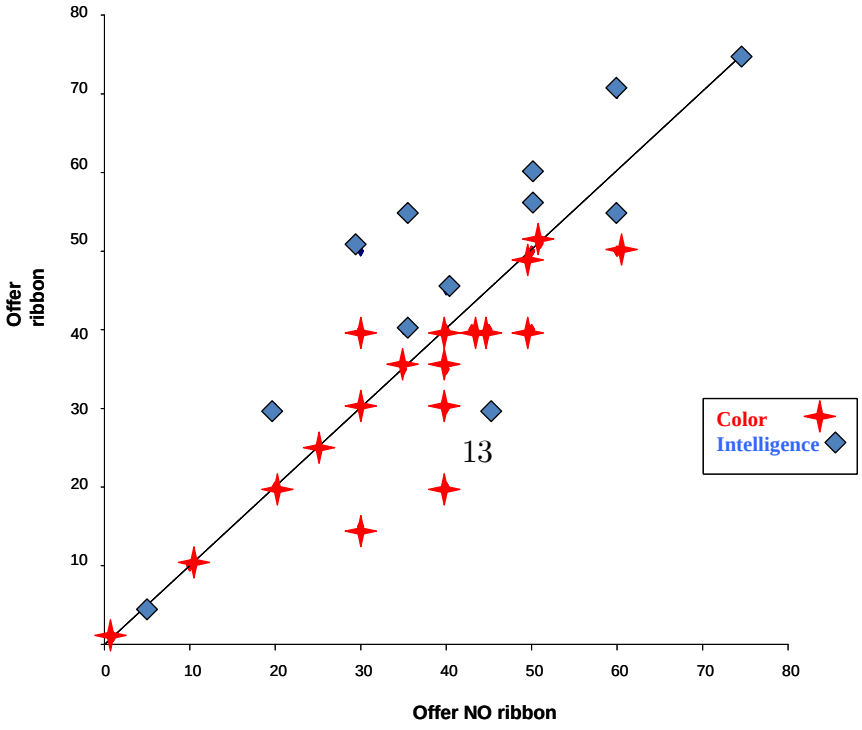




Figure 3: Principal's offers Cambridge

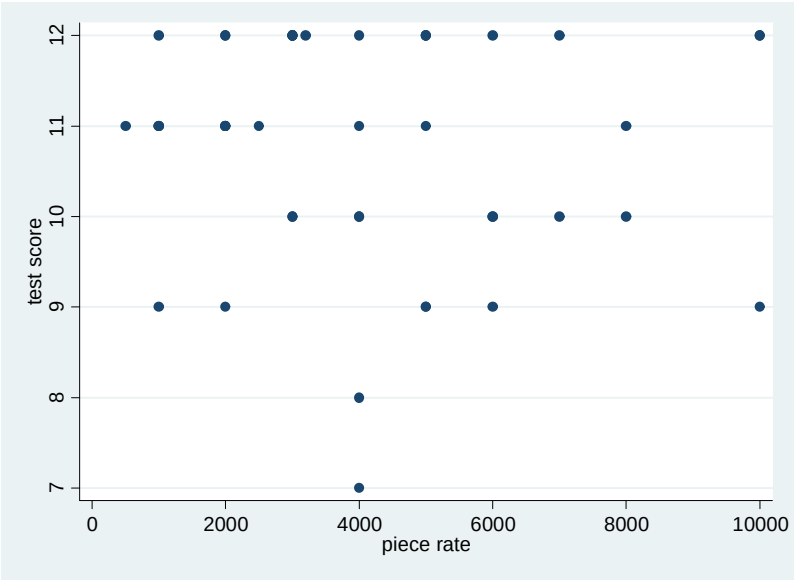


Figure 4: Vietnam

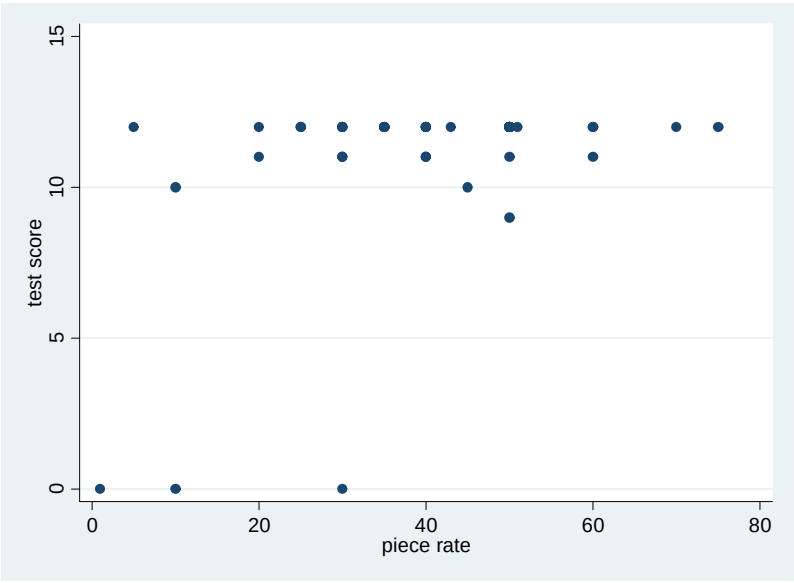


Figure 5: Cambridge

### 4.1. Piece rates and performance: does the data match the standard model predictions?

We now investigate whether behavior in the experiment matched the predictions of the Principal-Agent model of section 3. Table 3 summarizes these and our main findings.

| | Standard model | Vietnam results | Cambridge results |
|---|---|---|---|
| Piece rate | Independent of luck or ability | Increases with luck | Increases with ability |
| Performance | Increases with piece rate | Piece rate effect (negative) insignificant | Increases with piece rate (full sample) |

Table 3

We obtained two main predictions from the model.

**Prediction 1** : the piece rate does not depend on ability or luck.

Figure 6 shows the average piece rate in the intelligence treatment for "ribbon" (agents who gave the correct answer to the "intelligence" question) and "no ribbon" (agents who did not give the correct answer). The light grey and dark grey bars on the left of the graph show that there is no significant difference between the piece rates in Vietnam ($p = 0.706$)[10]. This is consistent with Prediction 1. In Cambridge, however, the piece rate is significantly higher for more talented agents ($p = 0.004$), as shown by the light and dark bars on the right of the graph.

[10] We report $p$-values for the Wilcoxon matched-pairs signed-ranks test, since for each Principal we have the piece rate offer for "ribbon" and the one for "no ribbon".

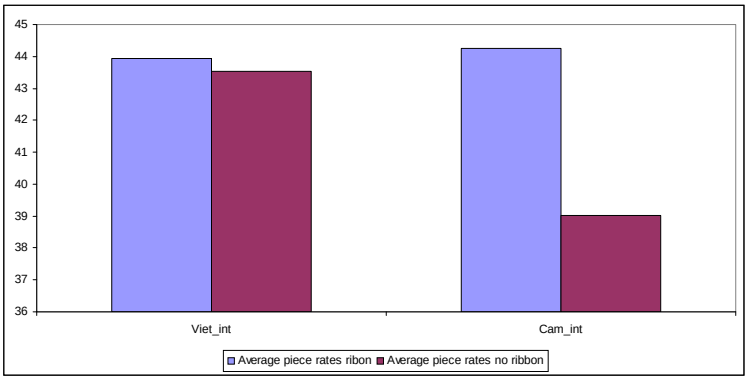


Figure 6: Intelligence treatment

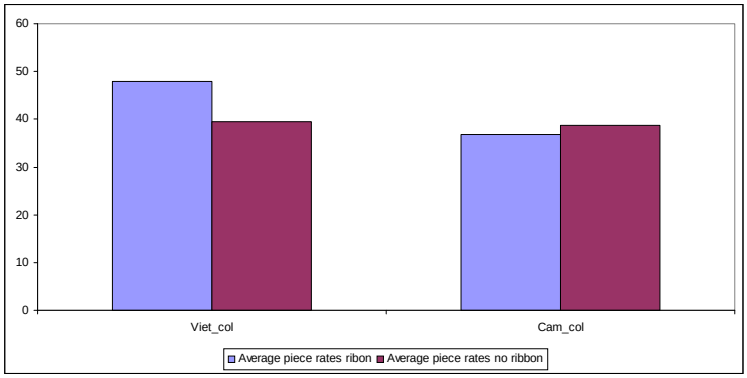


Figure 7: Color treatment

The piece rates for the color treatment are shown in Figure 7, again contrasting "ribbon" (agents who gave the correct answer to the "color" question) and "no ribbon" (agents who did not give the correct answer). Compared to the intelligence treatment, the pattern is reversed: in Vietnam the piece rate is significantly higher for "ribbon" agents ($p = 0.050$). In Cambridge the average piece rate is *lower* for "ribbon" agents, the difference being just insignificant ($p = 0.063$). These results are clearly inconsistent with Prediction 1.

**Prediction 2**: effort and performance increase with the piece rate.

We do not observe effort, but we do have a measure of performance, namely the test score (number of correct answers). Table 4 presents the results from Tobit regressions with the test score as the dependent variable.[11]

[11] In the Tobit regressions we allow for censoring at zero and twelve since the task consisted

**Table 4: Number of Correct Answers (tobit)**

| | Cambridge (full sample) | Cambridge (correct answers >0) | Vietnam |
|---|---|---|---|
| Piece rate | 0,369 | 0,05381 | -0,00002 |
| | (0.121)** | (0,03998). | (0.0001). |
| Talent | 19,531 | 1,9646 | 0,8653 |
| | (8,113)** | (2,5755). | (1,2185). |
| Piece rate * Talent | -0,40564 | -0,03357 | -0,000006 |
| | (0.1764)** | (0,05676). | (0.0002). |
| Male | -3,689 | -0,05383 | 0,92135 |
| | (2,271). | (0,85413). | (0,59281). |
| Age | -0,1227 | -0,0809 | 0,05595 |
| | (0,223). | (0,0690). | (0,2002). |
| Father's education | 2,5985 | 0,8689 | -0,7487 |
| | (1,908). | (0,6445). | (0,4773). |
| Mother's education | 0,7048 | 0,4991 | 0,08182 |
| | (1,9199). | (0,6218). | (0,6109). |
| Economics | -0,1488 | -0,4315 | |
| | (2,767). | (0,8702). | |
| Constant | -4,708 | 8,912 | 11,757 |
| | (13,311). | (4,0927). | (3,9609). |
| N. observations | 56 | 53 | 44 |
| Pseudo R2 | 0,2093 | 0,1322 | 0,0488 |

The explanatory variables include the piece rate, a "talent" dummy taking value one if the agent answered correctly the intelligence question prior to the experiment (Q1 in the questionnaire), and a term interacting these two variables. The first column reports the results for the full Cambridge sample. As expected, the estimated coefficients for the piece rate and for talent are positive and significant. The negative and significant coefficient for the interaction term implies that the positive impact of the piece rate on performance is due to its effect on the less talented agents. We go on to remove the three observations with zero test scores, and estimate the regression again. The results are reported in column 2. The estimated coefficients for these variables have the same sign as in column 1, but are no longer statistically significant. We check the three removed observations, and, as expected, find that all three were "no ribbon" agents (they had not answered correctly the intelligence question, Q1, in the questionnaire).

Thus the sensitivity of performance to the piece rate in the full Cambridge sample was driven mainly by the few observations where the agent, faced with a relatively low piece rate offer, chose to perform very poorly, giving no correct answers. These results suggest that for most participants, the motivation provided by the task (e.g. an IQ test can be interesting and challenging, and individuals typically like to prove their intelligence) was far more important than the piece rate. However for a few participants the offer of a relatively low piece rate was sufficient to destroy any motivation to do well on the task.

We do not find any of the Vietnam participants choosing to perform very poorly. The results for the full Vietnam sample are reported in column 3. The piece rate has a negative and insignificant impact on performance. The other estimated coefficients are also insignificant. A possible interpretation is that here too, the motivation provided by the nature of the task was far more important than the piece rate[12].

### 4.2. Understanding the results

Some of our findings are difficult to reconcile with the Principal-Agent model presented in section 3:

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of 12 questions from a Raven test.

[12]Our results are consistent with those found by Dessí and Rustichini (2011) for a sample of students from the University of Toulouse. In the first of two experiments reported in the paper, they gave an IQ test to participants in different conditions. They found that varying the piece rate had virtually no impact on performance (test score).

*(1) Why do principals in Cambridge offer higher piece rates to agents who are awarded gold ribbons for talent?*

We conjectured that the model in section 3 might not adequately capture the technology of the problem facing participants in the experiment (production function, cost of effort). Could it be that in reality principals were maximizing their expected payoff by giving higher piece rates to more talented agents? This would be the case if the estimated coefficient on the interaction term between talent and the piece rate in Table 4 were positive, implying that a higher piece rate leads to a bigger increase in performance for more talented agents than for less talented agents. We find the opposite: the coefficient is negative[13]. It is of course possible that Principals who offered higher piece rates to "ribbon" agents nevertheless believed that higher piece rates would elicit a bigger increase in performance from "ribbon" agents than from "no ribbon" agents. But this belief was incorrect.

*(2) Why do principals in Vietnam offer higher piece rates to agents who are awarded gold ribbons for luck?*

Whatever assumptions are made about the technology of the problem, the standard Principal-Agent model cannot account for this result. Whether a subject happened to guess correctly the experiment director's favorite color is simply irrelevant. Could it be that Vietnam participants somehow interpreted guessing the right color as a signal of talent/skill? We do not think this is plausible. Moreover, answering correctly the "intelligence" question clearly did signal talent/skill relevant to the task, much more persuasively. Yet Vietnam participants did not offer significantly higher piece rates to "ribbon" agents in the intelligence

[13]It is interesting to compare our results with those obtained by Dessí and Rustichini (2011). Following a first experiment in which participants took an IQ test under different conditions regarding pay, they conducted a second experiment, in which participants played a Principal-Agent game very similar to the one in this paper, with a different IQ test. A key difference is that Agents in their second experiment knew their score on the first IQ test, and Principals made their piece rate offers contingent on that score. Dessí and Rustichini found that Principals offered better piece rates to more talented agents, as in our Cambridge sample. This was payoff-maximizing for their Principals: the interaction term between talent and the piece rate was positive. We conjecture that the difference between our results and theirs is due to the different information available to participants. In their experiment, agents with a high score on the first test had already demonstrated their talent (to themselves and to their peers): their intrinsic motivation was therefore lower on the second test, and a sufficiently high piece rate was needed to motivate them. Those with a low score in the first test, on the other hand, may have been highly motivated to prove the first result could be dismissed as an inaccurate signal of their ability. In our experiment, in contrast, agents took the IQ test having had no feedback on whether they had answered correctly the intelligence question.

treatment.

### 4.3. The identification hypothesis

The identification hypothesis offers a possible interpretation of our findings. If higher status is perceived as implying entitlement to more resources and more favorable treatment, Principals may be willing to offer higher piece rates to agents perceived as having higher status. This begs the question: why would talent (and not luck) confer status in Cambridge, and luck (and not talent) in Saigon? It is not hard to see why talent, and not luck, would tend to elicit social recognition and esteem, particularly among students in a prestigious university with demanding entry requirements based on talent. It is more difficult, at first sight, to understand the result for Vietnam, given the high importance attached to learning and education in Vietnamese culture. Indeed, teaching faculty in universities have high social status in Vietnam. The experiment director, as member of the teaching faculty in both Toulouse and Saigon, was struck by the respect and admiration demonstrated by Vietnamese students (in comparison with French students back in Toulouse). It may be that, precisely for this reason, guessing correctly the experiment director's favorite color was interpreted not simply as luck, but rather as a signal of familiarity with, and/or attentiveness to, a person of high social status - and this in itself was perceived as conferring status.

## 5. Conclusions

The results we have just discussed strongly suggest that status has a direct effect on behavior in Principal-Agent interactions: status does more than simply convey information about exogenous personal characteristics relevant to the task. In this respect, our findings support those by Ball et al. (2001) and extend them to a very different context. However, we also show that the impact of status on behavior is very sensitive to local social and cultural norms. When status is generated in the lab, these norms affect participants' perceptions and expectations: in a sense, they complete the description of the game to be played. In the absence of very strong, explicit clues by the experimenters showing who is to be treated with special consideration and admiration, local norms will largely determine the real allocation of status, as opposed to the purely symbolic allocation (through symbolic awards). Outside the lab, local norms will be crucial in determining the role of status. Understanding the interaction between status, norms and behavior,

and the implications for the optimal design of incentives, seems to us an important challenge for future work, in theory, in the lab and in the field.

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# 7. Appendix A

## 7.1. Experimental Instructions

Here we present the experimental instructions for Principals and Agents in Cambridge and in Vietnam. In both locations, the experiment was pen-and-paper in university rooms. In Vietnam the instructions were translated into french for the francophone students. We present the instructions as they were read in the experiment, inserting the parts where Principal and Agent were taking decisions.

**********

Welcome; you are going to participate in an economics experiment. Your answers and decisions will have no consequences whatever for your course grades or your degree.

This experiment studies decision-making. There are no right or wrong decisions – you should simply decide according to your preferences.

The experiment will be remunerated. You will receive the remuneration tomorrow morning. I will call in each participant individually to give him or her the amount earned. The amount you receive will depend on your decisions and on the decisions taken by the other participants. I will explain the rules of the experiment in a moment.

Please now switch off your mobile phones, and do not talk to each other during the experiment. If you have a question, raise your hand and I will come and answer.

Are there any questions?

If there are no questions, we can start. You will see some instructions on each page. Read them carefully. Whenever you are asked a question, take the time you need to answer. If you want to ask a question during the experiment, please raise your hand.

---

General rules

During this experiment you will be asked at times to take decisions that will affect your outcome and the outcome for other participants. It is important for you to know that your decisions will remain completely confidential.

Each person will belong to a group of two participants, depending on the number you picked at the beginning. You will never know who was the other member of your group and they will never know that you were the other member of their group.

Within each group of two, there will be a participant "A" and a participant "B". Each person will learn his or her role (A or B) in a moment. When we refer to the other member of your group, we will always use the letter (A or B) and never the number or any other information that might allow you to identify him or her.

If you have a question, please raise your hand.

If there are no questions, we can move on to the specific instructions.

---

Specific instructions

In the experiment, we will give to each participant « B » a set of questions

from a Raven test, which is often used to measure intelligence quotient (IQ).

In particular, in each group of two participants, "B" will answer 12 questions (the same questions for all participants "B"). "A" will receive one pound for each correct answer given by "B".

Before starting the test, "A" will have to choose the amount he will pay "B" for each correct answer given by "B". The chosen amount will be disclosed to B before starting the test.

After the end of the experiment, when payments are made, B will be told the number of correct answers he gave, and also the average number of correct answers given by participants in the session.

---

FOR PRINCIPALS:

You are the « A » participant in your group. We will shortly ask you to choose the amount X that you will give to « B » for each correct answer.

You will therefore receive one pound minus X for each correct answer given by "B".

You will be asked to make your choice under two possible hypotheses concerning "B"; we will use the choice that corresponds to the correct hypothesis.

Reminder: this choice will be disclosed to "B" before starting the test.

FOR AGENTS:

You are the participant « B » in your group. You are going to answer 12 questions from a Raven test, which is often used to measure intelligence quotient (IQ).

You will receive an amount X for each correct answer you give. Participant "A" in your group will receive one pound minus X for each correct answer you give.

Participant "A" in your group will choose the amount X for each of two possible assumptions about you. We will then tell you his choice of X for the assumption that applies to you.

First we show you the assumptions for which we are asking participant "A" to choose X.

---

**Intelligence treatment:**

Important : all the participants in today's experiment have completed a questionnaire and sent it to us in order to be able to participate. In that questionnaire, each participant answered the following question:

Question: Four years ago, Jean was twice as old as Jacques. In four years' time, Jacques' age will be 75% of Jean's age. How old is Jean now?

Some participants gave the correct answer to this question. These participants will receive a gold-colour ribbon at the end of the experiment.

**Colour treatment:**

Important : all the participants in today's experiment have completed a questionnaire in order to be able to participate. In that questionnaire, each participant answered the following question:

Question: which colour do you believe to be the experiment director's favourite colour, out of the following? Red, yellow, black, gold, green, white, pink, blue, brown, grey, orange.

Some participants chose the answer we were looking for, gold. These participants will receive a gold-colour ribbon at the end of the experiment.

---

FOR PRINCIPALS:

Now we ask you to choose the amount X that you will pay to the participant « B » in your group for each correct answer he gives. We ask you to state your choice under two different assumptions concerning "B".

Assumption 1: "B" will receive a gold ribbon at the end of the experiment.

Decision 1 : For each correct answer given by "B", I will gain 1 pound and will give _ _ _ pence to B.

Assumption 2: "B" will not receive a gold ribbon at the end of the experiment.

Decision 2: For each correct answer given by "B", I will gain 1 pound and will give _ _ _ _ pence to B.

---

Now we will collect your answers. We will then tell B participants the choice of X that applies to them. They will thus be able to start their test.

Participant « B » in your group is answering the 12 questions from Raven's test. We ask you now to guess how many correct answers he or she will give. You will earn an additional pound if your answer is correct. Please give your answer for each of the two possible cases described below: we will use the one that applies to participant B in your group to calculate your earnings.

Remark: if you have forgotten, you can look at your previous answers to know how much you have decided to pay B for each correct answer.

Assumption 1: "B" will receive a gold ribbon at the end of the experiment.

In your opinion, how many correct answers will B give?

In my opinion, B will give _ _ _ _ correct answers.

Assumption 2: "B" will not receive a gold ribbon at the end of the experiment.

In your opinion, how many correct answers will B give?

In my opinion, B will give _ _ _ _ correct answers.

Now the test is finished.

Thank you for your participation in this experiment. Please leave your answers on the table before going out.

See you tomorrow!

---

FOR AGENTS:

We ask participant « A » to choose the amount X he will pay participant « B » for each correct answer given by "B". We ask him for his choice of X in each of the following two cases.

Assumption 1: "B" will receive a gold ribbon at the end of the experiment.

Assumption 2: "B" will not receive a gold ribbon at the end of the experiment.

---

Participant « A » in your group has decided to give you _ _ _ pence for each correct answer that you will give to the 12 questions in the test.

You will have 13 minutes and 12 seconds (on average 66 seconds per question) to complete the test.

After the end of the experiment, when you come back to be paid, we will tell you how many correct answers you gave, and what was the average number of correct answers in your session.

---

THE TEST

Now the test is finished.

Thank you for your participation in this experiment. Please leave your answers on the table before going out.

See you tomorrow!

# 8. Appendix B

## 8.1. Questionnaire

ID code:

Now we ask you to answer the following questions:

(1) What is your age ?

(2) You are 1 = a man or 2 = a woman

(3) What is your height (cm.) ?

(4) How many brothers do you have?

(5) How many sisters do you have ?

(6) If you have brothers and/or sisters, you are in terms of age 1=the first, 2= the second,. . . ?

(7) Your place of birth : (a) the place, (b) the nearest town, (c) country

(8) The place where you have lived until the age of 18 (if more than one, please for each place note the age when you started living there).

(9) Your father's education (1 = primary school ; 2 = secondary education ; 3 = university; 4 = technical education)

(10) Your mother's education (1 = primary school ; 2 = secondary education ; 3 = university; 4 = technical education)

(11) Which languages do you speak?

(12) What is your field of studies?

(13) In which year of studies are you?

(14) Which are the three historic events that have marked your memory the most? (1 = the most important ;. . . ) For each event, please indicate your impression of it on a scale from 0 to 10 (0 = very negative; 10 = very positive).

(15) Which are the three historical characters that have marked your memory the most? For each character, please indicate their most important quality or defect, together with your global impression of each of them in a scale from 0 to 10 (0 = very negative; 10 = very positive)

(16) To what extent do you agree with the following statement : « In general, most people can be trusted » (on a scale from 0 to 10, where 0 = do not agree: 10 = totally agree)

(17) To what extent do you agree with the following statement : "In general I expect more positive than negative events in my life » (on a scale from 0 to 10, where 0 = do not agree: 10 = totally agree)

(18) In general fathers try to advise their children on the organization of their lives. Can you indicate the importance that your father gave to the following

advices (on a scale from 0 to 10, where 0 = little importance ; 10 = a lot of importance) :

N1 Work regularly

N2 Keep your promises

N3 Be prudent

N4 Think before acting

N5 Do not trust people you do not know

N7 Be sincere

N8 Don't let people make a fool of you

N9 Be strong

N10 Be careful not to waste money and goods.

N11 Go after success

N12 Give a good example

N13 Do not take advantage of others

N14 Behave like others

(19) In general mothers try to advise their children on the organization of their lives. Can you indicate the importance that your mother gave to the following advices (on a scale from 0 to 10, where 0 = little importance ; 10 = a lot of importance) :

N1 Work regularly

N2 Keep your promises

N3 Be prudent

N4 Think before acting

N5 Do not trust people you do not know

N7 Be sincere

N8 Don't let people make a fool of you

N9 Be strong

N10 Be careful not to waste money and goods.

N11 Go after success

N12 Give a good example

N13 Do not take advantage of others

N14 Behave like others

(20) which colour do you believe to be the experiment director's favourite colour, out of the following? Red, yellow, black, gold, green, white, pink, blue, brown, grey, orange.

(21) Four years ago, Jean was twice as old as Jacques. In four years' time, Jacques' age will be 75% of Jean's age. How old is Jean now?