Social Status, Performance, and Motivated Beliefs*

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Abstract

This paper shows that achievement is affected by the social status to which individuals belong. I propose that such influence takes place through a psychological mechanism and, as a result, could occur above and beyond the material constraints inherent to social status. Specifically, social status influences the way individuals form beliefs about their ability and these beliefs are crucial for performance and, consequently, for achievement. A theoretical framework formalizes the proposed mechanism. Two laboratory experiments show that individuals with similar ability on a task exhibit higher performance as well as higher beliefs about their own performance when assigned to a high rather than to a low status treatment. These results are robust to the provision of frequent feedback on the task. Since the assignment to the high status treatment provided no direct material advantages and was independent of ability, these empirical findings corroborate the validity of the proposed mechanism against alternative explanations.

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1 Introduction

How does social status affect future economic success? This question has received considerable attention from economists, who have established that several aspects of social status early in life are important for explaining economic outcomes, including parents' income (Plug and Vijverberg, 2005, 2003), parents' education (Sacerdote, 2002), neighborhood during early childhood (Chetty and Hendren, 2018; Chetty et al., 2015; Borjas, 1995), among others. This study proposes an alternative mechanism linking social status to achievement. Specifically, I propose that the position of individuals in society influences how they form beliefs about their own capabilities, and these beliefs have a considerable effect on achievement.

Typically, the influence of social status on economic success has been attributed to material advantages inherent to the position that is held. For instance, higher parental income allows for the provision of higher quality education and healthcare as well as granting easier access to credit, all of which increase the chances economic success (Okten and Osili, 2004; Deaton, 2003; Uzzi, 1999; Fershtman and Murphy, 1996). These approaches focus on constraints that are *external* to the individuals, i.e. regardless of their preferences, behavioral biases, or beliefs, individuals face limited access to markets of goods and services that are crucial to economic success. In this study, I identify a mechanism whereby social status confers advantages or disadvantages via constraints that are *internal* to individuals. Specifically, I show that social status, above and beyond the material advantages and disadvantages that it entails, induces beliefs that constrain individual achievement.

Central to my proposal is the notion that individuals' beliefs about their capabilities and performance on productive tasks are positively related (See Dalton et al. (2016), Koszegi (2006), Compte and Postlewaite (2004), and Benabou and Tirole (2002) for some evidence on this relationship). Achievement is thus not only determined by abilities, but is complemented by beliefs about these abilities. In addition, individuals are sophisticated in that they understand the relationship between beliefs and performance and can accurately discount available information. However, when profitable, they can use their position in society to hold favorable, but potentially incorrect beliefs. For instance, individuals belonging to a high status can form high beliefs, even though their abilities could be low. This captures settings in which individuals attribute their social standing to their ability, say, by appealing to prevalent conceptions about meritocracy or due to a deep-rooted attitude toward social ranks. This generates a disadvantage for low status individuals who cannot form high beliefs, in a similar vein as high status individuals can.

To establish the existence of the proposed mechanism, I examine whether individuals with similar ability on a productive but burdensome task exhibit belief and performance differences when belonging to a different social status. This specific setting is chosen as it captures environments in which economic outcomes are achieved by means of motivation and ability.

Additionally, confining myself to this setting allows me to provide simple theoretical conditions guaranteeing the existence of the mechanism as well as clean corroborative empirical evidence. Nevertheless, these advantages come at the cost of generalizability as the present study should be regarded as a proof of concept of the suggested psychological influence of social status on achievement.[1]

Throughout this study I adhere to Ridgeway and Walker (1995)'s definition of social status, who characterize it as the rank-ordered relationship between individuals associated with prestige. According to their definition, social status involves a degree of social recognition, but it does not necessarily entail material advantages and is not necessarily earned. Standard economic theory predicts that these social ranks do not influence performance. However, the proposed theory and the main result presented in this paper go against this prediction. I show theoretically and empirically that social ranks, even when they do not yield any advantages to perform the task, do not not entail valuable information about ability on the task, and do not monetary rewards, influence performance by means of the different beliefs, i.e. the internal constraints, that they generate.

A theoretical framework formalizes the proposed mechanism and provides testable predictions. The model demonstrates that social status influences performance on productive tasks in a restrictive setting. Specifically, the model assumes that individuals are informed about their ability, that social status is independent of ability, and that such independence is common knowledge. Under such conditions, individuals are motivated to incorrectly, but deliberately, incorporate social status in their belief system only if such inaccuracy is profitable. Thus, a necessary condition for status to influence beliefs is that individuals derive utility gains from holding incorrect but favorable beliefs. When sufficiently large, these utility gains make up for the multiple costs of maintaining inaccurate beliefs, such as the cost of exerting excessively high effort levels or the cognitive costs associated to ignoring valuable information about ability. In contrast, when utility depends only on the monetary rewards that the task yields or when the costs of being inaccurate are too steep, beliefs and performance are not influenced by social status and are instead only determined by ability. These two opposing results develop into the testable predictions of the model.

The validity of the theoretical predictions are tested with two laboratory experiments. In the experiments, subjects are assigned to one of two treatments: high status or low status. Belonging to high status entails receiving social recognition from other participants in the experiment and a positional good with low market value. Moreover, a cognitively challenging

[1] It could be also argued that social status entails other psychological stimuli from which I abstract in this study which could enhance the influence of social status on individual beliefs. For instance, the degree to which a society segregates and discriminates individuals with low socio-economic status could lead them to hold even lower beliefs about their ability. Also, in a society with very low prospects of social mobility, belonging to a low social status may yield to low motivation to improve one's actual situation.

task, for which performance is more likely to depend on subjects' ability rather than on their motivation, is implemented before and after the status assignment took place. The first implementation serves to classify participants according to their initial ability on the task. The second implementation measures performance after social status is assigned and in a setup in which the accurate completion of the task entails monetary incentives. Throughout the experiments subjects are given feedback on the task as well as the possibility to inspect how well they performed the task in comparison to others. In addition, beliefs about how well subjects think they can perform the task were elicited in multiple occasions throughout in each session.

In the first experiment subjects were *randomly* assigned the high status or the low status. The main finding of this experiment is that low ability subjects assigned to low status display low performance levels while subjects with similar ability who were assigned to high status display high performance. The same qualitative dependence with respect to social status emerges in the beliefs data. Altogether, these results are in line with the proposed mechanism: individuals with the capacity to reach high outcomes become internally constrained when assigned to low status, forming low beliefs which are followed by low performance levels. Further analyses show that the treatments induced different processes of belief updating. Specifically, subjects with high status updated their beliefs upward more steeply, even when previous performance levels do not match those beliefs.

The second experiment is different in that the assignment to the high status was *meritocratic*. This means that subjects who at first exhibited higher ability on the task were assigned to high status. The data of this experiment demonstrates that subjects with low ability display low performance as well as low beliefs. These results corroborate that unless assigned high status, low ability subjects display low beliefs and low performance.

This paper contributes to different strands of literature. First, it contributes to the literature on confidence maintenance and motivated beliefs (Benabou, 2015; Mobius et al., 2014; Compte and Postlewaite, 2004; Benabou and Tirole, 2002). Although the theoretical framework is an adaptation of Benabou (2015) and Benabou and Tirole (2002), my results add novel interpretations and attributes to these models. For instance, I show that another mechanism to induce motivated beliefs, next to imperfect recall, is the incorrect but deliberate interpretation of social signals. Also, I show that in the presence of another dimension of types, e.g. social status, the intrapersonal equilibria depicted in Benabou (2015) exists under similar conditions. Moreover, the experimental data display clean evidence of subjects engaging in self-deception. In particular, subjects suppress relevant information about their ability, e.g. frequent feedback, and instead behave according to their assigned social status when this assignment is favorable. This finding supports the results of Eil and Rao (2011) and Mobius et al. (2014) who show that subjects update beliefs about their own skills and beauty in an asymmetric fashion, displaying stronger belief reactions toward favorable signals. Finally, the experimental data also suggest that, when given the chance, individuals accessed information about their ability relative to that of others regardless of the treatment assignment and their ability, e.g. they do not display information avoidance.

Second, the present paper adds to the theoretical literature that investigates the influence of social status on economic outcomes. The literature on this topic show that the inclusion of preferences for social status, that is that individuals intrinsically prefer to outrank others, could explain relevant economic phenomena. For instance, individual preferences for social status create consumption and saving behaviors that create and perpetuate inequality (Ray and Robson, 2012; Hopkins and Kornienko, 2010, 2004; Robson, 1992). Also, these preferences allow a principal achieve higher worker performance by means of the implementation of contests within the organization (Besley and Ghatak, 2008; Auriol and Renault, 2008; Moldovanu et al., 2007). I contribute to this literature demonstrating that social status has the potential to generate unequal outcomes in the absence of preferences for social status as well as in the absence of environments where there is competition for social status.

Finally, this paper contributes to the recent and growing literature in economics that studies the role of psychological constructs such as aspirations, self-esteem, and locus of control in perpetuating poverty (Genicot and Ray, 2017; Dalton et al., 2016; Bogliacino and Ortoleva, 2015; Blanden et al., 2007; Bowles et al., 2001). I propose a novel mechanism with the capacity to explain why individuals belonging to low social status achieve low outcomes as a consequence of having low aspirations, low self-esteem, and low locus of control. On the theoretical side, individuals in my setting internalize the positive relationship between performance and beliefs, which is the main difference with respect to Dalton et al. (2016) who focus on the economic consequences of poor individuals not internalizing this relationship. Moreover, in comparison to Genicot and Ray (2017), Bogliacino and Ortoleva (2015), and Dalton et al. (2016), I do not assume that individuals' preferences exhibit non-convexities that capture the notion that when beliefs, aspirations in their setup, are too high, they lead to frustration and consequently to low outcomes. In my framework if self-deception is available and is profitable, it leads to an strategic interaction within the individual whereby too favorable beliefs are deemed not credible and could cause low outcomes. On the empirical side, the experimental data provide clean evidence supporting my proposal.

2 Theoretical framework

The aim of this section is twofold. First, it formalizes the proposed mechanism. Second, it provides set of testable predictions. The main feature of the model is that it accommodates the prediction that social status influences performance under stringent conditions. Specifically, the model assumes that individuals know their ability and also know that social status and ability are independent processes.

The model is an adaptation of the theory of motivated beliefs developed by Benabou and Tirole (2002) and Benabou (2015). However, the results presented in this section add novel attributes and insights to these models. Readers interested in more complete and elaborated models of motivated beliefs should refer to these papers.

The benchmark

Consider a risk-neutral individual facing the problem of exerting some amount of effort $e \in \{e_H, e_L\}$ on a productive task. Let $e_H > e_L \geq 0$ and without loss of generality $\Delta e \equiv e_H - e_L = 1$. Moreover, the individual faces a time horizon of three periods $t = 0, 1, 2$. At $t = 1$ the task needs to be performed and at $t = 2$ monetary rewards associated to the task are paid. Specifically, let $a > 0$ be the monetary payment that the task yields for each unit of output that is delivered.

At date $t = 0$ the individual receives accurate information about his ability on the task. This information could be interpreted as the recollection of his own performance on the task in the past or as receiving feedback about his ability from a reliable source. For simplicity, I consider two ability levels: high and low. Formally, let $\theta_i \in \{\theta_H, \theta_L\}$ were $\theta_H > \theta_L$. I represent the ability that the agent *does not have* as θ_{-i}. Moreover, the distribution of ability is common knowledge. In particular, it is known that if an individual is randomly drawn, he is going to be of high ability with probability $q \in [0, 1]$.

At $t = 0$ the individual also receives a status class that endows him with a position on the society. I assume that there are two status classes: a high status and a low status. I represent social status with $\sigma_j \in \{\sigma_H, \sigma_L\}$. An individual receives σ_H with probability $r \in [0, 1]$. Moreover, I posse that $corr(\theta_H, \sigma_H) = pr$ which entails that the agent's position on the society is independent to his abilities on the task. I assume that this independence is common knowledge.

On the one hand exerting high effort is costly and carries out immediate disutility. I represent this cost with the function $c(e)$, which for simplicity is assumed to have the following functional form:

$$\textbf{Assumption 1. } c(e) = \begin{cases} c \textit{ if } e_H, \\ 0 \textit{ if } e_L. \end{cases} \quad \textit{With } c > 0.$$

On the other hand, effort yields monetary rewards that depend on the relationship between effort and output. I assume that effort is mapped into output by means of a deterministic production function that depicts a complementarity between abilities and effort. Therefore, exerting effort on the task yields monetary benefits that become larger when the exerted effort is high. The following assumption presents the specific functional form of the production function:

Assumption 2. $b(e, \theta_i) = \theta_i e$.

Finally, I assume that the individual experiences psychological utility, which captures the notion that ego and pride from holding high self-image about his diligence on the task yield utility gains.[2] I model psychological utility by incorporating the individual's belief about performance directly in his utility function.

All in all, the utility of the individual at $t = 1$ can be written as[3]

$$U_1(e) = \alpha\theta_i e + sE_1(\theta_i e) - c(e), \tag{1}$$

where the parameter $s \geq 0$ weights the impact of psychological utility on the overall utility. Note that in this setting the individual is fully informed about his ability, because of the precise information received at $t = 0$ and also because it is known that the relationship between effort and output is deterministic. Thus, $E_1(\theta_i e) = \theta_i e$ and Equation (1) becomes

$$U_1(e) = (\alpha + s)\theta_i e - c(e). \tag{2}$$

The rational individual chooses e_H if this choice generates utility gains, which is as long as $e_H(\alpha + s)\theta_i \geq c$. If instead $e_H(\alpha + s)\theta_i < c$, then e_L is chosen to avoid disutility. Throughout the paper I focus on the cost schedule $c \in \Big((\alpha + s)\theta_L, (\alpha + s)\theta_H\Big]$ which yields the interesting case in which high ability individuals choose to exert high effort whereas low ability individuals choose low effort.

Moreover, the agent's decision is not affected by his social status. This is because σ_j does not entail any economic or psychological value to the agent and does not yield any advantage to perform the task. Therefore, in an environment in which individuals achieve outcomes by means of their own ability and effort, the initial social status of an individual, alone, does not affect performance in the productive task. Note that this result is robust to setting $s = 0$, so that the independence of effort with respect to social status is not driven by the inclusion or not of psychological utility.

Social status, motivated beliefs and self-deception

I depart from the benchmark letting the individual engage in self-deception. This means that he can deliberately form erroneous beliefs about his own ability. However, instead of letting the individual freely manipulate his own beliefs, I model self-deception as a dual self interaction.

[2] An alternative explanation is given by (Benabou, 2015) were psychological utility is due to the emotions and psychosomatic reactions that the agent experiences from anticipating the future welfare levels that he will attain. Similarly, Compte and Postlewaite (2004) shows that keeping optimistic views about oneself, based on past experiences, could enhance future performance, and thus welfare.

[3] An implicit assumption is that the individual discounts utility using an exponential discount function, $D(t) = \sum_0^T \delta^t$ and that, without loss of generality, he is infinitely patient, $\delta = 1$.

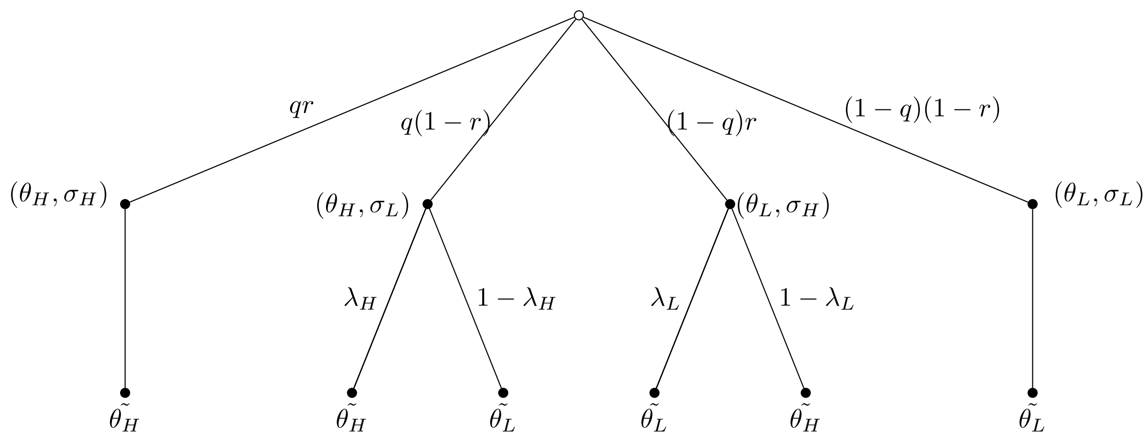

Figure 1: Self 1's reaction to signals

Specifically, there is an informed self or *Self 0* who receives accurate information about his ability on the task, θ_i, as well as the ability-irrelevant signal, σ_j. These information are used to create a composite signal $\tilde{\theta}_k \in \{\tilde{\theta}_H, \tilde{\theta}_L\}$ that is sent to *Self 1*. In particular, $\tilde{\theta}_k$ may be truthful, mapping accurately the agent's ability $k = i$, or could be distorted, $k = j$ whenever $i \neq j$. Thus, if Self 0 distorts the truth, he may do so as long as his endowed social status supports the composite signal that is sent to Self 1. This seeks to represent a setting in which individuals, due to some prevalent conception about meritocracy in society, are willing to erroneously attribute a positive relationship between ability and status. For the sake of notation, I represent the signal *that is not chosen* by Self 0 with $\tilde{\theta}_{-k}$.

Moreover, *Self 1* is uninformed about his ability. Thus, he is required to exert effort on the task, e, while making inference about the veracity of a received signal $\tilde{\theta}_k$. This information asymmetry between the selves creates an strategic interaction. To derive psychological utility from holding high beliefs or to save on effort costs, Self 0 sends signals that induce inaccurate beliefs.[4] However, Self 1 anticipates Self 0's intentions and discounts the received signals using bayes rule. Specifically, when a signal $\tilde{\theta}_k$ is received, Self 1 acknowledges that with probability $\lambda_k \in [0, 1]$ Self 0 is telling the truth and the state of nature is indeed θ_k, but that with probability $1-\lambda_k$ Self 0 is lying and he is instead of ability θ_{-k}. Figure 1 illustrates Self 1's updating process.

Hence, the probability that signal $\tilde{\theta_H}$ reflects the true state of nature is to Self 1 equal to

$$p_H(\lambda_H, \lambda_L) \equiv Prob(\theta_H|\tilde{\theta_H}) = \frac{qr + \lambda_H q(1-r)}{qr + \lambda_H q(1-r) + \chi r(1-q)(1-\lambda_L)} , \tag{3}$$

[4]To build intuition about the incentives that Self 0 faces, consider an scenario in which an agent received the tuple $\{\theta_L, \sigma_H\}$. Self 0 could either send $\tilde{\theta}_L$, a signal reflecting the true state of nature, or $\tilde{\theta}_H$, a distorted signal. Note that the psychological component $E_1(\theta_i e)$ becomes higher when Self 1 believes that his ability are high. However, these beliefs also lead to steeper costs of effort if those higher beliefs lead Self 1 to choose e_H. Thus, depending on how costly exerting the high level of effort is, Self 0 could be better off distorting information sending $\tilde{\theta_H}$.

and the probability that signal $\tilde{\theta_L}$ reflects the true state of nature is is to Self 1 equal to

$$p_L(\lambda_H, \lambda_L) \equiv Prob(\theta_L|\tilde{\theta_L}) = \frac{(1-q)(1-r) + \lambda_L(1-q)r}{(1-q)(1-r) + \lambda_L(1-q)r + \chi q(1-r)(1-\lambda_H)} . \tag{4}$$

Note that $p_H(\lambda_H, \lambda_L)$ depends on λ_L in the following way: if Self 0 with low ability never engages in self-deception, a favorable signal, $\tilde{\theta_H}$, is regarded as truthful and $p_H(\lambda_H, \lambda_L = 1) = 1$, but when Self 0 with low ability always engages in self-deception a favorable signal is ignored and Self 1 assesses the probability of having high ability according to his prior, this is according to $p_H(\lambda_H, \lambda_L = 0) = \frac{qr+\lambda_H q(1-r)}{qr+\lambda_H q(1-r)+\chi r(1-q)}$. The posterior probability, $p_L(\lambda_H, \lambda_L)$ exhibits similar patterns with respect to λ_H. Specifically, when $\lambda_H = 1$ an unfavorable signal, $\tilde{\theta_L}$ is regarded as truthful and $p_L(\lambda_H = 1, \lambda_L) = 1$. While when $\lambda_H = 0$ an unfavorable signal is non-credible and Self 1 assesses the probability that he is a low type using his prior $p_L(\lambda_H = 0, \lambda_L) = \frac{(1-q)(1-r)+\lambda_L(1-q)r}{(1-q)(1-r)+\lambda_L(1-q)r+\chi q(1-r)}$.

Additionally, the parameter $\chi \in (0, 1]$ present in equations (3) and (4), captures how bayesian the individual is. As $\chi \to 0$ Self 1 becomes increasingly naive and he is more likely to believe the received signal. Instead when $\chi = 1$, signals are entirely discounted according to bayes rule.

Therefore, Self 1 forms beliefs according to,

$$E_1(\theta_k|\tilde{\theta_k}) = p_k(\lambda_H, \lambda_L)\theta_k + (1 - p_k(\lambda_H, \lambda_L))\theta_{-k}. \tag{5}$$

We are now in a position to write down Self 1's program,

$$\begin{aligned} &\underset{e\in\{e_H,e_L\}}{\text{Max}} (a+s)eE_1(\theta_k|\tilde{\theta_k}) - c(e), \\ &\text{subject to} \\ &E_1(\theta_k|\tilde{\theta_k}) = p_k(\lambda_H, \lambda_L)\theta_k + (1 - p_k(\lambda_H, \lambda_L))\theta_{-k}. \end{aligned} \tag{6}$$

The solution to Self 1's program is presented in Lemma 1. All proofs are relegated to Appendix A.

Lemma 1. *The optimal effort chosen by Self 1 is,*

$$e(\tilde{\theta_k}) = \begin{cases} e_H & \textit{if } \tilde{\theta_H} \textit{ and } \lambda_L \in [\hat{\lambda_L}, 1], \\ e_H & \textit{if } \tilde{\theta_L} \textit{ and } \lambda_H \in [0, \hat{\lambda_H}]. \end{cases}$$

With $\hat{\lambda_L}$ and $\hat{\lambda_H}$, the threshold probabilities of self-deception, satisfying

$$\hat{\lambda_L} = 1 - \frac{q(\theta_H(a+s)-c)(r+(1-r)\lambda_H)}{\chi(1-q)r(c-(a+s)\theta_L)},$$

and

$$\hat{\lambda_H} = 1 - \frac{(1-q)(\theta_L(a+s)-c)((1-r)+r\lambda_L)}{\chi q(1-r)(c-(a+s)\theta_H)}.$$

Lemma 1 presents the conditions ensuring that Self 1 exerts the high effort level. Specifically, there is a threshold probability for low ability individuals, $\hat{\lambda_L}$, that makes Self 1 indifferent between setting e_L and e_H. When $\hat{\lambda_L} > \lambda_L$, favorable signals are no longer credible and Self 1 is better off setting e_L. Instead, when $\hat{\lambda_L} \leq \lambda_L$, favorable signals are credible and Self 1 sets e_H. Similarly, there is a threshold probability for high ability individuals, $\hat{\lambda_H}$, that makes Self 1 indifferent between setting e_L and e_H. Unfavorable signals remain credible to Self 1 if $\lambda_H > \hat{\lambda_H}$ while are not believed if $\lambda_H \leq \hat{\lambda_H}$.

Before analyzing Self 0's choice, I impose the assumption that lying has a cost that has to be faced by Self 0. The interpretation of this assumption is that forgetting or suppressing relevant information is cognitively costly to the individual. To keep the analysis simple, I assume that this cost follows a piece-wise function as follows:

Assumption 3. $m(\lambda) = \begin{cases} m \text{ } \textit{if } \lambda_i > 0, \\ 0 \text{ } \textit{if } \lambda_i = 0. \end{cases}$ *With* $m > 0$ *and* $\lambda_i = \{\lambda_L, \lambda_H.$

All in all, Self 0's program can be written down as

$$\underset{\lambda_i \in [0,1]}{\text{Max}} \; E_0(U(e, \lambda_i)) - m(\lambda). \tag{7}$$

Where

$$E_0(U(e_H, \lambda_i)) = a\theta_i e_H + s\Big(\lambda_i\theta_i + (1-\lambda_i)E_0\Big(E_1(\theta_k|\tilde{\theta_k})\Big)\Big)e_H - c,$$

captures Self 0's utility when e_H is exerted and

$$E_0(U(e_L, \lambda_i)) = a\theta_i e_L + s\Big(\lambda_i\theta_i + (1-\lambda_i)E_0\Big(E_1(\theta_k|\tilde{\theta_k})\Big)\Big)e_L,$$

captures Self 0's utility when e_L is exerted. Thus, Self 0's decision with θ_i consists on choosing $\lambda_i \in [0,1]$ that maximizes his utility given the effort level that such strategy induces in Self 1.

Note that the programs represented in (6) and (7) illustrate the strategic interaction between the selves. As mentioned above, the cause of this interaction is the information asymmetry between the two selves, which could lead them to form different beliefs. For example, when receiving a favorable signal, Self 0 holds beliefs $E_0(E_1(\theta_i)) = \lambda_i\theta_i+(1-\lambda_i)\Big((\theta_H-\theta_L)p_H(\lambda_H,\lambda_L)+\theta_H\Big)$ whereas Self 1 holds beliefs $E_1(\theta_i) = \Big((\theta_H - \theta_L)p_H(\lambda_H, \lambda_L) + \theta_H\Big)$. Since beliefs enter the utility function instrumentally, a difference in beliefs among the selves necessarily implies that the selves behavior is optimized with respect to different objective functions. Self 0 could influence Self 1 beliefs and thus his action e by setting λ_i while anticipating that these signals will be discounted.

The game played by the two selves is solved using sub-game perfection. The most relevant equilibria of the game are presented in Definition 1, Definition 2, and their existence is guaranteed by Proposition 1 and Proposition 2. Other equilibria of the game and their respective proofs are relegated to Appendix B. I start by defining and proving the existence of an equilibrium in which social status determines effort exertion as well as beliefs of low ability individuals.

Definition 1. *A (semi) pooling equilibrium of the status and self-deception game is characterized by the tuple $(\lambda_p^{**}, e_p^{**})$, where*

$$e_p^{**} = \begin{cases} e_L & \text{if } (\theta_L, \sigma_L), \\ e_H & \text{if } (\theta_L, \sigma_H) \text{ or } \theta_H, \end{cases}$$

and

$$\lambda_p^{**} = \begin{cases} 1 & \text{if } (\theta_L, \sigma_L) \text{ and } \theta_H, \\ \hat{\lambda_L} & \text{if } (\theta_L, \sigma_H). \end{cases}$$

Proposition 1. *There exists an equilibrium $(\lambda_p^{**}, e_p^{**})$ that is sustained if $s > 0$, $c \in \Big((a+s)\theta_L, (a+s)\Big(\frac{sqe_H\theta_H+\chi(1-q)r(a+s)\theta_L}{sqe_H+\chi(1-q)r(a+s)} - m\chi(1-q)r\Big)\Big)$, and $m \leq e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)r\chi}$.*

Proposition 1 characterizes an equilibrium in which the internal constraints induced by social status yield economic consequences. Specifically, low ability individuals exert high effort if they belong to the high status but exert instead low effort if they instead belong to low status. This difference in effort exertion stems from the higher beliefs that individuals could form when endowed the high status. Even though inaccurate, these higher beliefs generate utility gains that stem from psychological utility, which in conjunction with low effort costs, makes it affordable to choose e_H. Self 0's strategy supporting this equilibrium consists of a mixed strategy. Specifically, Self 0 sends favorable signals at the rate $\lambda_L = \hat{\lambda_L}$, which, according to Lemma 1, guarantees that Self 1 chooses high effort after having received a favorable signal. Given this behavior of low ability individuals, high ability individuals' best-strategy is to be truthful inasmuch as favorable signals are still credible despite that $\lambda_L > 0$.

The required conditions to sustain this (semi) pooling equilibrium are that the psychological costs, m, as well as the costs associated to choosing the high effort, c are moderate. Otherwise, the psychological benefits that low ability individuals derive from holding higher beliefs cannot make-up for the costs implied by choosing high effort and the costs of engaging in self-deception. These conditions are similar to the conditions that sustain the "intra-personal equilibria" in Benabou (2015) and Benabou and Tirole (2002). Moreover, the existence of the equilibrium in Proposition 1 necessarily requires $s > 0$, otherwise individuals with (θ_L, σ_H) would not be able to experience benefits from a strategy involving self-deception.

Let us now examine how the conditions guaranteeing the existence of the (semi) pooling equilibrium change as the parameters of the model change. First, as $q \to 1$, this is as the proportion of high ability individuals becomes increasingly larger, the semi pooling equilibrium holds under less stringent conditions. This is because the upper boundary of values of c sustaining the equilibrium approaches $(a + s)\theta_H$, covering the entire range of effort costs. Similarly, as $r \to 0$, which implies that the endowment of high status becomes increasingly unlikely, the (semi) pooling equilibrium holds under less stringent conditions since the upper boundary of the values of c sustaining the (semi) pooling equilibrium approaches $(a + s)\theta_H$. Finally, the less Bayesian the agent is, this is as $\chi \to 0$, the conditions to sustain the equilibrium presented in Proposition 1 become less stringent since it can be sustained over a wider range of values of c.

Definition 1 and Proposition 1 presented an equilibrium in which individuals receiving the tuple (θ_L, σ_H) engage in the mixed strategy $\lambda = \hat{\lambda}_L$,which generates high psychological utility as well as high effort. This strategy is best-response if costs are maintained low. Instead, when the cost associated to self-deception strategy is high, individuals are better-off self-signaling their type. Proposition 2 characterizes this separating equilibrium.

Definition 2. *A separating equilibrium of the status and self-deception game is characterized by the tuple* $(\lambda_s^{**}, e_s^{**})$*, where*

$$e_s^{**} = \begin{cases} e_L & \text{if } \theta_L, \\ e_H & \text{if } \theta_H, \end{cases}$$

as well as

$$\lambda_s^{**} = \lambda_L^{**} = \lambda_H^{**} = 1$$

Proposition 2. *There exists an equilibrium* $(\lambda_s^{**}, e_s^{**})$ *that is sustained if* $s > 0$ *and* $m > e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)r\chi}$.

When facing high costs of self-deception, individuals are better-off being truthful. In contrast to the equilibrium of Proposition 1, this equilibrium entails that the internal constraints that social status generates are not strong enough to generate economic consequences. Specifically, when the costs of self-deception are high, this is when $m > e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)\chi}$, low ability individuals face costs that cannot be outweighted by the potential benefits of engaging in self-deception and opt for strategy $\lambda_L = 1$. Given such strategy, high ability individuals are also truthful inasmuch as favorable signals remain credible. Self 1, knowing that $\lambda_L = 1$ and $\lambda_H = 1$ are best strategies, exerts low and high effort in reaction to unfavorable and favorable signals, respectively.

Moreover, note that the conditions ensuring the existence of this separating equilibrium become more stringent as $r \to 0$, $q \to 0$, and $\chi \to 0$. These comparative statics of the parameters of the model show that the equilibria of Proposition 1 and Proposition 2 cannot coexist and are more likely to be sustained when the other equilibrium is less likely to be sustained.

All in all the model generates two competing results. Proposition 1 demonstrates that in a restrictive setting the internal constraints that social status generates could develop into performance differences among similarly skilled individuals. Two assumptions are fundamental in guaranteeing this result. The first one is that beliefs enter as an argument in the utility function. The second is that social status is used to sustain inaccurate but profitable beliefs. In contrast, Proposition 2 shows that these internal constraints are, under certain conditions, not powerful enough to yield relevant economic consequences. The question of whether one or the other equilibrium governs behavior is going to be empirically investigated using controlled laboratory experiments. The explicit predictions that are derived from this model are presented in Section 4, after the experimental design is described.

3 Experimental design and procedures

Experiment 1

The experiment was conducted at Tilburg University's CentERLAB in October 2015. Participants were all students at the university and were recruited through an online system. The data consist of 8 sessions with a total of 136 subjects. On average a session lasted approximately 60 minutes. Between 13 and 24 participants took part in a session. The currency used in the experiment was Euros. I used Z-Tree (Fischbacher, 2007) to implement and run the experiment. Subjects earned on average 11.55 Euros. The instructions of the experiment are presented in Appendix C.

The experiment consisted of two parts and subjects were informed about this feature of the experiment. In both parts subjects were expected to complete different versions of the Raven's Matrices test. The accurate completion of this task demands cognitive resources on the part of subjects (Raven, 1989). Therefore, it was more difficult for motivated but unskilled subjects to improve their performance on the task as compared to another task that, instead, only demanded effort or attention from subjects. In terms of the model, exerting high effort in this task entailed high effort costs c and, due to the cognitive resources that it required, it made it more difficult to afford the cost of self-deception m. Hence, implementing this task was intended to be a stringent test of Proposition 1, and thus of the proposed mechanism linking status and achievement.

In the first part of the experiment, Set I of the Advanced Progressive Matrices test (APM) was implemented. This set was a "quick version" of the Raven's test and consisted of 12 matrices with a representative level of difficulty of the complete version of the Raven's test. Subjects had five minutes to complete these matrices as it is recommended by Raven (1989). Although subjects did not face any monetary incentives in this part of the experiment, they were encouraged by the experimenter to do their best. The aim of this part of the experiment was to measure subjects' ability on the task. Once the specified time for this part of the experiment was over, feedback about performance in the task, i.e. the number of correctly solved matrices, was given to each subject.

After the first part of the experiment was completed, I induced status differences between subjects participating in the same session. To that end, I implemented the protocol developed by Eckel and Ball (1996) and also implemented in Ball and Eckel (1998) and Ball et al. (2001). Specifically, subjects were randomly assigned to one of two treatments: the *High Status* treatment, in which they received a symbolic award and social recognition from their peers, or the *Low status* treatment, where they did not receive the award nor social recognition.[5] The assignment to the high status treatment was at random to allow for performance comparisons between subjects with similar ability but assigned to different treatments. Although participants were not informed about the assignment rule, they were also not deceived. This is a crucial difference with respect to Eckel and Ball (1996)'s protocol. The exact wording of the message given and read to subjects was "The following participants were assigned to the GOLD group. Please come up to the front as we call your number and receive your medal". The experimenter reports that no subject questioned the reason for the assignment to the treatments during the experiment.

[5]The reason behind implementing an artificial social status rather than a naturally occurring status rank was to minimize the possibility of disagreements that may arise from using naturally occurring rankings. For instance, subjects may disagree about the rank of an status allocation based on academic performance (what kind of courses are considered for this rank?), gender (which characteristics make one gender rank higher than the other?), or socio-economic status (I am right now having similar status than someone else of my age that is working, but I am investing in education at the moment). See Ball et al. (2001) for a more comprehensive discussion about the usage of this status differential.

In the second part of the experiment, I implemented Set II of the APM. This set is the complete version of the Raven's test and consisted of 36 matrices. Additionally, the most difficult 24 matrices of the Standard Progressive test (SPM) were included in this part of the experiment.[6] Subjects had 20 minutes to solve as many matrices as they could and faced a monetary incentive of 0.5 euros for each matrix that is solved accurately. The pre-specified time to complete matrices, also recommended by Raven (1989), was divided in five rounds of four minutes each. This division of the total available time in rounds had several purposes. First, provide feedback after each round was over so that subjects could learn about their ability on the task. Second, elicit subjects' beliefs about the number of matrices they think they are able to complete in the next round. Third, give some rest to the subjects to minimize depletion.

Subjects' beliefs were not incentivized. This was done for several reasons. First, previous studies have reported that implementing an incentive compatible mechanism to elicit beliefs could lead to distractions from the task of interest (Cabrales et al., 2010; Haruvy et al., 2007). I avoid using complicated payment rules to ensure that subjects focus on the Raven's test and on assignment to the treatment. Second, Trautmann and van de Kuilen (2015) show that non-incentivized belief elicitations display desirable properties that are also obtained using incentive compatible methods. Third, I am interested in beliefs differences across treatments rather than in the exact level of beliefs. Hence, in presence of noise, stemming from social desirability or subjects wanting to influence the results in the direction they believe the goal of the experiment is, it must be equally distributed across treatments and across types due to randomization. This is indeed what the data presented in Section 7 suggest.

Finally, for exactly half of the sessions, chosen at random, subjects had the possibility of accessing a ranking that shows their performance relative to that of the rest of participants in the session. This feature was only available in the second part of the experiment. The ranking was determined by subjects' performance on the task at the exact moment in which it was accessed. To look at the ranking, subjects had to click a button located at the left-bottom part of their screen. Accessing this ranking was costly inasmuch as subjects spend time that could have been used to improve their performance on the task. I included this rank to understand if potential treatment effects are due to subjects being confused due to the treatment assignment or, as predicted by the theoretical framework, the treatment effects are independent of such knowledge.

[6]The SPM is also a Raven's matrices test but with a lower average difficulty as compared to the APM. Using the most difficult matrices kept the degree of difficulty of the task constant

Experiment 2

The experiment was conducted at Tilburg University's CentERLAB in October 2015. Participants were all students at the university and were recruited using an online system. The data consist of 8 sessions with a total of 138 subjects. On average a session lasted approximately 60 minutes. Between 11 and 23 participants took part in a session. The currency used in the experiment was Euros. I used Z-Tree (Fischbacher, 2007) to implement and run the experiment. Subjects earned on average 11.8 Euros. The instructions of the experiment are presented in Appendix C.

The experimental design had only one difference with respect to Experiment 1. Namely that the assignment to the high status was not random and was instead determined by performance in Set I. Specifically, subjects with higher performance than at least half of the subjects in the same session, were given the high status. The other half of subjects were assigned Low Status. The rationale behind implementing this experiment was to show that without being assigned to high status, low ability subjects exhibit low performance levels. In other words, it was designed to corroborate that potential treatment effects found in Experiment 1 were due to the treatment assignment and not due to other factors such as subjects' heterogeneity in beliefs and performance.

4 Predictions

This section presents two competing predictions regarding subjects' performance and beliefs. These predictions are based on the theoretical model presented in Section 2. The first prediction is based on the results of the benchmark and on Proposition 2. These results have in common that they predict that the treatments do not affect subjects' performance nor beliefs. In the benchmark, this prediction stems from the assumption that the endowed social status does not relate to ability and does not yield advantages to perform the task. In the model with self-deception, subjects have the possibility to hold incorrect beliefs, which allows them to derive psychological benefits, but due to the steep costs that this strategy entails, they are better off being truthful.

Prediction 1: *Performance is highest for high ability subjects and lowest for low ability subjects. The treatment assignment does not affect performance.*

The second prediction is based on Proposition 1. This result predicts that subjects with low ability exert higher effort and exhibit higher beliefs when assigned to the High Status. This is because the internal constraints that the low status generates are strong enough to yield economic consequences in the experiment despite the elevated costs of effort that subjects face. Moreover, this result also predicts that high ability subjects exhibit high performance as well as high beliefs regardless of their treatment assignment. This is because they can form high beliefs in the absence of high status.

Prediction 2: *Performance is highest for high ability subjects, second highest for low ability subjects assigned to the high status, and lowest for low types in the low status.*

Finally, Note that if the channel through which social status generates different beliefs and performance levels are the internal constraints generated by the social status treatments and not, for example, confusion about ability on the task that stems from the treatment assignment, this prediction must be robust to the provision of frequent feedback about relative and absolute performance in the task. This is captured by the model through the assumption that subjects know θ_i.

5 Status affects performance

5.1 Experiment 1: random assignment

Experiment 1 aims to evaluate the casual effect of social status on performance and beliefs. The identification strategy consists on performance comparisons among subjects with similar ability on the task but who were assigned to different treatments. To that end, I classify subjects into two ability categories: high ability and low ability. A subject is classified to have ability if he completes accurately more matrices in the first part of the experiment than at least half of the subjects in the same session. An individual that fails to classify as a high ability is classified as low ability. Note that participants are not aware of this classification throughout the experiment. The data suggests that this classification entails significant differences in average performance on the first part of the experiment. Specifically, high ability subjects outperform low ability subjects on 2.21 standard deviations ($p < 0.001$).

Moreover, a successful assignment to the treatments must ensure that subjects' ability is comparable across treatments. Indeed, I find no difference in average performance in Set I between low ability subjects assigned to the different treatments ($t(62) = 0.159, p = 0.83$). In contrast, I do find that high ability subjects assigned to low status exhibit higher performance in Set I than high ability subjects assigned high status ($t(67) = 1.831, p = 0.071$). This difference is taken into account in what remains of the analysis, but posses no threat to the validity of the main results of the paper.

We are now position to evaluate subjects' performance in the second part of the experiment.

Table 1 presents the descriptive statistics of performance by treatment and by ability. The main finding of the experiment is that low ability subjects exhibit higher performance when assigned the high status ($t(55.89) = -2.241, p = 0.029$). The effect size of this difference is of 0.53 standard deviations ($p = 0.01$, with 1000 bootstrap replications).[7] The average performance level achieved by low ability subjects assigned to High Status is comparable to that achieved by high ability subjects assigned to the same treatment ($t(58.05) = -1.048, p = 0.298$). Additionally, low ability subjects assigned to the low status are outperformed by high ability subjects who belong to the same treatment ($t(67.54) = 2.751, p < 0.01$). Finally, I find no empirical evidence of a difference between high ability subjects assigned to the different treatments ($t(64.31) = 1.234, p = 0.22$).[8]

Table 1: Descriptive statistics of performance in the second stage per treatment and type

Type/Treatment	High Status	Low Status	Total
High Ability	22.285	24.658	23.695
	(7.215)	(8.676)	(8.144)
Low Ability	24.771	19.621	22.437
	(11.476)	(6.630)	(9.863)
Total	23.68	22.65	23.139
	(9.744)	(8.224)	(8.952)

Note: This table presents the averages and standard deviations of the performance in the second part of the experiment by experimental treatment and subject ability. Standard deviations are presented in parentheses.

To account for factors other than the treatment assignment that might influence subjects' performance, I perform regression analyses that evaluates the treatment effects while controlling for a set of relevant covariates. Table 2 presents the estimates of negative binomial regressions of performance in the second part of the experiment on subjects' ability, treatment dummies, and relevant controls such as gender, the number of participants in a session, self-reported locus of control, subjects' initial performance beliefs, subjects' perception about the assignment to the high status, and whether subjects' performed the task in the past.[9]

The estimates of the regression confirm most of the aforementioned results. First, among low ability subjects, those assigned high status attain higher average performance ($\chi^2(1) =$

[7]The statistical power of this test is $1 - \beta$=0.73 at the 5 percent confidence level.

[8]Since high ability subjects assigned to the different treatments exhibited differences in performance in Set I, the latter finding could be interpreted as evidence suggesting that high ability subjects display higher performance when assigned to High Status. Further analyses of the data will show that high ability subjects assigned to different treatments exhibit similar average performance.

[9]The performance data exhibits a variance, 69.30, that is larger than its mean, 23.434. A standard count regression model does not account for a data process with these characteristics. To control for such overdispersion in the data, I use a negative binomial model.

Table 2: Treatment Effects

	(1) Performance	(2) Performance	(3) Performance
Low Ability	-5.095**	-5.687***	-5.613***
	(2.038)	(1.996)	(1.929)
High Status	-2.198	-2.385	-1.881
	(1.978)	(1.949)	(1.924)
Low Ability*High Status	6.930**	7.020**	6.220**
	(2.895)	(2.794)	(2.744)
Session size		-0.156	-0.387
		(0.370)	(0.364)
Female		4.010***	3.561**
		(1.507)	(1.463)
Session Nr.		-0.235	-0.358
		(0.241)	(0.253)
Belief round 1		-0.188	-0.172
		(0.243)	(0.238)
Times Rank		0.346	0.110
		(0.238)	(0.244)
Locus of Control			0.610
			(0.456)
Performed task before			6.276***
			(2.065)
Assignment due to luck			0.391
			(2.083)
ln(δ)	0.659***	0.5311***	0.4201***
	(0.187)	(0.196)	(0.203)
N	133	133	133
Log-likelihood	-463.927	-459.14	-454.263

Note: This table presents marginal effects of negative binomial regressions of the model $Performance_i = \beta_0 + \beta_1 LowAbility + \beta_2 HighStatus + \beta_3 LowAbility * HighStatus + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. "Performance" is the number of correctly solved matrices in the second stage of the experiment, "High Status" is a dummy variable that captures whether the subject was assigned to the high status treatment "Low Ability" is a dummy variable that captures whether the subject was classified as having low ability on the task. The controls used in this model are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment,"Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

$7.68, p = 0.005$). Moreover, the coefficient associated to “High Status” shows that, when disparities in initial ability on the task are controlled for, the treatments did not generate differences in average performance among high ability subjects. In addition, the coefficient associated to “Low ability” confirms that subjects with low ability assigned to the low status exhibit lower average performance than high ability subjects assigned to the same treatment. Finally, and in contrast to the previous analysis of the data, I find that high ability subjects assigned to “High Status” were outperformed by low ability subjects assigned to the same treatment ($\chi^2(1) = 3.56, p = 0.06$).

To better understand the effect of the treatments on performance, I abandon the binary classification of ability, e.g. high and low, and use instead subjects’ performance on the first part of the experiment as a “continuous” measure of ability. Such analysis allows for a richer quantification of the treatment effect. Table 3 presents the estimates of negative binomial regressions of performance on the second part of the experiment on performance on the first part of the experiment, treatment dummies and the controls used in the statistical model presented in Table 2.

The estimates suggest that the treatments generate a drastic change in the relationship between subjects’ performance in the first part of the experiment and performance in the second part of the experiment. The estimate associated to "Performance Part I" in Table 3 suggests that for subjects assigned to low status these two parts relate positively. Specifically, solving correctly one additional matrix in part one generates on average a 10% increase on performance in the second part of the experiment. In contrast, the estimate associated to "Part I* High status" shows that subjects assigned to High Status exhibit a negative relationship between the two parts of the experiment. For these subjects, solving correctly an additional matrix in the first part of the experiment yields an decrease in performance of 12% on average. The asymmetry of these two effects, along with the large coefficient associated to “High Status”, account for the treatment effects presented in Table 2.

5.2 Experiment 2: meritocratic assignment

In the second experiment, High Status is exclusively assigned to high ability subjects. The goal of this experiment is to investigate whether this meritocratic assignment maintains the ability differences between high and low ability subjects in the second part of the experiment. Such a result would suggest that the treatment effects found in Experiment 1 are entirely caused by the assignment to the treatments rather than by other factors such as disproportionate heterogeneity among low ability subjects in Experiment 1. As in the previous subsection, I begin the data analysis showing that the classification of subjects into high and low ability entails considerable performance differences in the first part of the experiment. According to

Table 3: Heterogeneous Treatment Effects

	(1) Performance	(2) Performance	(3) Performance
Performance Part 1	2.184***	2.263***	2.233***
	(0.731)	(0.692)	(0.681)
High Status	28.616***	29.170***	29.038***
	(9.339)	(8.968)	(8.912)
Performance Part 1 * High Status	-3.058***	-3.144***	-3.114***
	(1.023)	(0.984)	(0.979)
Session Size		-0.225	-0.420
		(0.353)	(0.347)
Female		3.812***	3.486**
		(1.461)	(1.420)
Session Nr.		-0.203	-0.371
		(0.236)	(0.249)
Belief round 1		-0.182	-0.194
		(0.239)	(0.233)
Times Rank		0.315	0.121
		(0.236)	(0.241)
Locus of Control			0.675
			(0.429)
Performed task before			5.561***
			(1.967)
Assignment due to luck			-0.299
			(2.059)
$ln(\delta)$	0.612***	0.494***	0.3860
	(0.187)	(0.196)	(0.203)
N	136	136	136
Log-likelihood	-472.418	-467.820	-463.151

Note: This table presents marginal effects of negative binomial regressions of the model $Performance_i = \beta_0 + \beta_1 PerformancePart1 + \beta_2 HighStatus + \beta_3 PerformancePart1 * HighStatus + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. "Performance" is the number of correctly solved matrices in the second part of the experiment, "High Status" is a dummy variable that captures whether the subject was assigned to the high status treatment "Performance Part 1' is the number of correctly solved matrices in the first part of the experiment. The controls used in this model are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment,"Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

the data, the difference in average performance between low and high ability subjects is of 2.31 standard deviations ($p < 0.001$).

In the second part of the experiment, high ability subjects outperformed low ability subjects ($t(130.32) = 2.371, p = 0.019$). This difference is of the order of 0.407 standard deviations (g_s=.407, p=0.015 with 1000 bootstrap replications). This result demonstrates that low ability subjects achieve low performance levels in the second part of the experiment when assigned low status.

To control for factors other than treatment assignment that could be driving these results, I perform negative binomial regressions of performance in the second part of the experiment on subject's ability, treatment dummies and relevant controls. The estimates, presented in Table 4, confirm the finding that subjects assigned to High Status exhibit higher performance on the task.

All in all, the performance data of the two experiments show that social status has an influence on subjects' performance and the strength of this effect depends on subjects' ability. Subjects with low ability on the task exhibit higher performance when assigned to the high rather than to the low status. On the other hand, subjects with high ability on the task do not exhibit significant performance differences due to the treatment assignment. These results are all in line with Prediction 2 and disregard Prediction 1.

6 Status and access to relative performance feedback

The experiment allowed some participants to access a ranking containing information about their own performance on the task relative to that of others. Accessing this ranking was costly inasmuch as subjects could have spent this time solving more matrices. However, accessing the rank provided subjects with additional information about their ability on the task. This attribute of the experiment allows me to investigate whether the aforementioned treatment effects differ between subjects who accessed this information and subjects who did not. If subjects misinterpret the treatment assignment, incorporating it as a signal about their ability, and this is the reason behind the treatment effects, we should observe that subjects accessing the ranking exhibit weaker treatment effects or no treatment effects at all. In contrast, Prediction 2 states that the effect of social status takes place regardless of subjects accessing the rank. The data support Prediction 2, subjects who accessed more often the rank exhibit stronger treatment effects.

I start investigating the frequency at which subjects accessed the rank and whether being assigned to any of the treatments influenced this decision. Table 5 presents the descriptive statistics of rank access. On average, subjects who had the chance to access the rank did so 2.66 times on average. Furthermore, subjects assigned to the different treatments do not exhibit

Table 4: Treatment Effects Experiment 2

	(1) Performance	(2) Performance	(3) Performance
High Status	2.321*	2.867**	2.546**
	(1.301)	(1.233)	(1.253)
Session Size		-0.250	-0.295
		(0.310)	(0.308)
Female		-2.181*	-1.991
		(1.237)	(1.258)
Session Nr.		-0.229	-0.174
		(0.240)	(0.241)
Belief Round 1		0.252	0.271
		(0.201)	(0.204)
Times Rank		-0.007	-0.004
		(0.231)	(0.231)
Locus of control			0.070
			(0.487)
Performed task before			2.126
			(1.774)
Assignment due to luck			-1.672
			(1.724)
$ln(\delta)$	1.493**	0.086	0.0516
	(0.314)	(0.234)	(0.238)
Observations	138	136	136
Log Likelihood	-478.157	-455.920	-454.749

Note: This table presents marginal effects of negative binomial regressions of the model $Performance_i = \beta_0 + \beta_1 HighStatus + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. "Performance" is the number of correctly solved matrices in the second stage of the experiment, "High Status" is a dummy variable that captures whether the subject was assigned to the high status treatment. The controls used in this model are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment, "Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

differences in average rank access ($t(67) = 1.009, p = 0.316$). Similarly, I find that subjects with different ability do not exhibit differences in average rank access ($t(67) = 0.1392, p = 0.889$). To evaluate whether subjects with similar ability but assigned to different treatments exhibit different patterns of rank access, I perform regressions of rank access on treatment dummies and relevant controls. The main rationale for using regressions rather than performing a pairwise test is that the latter could be potentially under-powered due to the low number of subjects that were assigned to a treatment, had certain ability on the task, and had access to the rank.

Table 5: Rank Access by treatment and by ability

Ability/Treatment	High Status	Low Status	Total
High Ability	3.363	2.227	2.606
	(4.884)	(3.624)	(4.046)
Low Ability	3	2.375	2.722
	(3.128)	(2.446)	(2.824)
Total	3.129	2.289	31.691
	(3.766)	(9.113)	(3.144)

Note: This table presents the averages and standard deviations of rank access in the second part of the experiment by experimental treatment, and subject ability. Standard deviations are presented in parentheses.

Table 6 presents the estimates of negative binomial regressions of rank-access on treatments, ability dummies, their respective interactions, and a set of relevant controls. The estimates show that there are no significant differences in rank-access between subjects with similar ability but who were assigned to different treatments. Specifically, low ability subjects assigned high status exhibit similar average rank access as compared to low ability subjects assigned the low status ($\chi^2(1) = 0.05, p = 0.8171$). Also, low ability subjects with low status exhibit similar average rank access behavior as compared to high ability subjects assigned to the high status ($\chi^2(1) = 0.42, p = 0.516$). Therefore, the subjects' decision to access the rank was not affected by ability or by their treatment assignment.

We are now in the position to investigate whether accessing the rank influenced the treatment effects. Table 7 presents the estimates of a negative binomial regression of the statistical model presented in Table 2 with the difference that "Times Rank" is interacted with treatment dummies as well as with ability dummies. Surprisingly, the estimates suggest that subjects who accessed the rank exhibited a stronger treatment effect. Specifically, low ability subjects who never accessed the rank or did not have access to it, achieved similar performance levels in both treatments ($\chi^2(1) = 1.75, p = 0.1855$). Instead, low ability subjects who accessed the rank at least once display steep performance differences between the treatments ($\chi^2(1) = 5.28, p = 0.021$). A similar pattern is found when high and low ability subjects assigned to High

Table 6: Determinants of Rank Access

	(1) Times Rank	(2) Times Rank	(3) Times Rank
Low Ability	0.171	1.406	1.330
	(1.226)	(1.088)	(1.125)
High Status	1.099	0.283	0.335
	(1.380)	(1.265)	(1.208)
Low Ability* High Status	-0.476	-0.070	-0.071
	(1.832)	(1.552)	(1.540)
Belief round 1		-0.042	-0.104
		(0.168)	(0.185)
Session size		-0.101	-0.138
		(0.175)	(0.175)
Female		-2.044**	-2.255**
		(0.859)	(0.913)
Session Nr.		0.287	0.174
		(0.323)	(0.329)
Locus of control			-0.133
			(0.321)
Task performed before			-0.523
			(1.236)
Assignment due to luck			1.447
			(0.913)
$ln(\delta)$	0.4207	1.237 **	1.183 **
	(0.255)	(0.310)	(0.320)
Observations	69	69	69
Log Likelihood	-146.275	-142.499	-141.200

Note: This table presents marginal effects of negative binomial regressions of the model $TimesRank_i = \beta_0 + \beta_1 LowAbility + \beta_2 HighStatus + \beta_3 LowAbility * HighStatus + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment,"High Status" is a dummy variable that captures whether the subject was assigned to the high status treatment "Low Ability" is a dummy variable that captures whether the subject was classified as having low ability on the task. The controls used in this model are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

Status are compared. I find no significant differences in performance between these groups if they did not access the rank or had no access to it ($\chi^2(1) = 0.59, p = 0.4442$) and find steep differences in performance among these groups when they accessed the rank at least once ($\chi^2(1) = 5.51, p = 0.0189$). These findings are all robust to the inclusion of relevant controls.

These findings demonstrate that the performance differences generated by the treatments, are not caused by subjects naively believing that the treatment assignment had any relationship with their ability on the task. On the contrary, I find that subjects who were more informed about their ability on the task, display stronger treatment effects. These results support the mechanism behind Prediction 2, which consists of individuals disregarding accurate information and forming inaccurate beliefs to derive utility gains.

In Experiment 2, subjects accessed the rank 1.847 times on average. High status subjects, who are also high ability subjects, accessed the rank 1.285 times on average. Subjects belonging to Low Status accessed the rank 2.157 times on average. The difference in rank access between treatments is not significant ($t(57) = 0.773, p = 0.44$). A regression of "Times Rank" on treatment dummies and relevant controls confirms this finding ($p = 0.11$). I present the regression estimates in Table 13, which is included in Appendix D. These results confirm that, as found in Experiment 1, subjects accessed the rank with average similar frequency across the treatments.

Finally, I estimate the statistical model presented in Table 4 with the only difference being that "Times rank" was interacted with "High Status". Table 14 presenting the regression estimates is included in Appendix D. The data suggest that subjects in low status do not exhibit performance differences when accessing the ranking ($p = 0.758$). Therefore, the performance differences observed in Experiment 1 do not stem from low ability subjects accessing the rank, but are caused by the assignment to High Status.

7 Status affects performance beliefs

In this section, I show that the experimental treatments have an influence on subjects' beliefs. Specifically, subjects with low ability who were assigned to high status exhibit higher performance beliefs than subjects with similar ability, but who happened to be assigned to low status. In contrast, high ability subjects do not display such dependence with respect to social status. These patterns of belief formation are in line with the performance data presented in Section 5 and support Prediction 2.

Table 7: Treatment Effects and Rank Access

	(1) Performance	(2) Performance	(3) Performance
Low Ability	-2.134	-2.898	-3.261
	(2.201)	(2.193)	(2.149)
High Status	-0.807	-1.007	-0.508
	(2.068)	(2.045)	(2.010)
Low Ability * High Status	3.522	3.737	3.017
	(3.128)	(3.068)	(3.016)
Times Rank	1.049***	0.932***	0.595*
	(0.324)	(0.327)	(0.338)
Low Ability * Times Rank	-2.369***	-2.048**	-1.744**
	(0.867)	(0.861)	(0.857)
Low Ability* High Status* Times Rank	2.660**	2.484**	2.370**
	(1.090)	(1.077)	(1.041)
High Status * Times Rank	-1.111*	-0.999*	-0.940*
	(0.575)	(0.581)	(0.557)
Belief round 1		-0.174	-0.157
		(0.239)	(0.235)
Session Size		-0.171	-0.395
		(0.373)	(0.366)
Female		3.383**	3.114**
		(1.505)	(1.469)
Session Nr.		-0.203	-0.345
		(0.237)	(0.249)
Locus of Contol			0.659
			(0.452)
Performed task before			5.665***
			(2.079)
Assignment due to luck			0.384
			(2.084)
ln(δ)	0.530***	0.447 ***	0.345
	(0.195)	(0.202)	(0.209)
N	133	133	133
Log-likelihood	-458.506	-455.509	-451.178

This table presents marginal effects of negative binomial regressions of the model $Performance_i = \beta_0 + \beta_1 LowAbility + \beta_2 HighStatus + \beta_3 LowAbility * HighStatus + \beta_4 LowAbility * TimesRank + \beta_5 HighStatus * TimesRank + \beta_6 LowAbility * HighStatus * TimesRank + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. "Performance" is the number of correctly solved matrices in the second stage of the experiment, "High Status" is a dummy variable that captures whether the subject was assigned to the high status treatment "Low Ability" is a dummy variable that captures whether the subject was classified as having low ability on the task. The controls used are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment,"Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

7.1 Aggregated beliefs

I first analyze the sum of subjects' beliefs over all experimental rounds. Table 8 presents the descriptive statistics of this variable by treatment and by type. While high ability subjects exhibit similar average beliefs across treatments ($t(57.15) = 0.68, p = 0.49$), low ability subjects exhibit higher average beliefs when assigned to High Status ($t(54.29) = 1.749, p = 0.043$). In fact, the average belief level exhibited by low ability subjects with the high status is comparable to that of high ability subjects in the same treatment $t(54.29) = 1.749, p = 0.43$). Thus, the data suggest that the assignment to High Status induces higher beliefs in low ability subjects. However, whether these high beliefs are accurate or whether this difference is originated by behavior at the beginning or at the end of the experiment is unclear and will be discussed in what remains of this section.

Table 8: Performance beliefs in the second stage by treatment and by ability

Ability / Treatment	High Status	Low Status	Total
High Ability	31.285	31.804	31.594
	(8.944)	(8.721)	(8.793)
Low Ability	29.8	27.620	28.81
	(8.442)	(9.484)	(10.458)
Total	32.161	29.559	31.691
	(9.240)	(9.113)	(9.249)

Note: This table presents the averages and standard deviations of aggregated beliefs in the second stage of Experiment 1 by experimental treatment, and subject type. Standard deviations are presented in parentheses.

To control for factors other than the treatment assignment that could be driving these results, I perform negative binomial regressions of the sum of beliefs over all rounds on subject's type, treatment dummies and relevant controls. Table 9 presents the regression estimates which confirm the result that low ability subjects exhibit lower average beliefs than high ability subjects when both groups of subjects are assigned to Low Status ($p = 0.036$). Moreover, they corroborate the finding that average beliefs do not differ across subjects with low and high ability if both groups are assigned to High Status ($\chi^2(1)$=0.24, p=0.621). Finally, there is no empirical evidence of a difference in beliefs between high ability subjects assigned to different treatments ($p = 0.914$).[10]

To investigate how beliefs relate to performance, I study the empirical properties of the difference between beliefs and performance. The data show that there is a generalized tendency

[10] Table 15, presented in Appendix D, shows that low ability subjects exhibit steeper belief differences across treatments when they accessed the ranking displaying relative performance at least once. This is complementary to the results presented in Section 6 and corroborates that the treatment effects are not due to lack of information.

Table 9: Treatment Effects on Performance Beliefs

	(1) Beliefs	(2) Beliefs	(3) Beliefs
Low Ability	-4.702**	-4.688**	-4.489**
	(2.253)	(2.253)	(2.145)
High Status	-0.438	0.271	0.232
	(2.175)	(2.197)	(2.141)
Low Ability * High Status	3.257	2.968	2.604
	(3.204)	(3.172)	(3.079)
Times Rank		-0.043	-0.003
		(0.287)	(0.292)
Belief Round 1		0.485*	0.549*
		(0.295)	(0.280)
Session Size		0.140	0.106
		(0.429)	(0.422)
Female		-1.157	-0.942
		(1.734)	(1.660)
Session Number		0.205	0.172
		(0.276)	(0.281)
Locus of Control			0.006
			(0.507)
Performed task before			7.464***
			(2.391)
Assignment due to luck			-5.848**
			(2.590)
$ln(\delta)$	0.568**	0.525**	0.372
	(0.196)	(0.199)	(0.212)
Observations	133	133	133
Log-likelihood	-480.819	-479.050	-473.009

Note: This table presents marginal effects of negative binomial regressions of the model $Beliefs_i = \beta_0 + \beta_1 Lowtype * HighStatus + \beta_2 Lowtype + \beta_3 HighStatus + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. "Beliefs' is the number of correctly solved matrices the participant believed could achieve in the second part of the experiment, "High Status" is a dummy variable that captures whether the subject was assigned to the high status treatment "Low Ability" is a dummy variable that captures whether the subject was classified as having low ability on the task. The controls used in this model are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment,"Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

of subjects to be overconfident. In particular, subjects state beliefs that were, on average, 7.09 matrices higher than their performance level. Such behavior is likely to be generated by subjects underestimating the difficulty of the task along with the lack of monetary incentives rewarding accurateness. These inaccurate beliefs do not posse a threat to the validity of the results since the focus of the analysis is on belief comparisons across treatments and across subjects' ability. Hence, as long as this imprecision is on average similar across treatments and across ability, indicating that randomization was successful and guaranteed similar degrees of overconfidence, the belief differences presented above must be caused by the treatments.

Indeed, the data suggest that the performance-beliefs gap is similar across treatments, implying that overconfidence is similar across treatments and across ability. For low ability subjects, who exhibit the most interesting beliefs and performance behaviors between treatments, the gap is on average of -8 for those assigned Low Status and of -5.02 for those assigned High Status ($t(63.99) = -1.109, p = 0.271$). This finding implies that the higher average beliefs exhibited by low ability subjects assigned High Status are met with a performance level that is high enough to make the difference between performance and beliefs is similar to that displayed by subjects assigned to Low Status, who displayed lower beliefs.[11]

7.2 Beliefs by round

To gain further understanding about the influence of social status on beliefs, I investigate how beliefs evolve over experimental rounds. The aim of this analysis is twofold. First, it seeks to study if the treatment assignment affects beliefs at the onset of the experiment or if such influence requires time and experience on the task. Second, it allows me to understand how individuals update beliefs in each round and how the treatment assignment influenced this updating process. The analysis presented in this subsection focuses on low ability subjects, because high ability subjects did not exhibit differences in aggregate beliefs or differences in performance across treatments.

Table 10 presents the average beliefs of subjects by round, by treatment, and by ability. I find that low ability subjects assigned to different treatments display similar average beliefs in the first and second rounds (t(60.829)=-0.861, p=0.392). However, as of the third round, steep treatment differences emerge.[12] Hence, the treatments' influence on beliefs emerges after the first two rounds. In addition, the average beliefs by round of low and high ability subjects are

[11] The only difference in performance-beliefs gap arises when low ability subjects and high ability subjects are compared ($t(62.918) = 1.463, p = 0.074$). For this case it is not possible to establish whether the randomization problems for the high types (See section 4) or a difference in overconfidence is driving this effect. This question is left open, but posses not threat to the validity of the results since the focus from here onward is, for reasons discussed below, the process of belief formation of low ability subjects.

[12] The t-tests of these differences are round 3 ($t(52.046) = -1.819, p = 0.03$), round 4 ($t(59.678) = -1.239, p = 0.110$) and round 5 ($t(61.499) = -1.621, p = 0.055$)

similar in when both groups of subjects are assigned High Status.[13]

Table 10: Performance beliefs by round and by treatment for the low ability subjects

Ability Treatment	Low Ability High Status	Low Ability Low Status	High Ability High Status	High Ability Low Status
$\text{Belief}_{r=1}$	7.228	8.103	7.804	8.428
	(2.880)	(4.369)	(4.539)	(4.590)
$\text{Belief}_{r=2}$	8.542	8	8.464	9.463
	(2.582)	(2.449)	(1.971)	(2.079)
$\text{Belief}_{r=3}$	6.285	5.310	6.560	6.785
	(1.824)	(2.361)	(2.549)	(2.079)
$\text{Belief}_{r=4}$	4.371	3.724	4.464	4.634
	(2.073)	(2.085)	(1.815)	(2.130)
$\text{Belief}_{r=5}$	3.3714	2.482	3.142	3.341
	(2.498)	(1.882)	(1.603)	(2.220)
Belief_{r}	5.96	5.524	6.257	6.345
	(3.029)	(3.549)	(3.285)	(3.259)

Note: This table presents the averages and standard deviations of beliefs in the second stage of the experiment by experimental treatment and round for those subjects classified as low ability. Standard deviations are presented in parentheses.

To understand how subjects update beliefs, I perform a regression relating subjects' beliefs in some round r to their beliefs and performance in previous rounds. This analysis allows me to distinguish between subjects possibly setting high beliefs to match performance in previous rounds from subjects setting high beliefs due to the influence of the treatment alone. Evidence supporting the former conjecture would suggest that the high status treatment induces high performance and beliefs follow. Evidence supporting the latter conjecture would corroborate the existence of the proposed mechanism: social status induces internal constraints through beliefs, which consequently affect performance.

The specific statistical model regresses individual beliefs in round r on performance in round $r-1$, beliefs in the previous two rounds, $r-1$ and $r-2$, treatment dummies, and relevant controls.[14] I estimate the model using the Blundell and Bond technique, which has the advantage of allowing the error term of the regression to be correlated with non-observable characteristics. Additionally, I estimate the model instrumenting the subject's belief in the previous round, as it is typically done in dynamic panel data models, as well as the subject's performance in the previous round.

[13] The t-tests of these differences are round 1 ($t(43.284) = 1.206, p = 0.234$, round 2 ($t(60.890) = -0.136, p = 0.891$) ,round 3 ($t(54.178) = 1.001, p = 0.321$), round 4 ($t(60.466) = 0.189, p = 0.850$) and round 5 ($t(58.501) = 58.501, 0.661$

[14] This model is the one that best fits the data, additional auto-regressive terms display no statistical significance at the 10% level.

Table 11 presents the estimates of the Blundell and Bond regression. The data suggest that the belief updating process of low ability subjects differs across treatments in two aspects. First, there is a treatment difference in how subjects update beliefs in reaction to achieved performance in the previous round. Specifically, subjects who belong to High Status update their beliefs upward with respect to performance in the previous round, while subjects belonging to Low Status do not exhibit this feature. This difference in belief updating suggests that the assignment to High Status induces confidence in the subjects, who believe that they could improve their previous achievement. This result disregards the conjecture of subjects setting high beliefs to match previous performance.

Table 11: Belief dynamics for low ability subjects

	(1)	(2)	(3)
Sample	Low Ability	Low Ability/High Status	Low Ability/ Low Status
	Belief$_r$	Belief$_r$	Belief$_r$
Belief$_{r-1}$	0.4170***	0.400 ***	0.342***
	(0.127)	(0.155)	(0.436)
Belief$_{r-2}$	0.083	0.258***	0.016
	(0.055)	(0.088)	(0.075)
Performance$_{r-1}$	0.488***	0.521***	0.311
	(0.124)	(0.149)	(0.235)
Constant	11.528***	-1.441***	-12.201
	(155.444)	(46.090)	(15.728)
Controls	Yes	Yes	Yes
Observations	192	105	87
# instruments	23	23	23

Note: This table presents estimates of the Blundell and Bond regression of the model $Belief_{ri} = \alpha_0 + \alpha_1 Belief_{(r-1)i} + \alpha_2 Performance_{(r-1),i} + Controls'\Gamma + \epsilon_i$. "Belief" is a subject's beliefs about the number of correctly solved matrices in round r. "Performance" is the number of correctly solved matrices in a round in the second stage of the experiment. The controls used in this model are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment,"Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

Second, low ability subjects assigned High Status exhibit stronger state dependence (Heckman, 1981). This means that they exhibit a stronger inertia to update beliefs upward as rounds elapse. Subjects in High Status update beliefs upward with respect to the belief levels of the previous two rounds, while subjects in Low Status update beliefs upward only with respect to the previous round. This difference in belief updating between similarly skilled subjects suggests that, regardless of achieved performance in previous rounds, subjects with high status had the confidence to update beliefs upward more steeply than their counterparts in low status.

These two differences in belief updating between subjects assigned to different treatments support the findings of Eil and Rao (2011) and Mobius et al. (2014). In particular, subjects with low ability reacted to an assignment to high status by steeply updating their beliefs upward, displaying optimism about the level of performance they expected to attain in the next round. Such optimism emerged despite them receiving unfavorable feedback in the first part of the experiment, which was unfavorable due to their classification to the low ability category, and also despite receiving constant feedback in the second part of the experiment. In contrast, the low status assignment was ignored by high ability subjects who behaved and formed beliefs as if they ignored such unfavorable signal.

7.3 Beliefs experiment 2

Finally, I show that unless assigned to High Status, subjects with low ability exhibit lower beliefs as compared to high ability subjects. To that end, I analyze the belief data of Experiment 2. Table 12 presents the aggregated beliefs of subjects participating in Experiment 2 as well as their beliefs by round and by treatment. I find that aggregated beliefs of high ability subjects are on average 9.2% higher than those of low ability subjects ($t(129.51) = 2.99, p = 0.0033$). Moreover, this treatment effect emerges in the first rounds of the experiment; high status subjects display higher beliefs in round one ($t(114.64) = 3.318, p = 0.001$), round two ($t(126.52) = 4.1688, p = 0.001$) and round three ($t(129.99) = 3.393, p = 0.0003$). Thus, unless assigned high status, as in Experiment 1, low ability subjects exhibit lower beliefs and this difference emerges right at the onset of the experiment.

8 Conclusion and Discussion

This paper demonstrated that internal constraints generated by social status, in the form of low beliefs about own ability, have the strength to carry out economic consequences. In consequence, holding a social position influences individual achievement not only by means of the material disadvantages that it entails, but also through the beliefs that it triggers.

A theoretical framework presented conditions guaranteeing the existence of the proposed mechanism. A necessary condition is that individuals derive utility gains from holding high beliefs about their ability. When these utility gains outweigh all potential costs that arise from maintaining inaccurate beliefs, performance differences among individuals with different social status emerge. This is because high beliefs boost performance and because erroneous beliefs can only be validated with the social status that is held.

Two laboratory experiments supported the proposed mechanism. Individuals with similar

Table 12: Performance beliefs by round and by treatment in Experiment 2

Ability	Low ability	High ability
$\text{Belief}_{r=1}$	7.112	8.045
	(0.445)	(0.533)
$\text{Belief}_{r=2}$	8.323	10.121
	(0.268)	(0.336)
$\text{Belief}_{r=3}$	6.323	7.560
	(0.236)	(0.277)
$\text{Belief}_{r=4}$	4.056	4.484
	(0.245)	(0.263)
$\text{Belief}_{r=5}$	3.281	3.575
	(0.269)	(0.309)
Aggregated Beliefs	29.098	33.787
	(1.009)	(1.197)

Note: This table presents the averages and standard deviations of beliefs in the second stage of the experiment by experimental treatment and round. Standard deviations are presented in parentheses.

ability exhibited sharp differences in performance as well as sharp differences in beliefs about performance when assigned to different status treatments. This result was robust to the provision of different forms of feedback, corroborating that internal constraints and not confusion about the treatment assignment lead these findings. Further analyses show that the treatments generated different processes of belief updating. In particular, subjects in high status updated their beliefs upward by a higher margin.

The present article has several limitations that could open avenues for future research. First, even though there are advantages to using laboratory experiments, for example the possibility of implementing a status differential that is orthogonal to subjects' ability, these advantages come at the cost of external validity. A more general test of the proposed mechanism requires setups with more meaningful tasks, higher-powered incentives, a more natural environment for subjects and a naturally occurring social status. To tackle these disadvantages, future research could use observational data to causally link social status at birth and different measures of beliefs about own ability to achievement at adulthood. Given that the availability of such data sets is limited, another option would be the implementation of field experiments aimed at addressing these disadvantages.

Also, this paper is silent about the specific way in which social status validates incorrect beliefs. Is it that widespread beliefs about meritocracy and social mobility provide such validation? Or is it rather that deep-rooted attitudes toward social ranks unconsciously affects beliefs?[15] With the empirical methods used in this paper, I cannot answer these questions. Future research could perform empirical tests of the proposed mechanism, such as the one presented in this paper, in societies displaying differences in beliefs about meritocracy and social mobility. This could shed light on the role of social perceptions about status in facilitating the existence of the proposed mechanism.

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[15]Status-seeking behaviors are also documented in non-human animals such as apes (de Waal, 2007) and bonobos (Sapolsky, 1992). Suggesting, from an evolutionary perspective, that status-seeking behavior is deep-rooted and could affect beliefs regarding ability.

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Appendix A: Proofs

Lemma 1

Proof. Consider Self 1 receiving $\tilde{\theta_H}$. In this case, Self 1 chooses e_H if $E_1(U(e_H,\theta_i)|\tilde{\theta_H}) \geq E_1(U(e_L,\theta_i)|\tilde{\theta_H})$, which can be rewritten as $p_H(\lambda_H,\lambda_L)(\theta_H-\theta_L)(a+s)+\theta_L(a+s) \geq c$ with $p_H(\lambda_H,\lambda_L) = \frac{qr+q\lambda_H(1-r)}{qr+q\lambda_H(1-r)+(1-\lambda_L)\chi q(1-r)}$. Some algebraic manipulations yield the following condition,

$$\lambda_L \geq 1 - \frac{(\theta_H(a+s)-c)q\Big(r+(1-r)\lambda_H\Big)}{(c-(a+s)\theta_L)\chi(1-q)r}. \tag{8}$$

Thus, e_H is chosen when $\tilde{\theta_H}$ is received if $\lambda_L \geq \hat{\lambda_L}$ for $\hat{\lambda_L} \equiv 1 - \frac{(\theta_H(a+s)-c)q(r+(1-r)\lambda_H)}{(c-(a+s)\theta_L)\chi(1-q)r}$.

If instead Self 1 receives $\tilde{\theta_L}$, e_H is chosen whenever $E_1(U(e_H,\theta_i)|\tilde{\theta_L}) \geq E_1U(e_L,\theta_i)|\tilde{\theta_L})$, which can be rewritten as $p_L(\lambda_H,\lambda_L)(\theta_H-\theta_L)(a+s)+\theta_L(a+s) \geq c$ with $p_L(\lambda_H,\lambda_L) = \frac{(1-q)(1-r)+\lambda_L(1-q)r}{(1-q)(1-r)+\lambda_L(1-q)r+\chi(1-\lambda_H)q(1-r)}$. Algebraic manipulations lead to

$$\lambda_H \leq 1 - \frac{\Big((a+s)\theta_L-c\Big)(1-q)\Big((1-r)+\lambda_L r\Big)}{\Big(c-(a+s)\theta_H\Big)\chi q(1-r)}. \tag{9}$$

Hence, e_H is chosen when $\tilde{\theta_L}$ is received if $\lambda_H \leq \hat{\lambda_H}$ for $\hat{\lambda_H} \equiv 1 - \frac{((a+s)\theta_L-c)(1-q)((1-r)+\lambda_L r)}{\Big(c-(a+s)\theta_H\Big)\chi q(1-r)}$.

□

Proposition 1

Proof. Suppose that Self 0 with θ_H sets $\lambda_H = 1$. Due to Lemma 1, Self 1 chooses e_L when receiving $\tilde{\theta_L}$ since $\lambda_H = 1 \geq \hat{\lambda_H}$. Instead, if $\tilde{\theta_H}$ is received, Self 1 chooses e_H or e_L. The strategy of Self 0 with $\theta_i = \theta_L$ depends on values of m. Specifically, when $\lambda_L = 0$ induces e_L, he is better off setting $\lambda_L = 0$ if $m \leq \frac{se_L q(\theta_H-\theta_L)}{q+\chi r(1-q)}$, because the inequality $E_0(U(\lambda_L=1,e_L)) = \theta_L(a+s)e_L \leq \theta_L(a+s)e_L + se_L(\theta_H-\theta_L)p_H(\lambda_H=1,\lambda_L=0) - m = E_0(U(\lambda_L=0,e_L))$ holds for those values of m. If instead $\lambda_L = 0$ induces e_H, Self 0 is better off setting $\lambda_L = 0$ if $m \leq \frac{se_H q(\theta_H-\theta_L)}{q+\chi r(1-q)}$ since $E_0(U(\lambda_L=1,e_L)) = \theta_L(a+s)e_L \leq \theta_L(a+s)e_H + se_H(\theta_H-\theta_L)p_H(\lambda_H=1,\lambda_L=0) - m - c = E_0(U(\lambda_L=0,e_H))$ requires that m attains, at least, $m = \frac{se_H q(\theta_H-\theta_L)}{q+\chi r(1-q)}$. Therefore, whenever $\lambda_H = 1$ Self 0's best strategy is to set $\lambda_L = 0$ if, at least, $m \leq \frac{se_L q(\theta_H-\theta_L)}{q+\chi r(1-q)}$.

According to Lemma 1, when $\lambda_L = 0$ and $\lambda_H = 1$, Self 1 reacts to $\tilde{\theta_H}$ setting e_L. To induce e_H with $\tilde{\theta_H}$ Self 0 with $(\theta_L,\sigma_H$ could set $\lambda_H = \rho$ such that $\rho \in [\hat{\lambda_H},1)$. This strategy is profitable if $E_0(U(e_L,\lambda_L=1)) = \theta_L(a+s)e_L \leq \theta_L a e_H + se_H(\rho\theta_L + (1-\rho)(\theta_H p_H(\lambda_H=1,\lambda_L=\rho) + \theta_L(1-p_H(\lambda_H=1,\lambda_L=\rho)) - c - m = E_0(U(e_H,\lambda_L=\rho))$ holds. This inequality can be rewritten as,

$$\rho \leq 1 - \frac{\phi q}{1 - \phi(1-q) r \chi} \tag{10}$$

with $\phi \equiv= \frac{c - \theta_L(a+s)+m}{q(\theta_H - \theta_L) s e_H}$.

From Lemma 1, to induce e_H it is necessary that $\hat{\lambda_H} \leq \rho$. Let $\rho = \hat{\lambda_H}$ where $\hat{\lambda_H} = 1 - \frac{(\theta_H(a+s)-c)q(r+(1-r)\lambda_H)}{(c-(a+s)\theta_L)\chi(1-q)r}$. Thus, Equation (10) becomes

$$1 - \frac{(\theta_H(a+s)-c)q(r+(1-r)\lambda_H)}{(c-(a+s)\theta_L)\chi(1-q)r} \leq 1 - \frac{\phi q}{1-\phi(1-q)r\chi}. \tag{11}$$

Some algebraic manipulations yield,

$$c \leq (a+s)\bigg(\frac{sqe_H\theta_H + \chi(1-q)r(a+s)\theta_L}{sqe_H + \chi(1-q)r(a+s)} - m\chi(1-q)r\bigg). \tag{12}$$

Hence, if $m \leq e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)r\chi}$ and $c \leq (a+s)\bigg(\frac{sqe_H\theta_H+\chi(1-q)r(a+s)\theta_L}{sqe_H+\chi(1-q)r(a+s)} - m\chi(1-q)r\bigg)$ Self 0 sets $\lambda_L = \hat{\lambda_L}$ to which Self 1 reacts with e_H.

Self 0 does not deviate from $\lambda_L = \hat{\lambda_L}$ to set $\lambda_L = 0$ as long as $E_0(U(e_L, \lambda_L = 0)) = a\theta_L e_L + se_L\Big(\theta_H p_H(\lambda_H = 1, \lambda_L = 0) + (1 - p_H(\lambda_H = 1, \lambda_L = 0))\theta_L\Big) - m \geq \theta_L a e_H + se_H(\hat{\lambda_L}\theta_L + (1-\hat{\lambda_L})(\theta_H p_H(\lambda_H = 1, \lambda_L = \hat{\lambda_L}) + \theta_L(1 - p_H(\lambda_H = 1, \lambda_L = \hat{\lambda_L})) - c - m = E_0(U(e_H, \lambda_L = \hat{\lambda_L}))$ which can be rewritten as

$$\lambda_L \leq 1 - \frac{\gamma q}{1 - \chi(1-q)r\gamma} \tag{13}$$

with $\gamma \equiv \frac{(c-(a+s)\theta_L}{e_H s(\theta_H-\theta_L)q} + \frac{e_L}{e_H(q+(1-q)\chi)}$. Note that $\phi = \gamma$ if $m = e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)r\chi}$. This implies that if $m \leq e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)r\chi}$ and $c \leq (a+s)\bigg(\frac{sqe_H\theta_H+\chi(1-q)r(a+s)\theta_L}{sqe_H+\chi(1-q)r(a+s)} - m\chi(1-q)r\bigg)$, then $E_0(U(e_L, \lambda_L = 1)) \leq E_0(U(e_H, \lambda_L = \hat{\lambda_L}))$ guarantees that $E_0(U(e_L, \lambda_L = 0)) \geq E_0(U(e_H, \lambda_L = \hat{\lambda_L}))$.

In addition, Self 0 does not deviate from $\lambda_L = \hat{\lambda_L}$ to set $\lambda_L = \rho$ in $\rho \in (\hat{\lambda_L}, 1)$ because $E_0(U(e_L, \lambda_L = \rho)) \leq E_0(U(e_H, \lambda_L = \hat{\lambda_L}))$ holds due to $qse_H(\theta_H - \theta_L)\Big(\frac{(1-\rho)}{q+(1-q)(1-\rho)} - \frac{(1-\hat{\lambda_L})}{q+(1-q)(1-\hat{\lambda_L})}\Big) \leq 0$, which is implied by $1 - \rho \leq 1 - \hat{\lambda_L}$. Thus, Self 0 with (θ_L, σ_H) sets $\lambda_L^{**} = \hat{\lambda_L}$ if $m \leq e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)r\chi}$ and $c \leq (a+s)\bigg(\frac{sqe_H\theta_H+\chi(1-q)r(a+s)\theta_L}{sqe_H+\chi(1-q)r(a+s)} - m\chi(1-q)r\bigg)$

According to Lemma 1, strategy $\lambda_L^{**} = \hat{\lambda_L}$ ensures that favorable signals $\tilde{\theta_H}$ induce e_H. Instead, when $\tilde{\theta_L}$ is received, Self 1 chooses e_H or e_L. We focus now on the strategies of Self 0 with (θ_H, σ_L) when $\lambda_L = \hat{\lambda_L}$. If $\lambda_H = 0$ induces e_H, then he is better off with $\lambda_H = 1$ rather than with $\lambda_H = 0$. That is because the inequality $E_0(U(\lambda_H = 1, e_H)) = \theta_H(a+s)e_H - c > \theta_H(a+s)e_H - se_H(\theta_H - \theta_L)p(\lambda_H = 0, \lambda_L = \hat{\lambda_L}) - m - c = E_0(U(\lambda_H = 0, e_H))$ holds since $-se_L(\theta_H - \theta_L)p(\lambda_H = 0, \lambda_L = \hat{\lambda_L}) - m < 0$. In contrast, if $\lambda_H = 0$ induces e_L he is also better off setting $\lambda_H = 1$ since the inequality $E_0(U(\lambda_H = 1, e_H)) = \theta_H(a+s)e_H - c > \theta_H(a+s)e_L - se_L(\theta_H - \theta_L)p(\lambda_H = 0, \lambda_L = \hat{\lambda_L}) - m = E_0(U(\lambda_H = 0, e_H))$ always holds due to $\theta_H(a+s) - c > 0 > -se_L(\theta_H - \theta_L)p(\lambda_H = \nu, \lambda_L = \hat{\lambda_L}) - m$. Hence, Self 0 with $\theta_i = \theta_H$ is better off setting $\lambda_H^{**} = 1$ whenever $\lambda_L = \hat{\lambda_L}$.

Finally, Selves 0 with (θ_L, σ_L) or with (θ_L, σ_L) are unable to engage in self-deception and set $\lambda_L^{**} = 1$ and $\lambda_H^{**} = 1$. These strategies yield e_L and e_H, respectively.

□

Proposition 2

Proof. Suppose that $\lambda_L = 1$. Due to Lemma 1, Self 1 chooses e_H when receiving $\tilde{\theta_H}$ since $\lambda_L = 1 \geq \hat{\lambda_L}$. Instead, if $\tilde{\theta_L}$ is received, Self 1 chooses e_H or e_L. When $\lambda_L = 0$ induces e_H, Self 0 is better off with strategy $\lambda_H = 1$ rather than with $\lambda_L = 0$. This is because the inequality $E_0(U(\lambda_H = 1, e_H)) = \theta_H(a+s)e_H - c \geq \theta_H(a+s)e_H - se_H(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 1) - m - c = E_0(U(\lambda_H = 0, e_H))$, holds since $-se_L(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 1) - m < 0$. Similarly, when the strategy $\lambda_H = 0$ yields e_L, then Self 0 is also better off with $\lambda_H = 1$ because $E_0(U(\lambda_H = 1, e_H)) = \theta_H(a+s)e_H - c \geq \theta_H(a+s)e_L - se_L(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 1) - m = E_0(U(\lambda_H = 0, e_H))$ holds given that $\theta_H(a+s) - c > 0 > -se_L(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 1) - m$. Hence, Self 0's best strategy is to set $\lambda_H^{**} = 1$ if $\lambda_L = 1$.

Suppose now that $\lambda_H = 1$. Due to Lemma 1, Self 1 chooses e_L when receiving $\tilde{\theta_L}$ since $\lambda_H = 1 \geq \hat{\lambda_H}$. Instead, if $\tilde{\theta_H}$ is received, Self 1 chooses e_H or e_L. The strategy of Self 0 with $\theta_i = \theta_L$ depends on values of m. Specifically, when $\lambda_L = 0$ induces e_L, he is better off setting $\lambda_L = 1$ if $m > \frac{se_L q(\theta_H - \theta_L)}{q + \chi r(1-q)}$, because the inequality $E_0(U(\lambda_L = 1, e_L)) = \theta_L(a+s)e_L > \theta_L(a+s)e_L + se_L(\theta_H - \theta_L)p_H(\lambda_H = 1, \lambda_L = 0) - m = E_0(U(\lambda_L = 0, e_L))$ holds for those values of m. If $\lambda_L = 0$ induces e_H, Self 0 is better off setting $\lambda_L = 1$ if $m > \frac{se_H q(\theta_H - \theta_L)}{q + \chi r(1-q)}$ since $E_0(U(\lambda_L = 1, e_L)) = \theta_L(a+s)e_L > \theta_L(a+s)e_H + se_H(\theta_H - \theta_L)p_H(\lambda_H = 1, \lambda_L = 0) - m - c = E_0(U(\lambda_L = 0, e_H))$ requires $m > \frac{se_H q(\theta_H - \theta_L)}{q + \chi r(1-q)}$. Therefore, for $\lambda_H = 1$ Self 0's best strategy is to set $\lambda_L^{**} = 1$ if $m > \frac{se_L q(\theta_H - \theta_L)}{q + \chi r(1-q)}$.

According to Lemma 1, when $\lambda_L^{**} = 1$ and $\lambda_H^{**} = 1$, Self 1 reacts to $\tilde{\theta_L}$ with e_L and to $\tilde{\theta_H}$, with e_H.

□

Appendix B: Additional equilibria of the status and self-deception game

In this appendix I present the remaining equilibria of the social status and self-deception game. These equilibria are relegated to an appendix for two reasons. The first is to keep the paper short and coherent; presenting the whole set of equilibria could deviate the reader's attention from the main message of this study which is not other than status having an influence on performance by means of beliefs. The second one is that the equilibria presented in the main body of the paper are the empirically relevant ones.

Let me start describing an equilibrium in which individuals exert low effort regardless of their social status or ability. This equilibrium is a pooling equilibrium at low levels of effort and it illustrates a situation in which low ability individuals engage in self-deception whenever they can, making favorable signals non credible.

Definition A.1. *A "low pooling" equilibrium of the status and self-deception game is characterized by the tuple* $(\lambda_l^{**}, e_l^{**})$*, where*

$$e_l^{**} = e_L$$

and

$$\lambda_l^{**} = \begin{cases} 0 & \textit{if } (\theta_L, \sigma_H), \\ 1 & \textit{if } \theta_H \text{ or } (\theta_L, \sigma_L). \end{cases}$$

Proposition A.1. *There exists an equilibrium* $(\lambda_l^{**}, e_l^{**})$ *that is sustained if* $s > 0$, $c > (a+s)\left(\frac{sqe_H\theta_H + \chi(1-q)r(a+s)\theta_L}{sqe_H + \chi(1-q)r(a+s)} - m\chi(1-q)r\right)$, $m > \frac{(\theta_H - \theta_L)\left((1-q)(1-r)((a+s)-se_H) + \chi q(1-r)(a+s)\right)}{(1-q)(1-r)+\chi q(1-r)}$, *and* $m \leq e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)r\chi}$.

Proof. Suppose that $\lambda_H = 1$. Due to Lemma 1, Self 1 chooses e_L when receiving $\tilde{\theta_L}$ since $\lambda_H = 1 \geq \hat{\lambda_H}$. Instead, if $\tilde{\theta_H}$ is received, Self 1 chooses e_H or e_L. The strategy of Self 0 with $\theta_i = \theta_L$ depends on values of m. Specifically, when $\lambda_L = 0$ induces e_L, he is better off setting $\lambda_L = 0$ if $m \leq \frac{se_L q(\theta_H - \theta_L)}{q+\chi r(1-q)}$, because the inequality $E_0(U(\lambda_L = 1, e_L)) = \theta_L(a+s)e_L \leq \theta_L(a+s)e_L + se_L(\theta_H - \theta_L)p_H(\lambda_H = 1, \lambda_L = 0) - m = E_0(U(\lambda_L = 0, e_L))$ holds for those values of m. Also, if $\lambda_L = 0$ induces e_H, Self 0 is better off setting $\lambda_L = 0$ as long as $m \leq \frac{se_H q(\theta_H - \theta_L)}{q+\chi r(1-q)}$ since $E_0(U(\lambda_L = 1, e_L)) = \theta_L(a+s)e_L \leq \theta_L(a+s)e_H + se_H(\theta_H - \theta_L)p_H(\lambda_H = 1, \lambda_L = 0) - m - c =$

$E_0(U(\lambda_L = 0, e_H))$ requires that m attains, at least, $m = \frac{se_H q(\theta_H - \theta_L)}{q+\chi r(1-q)}$.

Additionally, according to Proposition 1 if $c > (a+s)\Bigg(\frac{sqe_H\theta_H + \chi(1-q)r(a+s)\theta_L}{sqe_H + \chi(1-q)r(a+s)} - m\chi(1-q)r\Bigg)$, then $\lambda_L = 0$ is preferred to $\lambda_L = \hat{\lambda_L}$ since $E_0(U(e_L, \lambda_L = 1)) > E_0(U(e_H, \lambda_L = \hat{\lambda_H}))$. Therefore, whenever $\lambda_H = 1$ Self 0's best strategy is to set $\lambda_L = 0$ if $m \leq \frac{se_L q(\theta_H - \theta_L)}{q+\chi r(1-q)}$.

Let now $\lambda_L = 0$. According to Lemma 1, Self 1 chooses e_L after receiving $\tilde{\theta_H}$ since $\lambda_L = 0 < \hat{\lambda_L}$. Instead, if $\tilde{\theta_L}$ is received, Self 1 chooses e_H or e_L. When $\lambda_H = 0$ induces e_L, Self 0 is better off setting $\lambda_H = 1$ since the inequality $E_0(U(\lambda_H = 1, e_L)) = \theta_H(a+s)e_L \geq \theta_H(a+s)e_L - se_L(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 0) - m = E_0(U(\lambda_H = 0, e_L))$ always holds given that $-se_L(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 0) - m < 0$. In contrast, when $\lambda_H = 0$ induces e_H, Self 0 is better off with $\lambda_H = 1$ rather than with $\lambda_H = 0$ for $m > \frac{(\theta_H - \theta_L)\Big((a+s)(q+\chi(1-q)) - qse_H\Big)}{(1-q)+\chi q}$. This is because $E_0(U(\lambda_H = 1, e_L)) = \theta_H(a+s)e_L > \theta_H(a+s)e_H - se_H(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 0) - m - c = E_0(U(\lambda_H = 0, e_H))$ holds for such values of m. Thus, when $\lambda_L = 0$ and the cost of self-deception is large, in particular $m > \frac{(\theta_H - \theta_L)\Big((a+s)(q+\chi(1-q)) - qse_H\Big)}{(1-q)+\chi q}$, Self 0 with $\theta_i = \theta_H$ sets $\lambda_H^{**} = 1$.

Lemma 1 states that when $\lambda_L^{**} = 0$ and $\lambda_H^{**} = 1$, favorable signals $\tilde{\theta_H}$, are best responded with e_L. Finally, individuals with (θ_L, σ_L) and (θ_H, σ_H) set $\lambda_L^{**} = 1$ and $\lambda_H^{**} = 1$, respectively, to which Self 1 reacts with e_L.

□

Proposition A.1 presents an equilibrium in which low ability individuals engage in a pure strategy of self-deception $\lambda_L = 0$ since that the associated costs of engaging in self-deception are moderate. However, contrary to Proposition 2 engaging the mixed strategy $\lambda_L = \hat{\lambda_H}$ is not profitable inasmuch as it generates the high effort level, e_H which entails too steep costs. Since self-deception is profitable for the low types, favorable signals are no longer credible and are best-responded with low effort levels by Self 1.

Even though favorable signals are not credible, high ability individuals' best strategy is to be truthful. That is because they could generate e_L without incurring in self-deception and because the costs associated to high effort levels are too elevated. As stated above, Self 1 reacts to favorable signals setting low effort levels.

Another equilibrium arising from the game is a separating equilibrium in social status. However, in this equilibrium effort becomes lower the higher the status is.

Definition A.2. *A separating equilibrium of the status and self-deception game is characterized by the tuple* $(\lambda_m^{**}, e_m^{**})$*, where*

$$e^{**}_m = \begin{cases} e_L & \textit{if } (\theta_L, \sigma_H) \textit{ and } (\theta_H, \sigma_H), \\ e_H & \textit{if } (\theta_L, \sigma_L) \textit{ and } (\theta_H, \sigma_L). \end{cases}$$

and

$$\lambda^{**}_m = \begin{cases} 0 & \textit{if } (\theta_L, \sigma_H) \textit{ and } (\theta_H, \sigma_L), \\ 1 & \textit{if } (\theta_L, \sigma_L) \textit{ and } (\theta_H, \sigma_H). \end{cases}$$

Proposition A.2. *There exists an equilibrium* $(\lambda^{**}_m, e^{**}_m)$ *that is sustained if* $s > 0$, $c > (a+s)\left(\frac{sqe_H\theta_H + \chi(1-q)r(a+s)\theta_L}{sqe_H + \chi(1-q)r(a+s)} - m\chi(1-q)r\right)$, $m \leq \frac{(\theta_H - \theta_L)\left((1-q)(1-r)((a+s)-se_H) + \chi q(1-r)(a+s)\right)}{(1-q)(1-r)+\chi q(1-r)}$, *and* $m \leq e_L s(\theta_H - \theta_L)\frac{q}{q+(1-q)r\chi}$.

Proof. Let $\lambda_H = 0$. Due to Lemma 1, Self 1 chooses e_H when receiving $\tilde{\theta_L}$ since $\lambda_H = 0 < \hat{\lambda_H}$. Instead, if $\tilde{\theta_H}$ is received, Self 1 chooses e_H or e_L. Self 0's strategy with $\theta_i = \theta_L$ depends on m. When $\lambda_L = 0$ generates e_L, Self 0 is better off setting $\lambda_L = 0$ rather than $\lambda_L = 1$ if $m \leq \frac{s(\theta_H - \theta_L)e_L q}{q+\chi(1-q)}$, that is because the inequality $\lambda_L = 1$ if $m \leq \frac{s(\theta_H - \theta_L)e_L q}{q+\chi(1-q)}$ holds for those values of m. Similarly, when $\lambda_L = 0$ induces e_H, then Self 0's strategy depends on values of m. Strategy $\lambda_L = 0$ is profitable if $m \leq \frac{s(\theta_H - \theta_L)e_H q}{q+\chi(1-q)}$, since it guarantees $E_0(U(\lambda_L = 1, e_H)) = \theta_L(a+s)e_H - c \leq \theta_L(a+s)e_H + se_H(\theta_H - \theta_L)p_H(\lambda_H = 0, \lambda_L = 0) - m - c = E_0(U(\lambda_L = 0, e_L))$.

Suppose now that $\lambda_L = 0$. According to Lemma 1, Self 1 chooses e_L after receiving $\tilde{\theta_H}$ since $\lambda_L = 0 < \hat{\lambda_L}$. Instead, if $\tilde{\theta_L}$ is received, Self 1 chooses e_H or e_L. When $\lambda_H = 0$ induces e_L, Self 0 is better off setting $\lambda_H = 1$ since the inequality $E_0(U(\lambda_H = 1, e_L)) = \theta_H(a+s)e_L \geq \theta_H(a+s)e_L - se_L(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 0) - m = E_0(U(\lambda_H = 0, e_L))$ always holds given that $-se_L(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 0) - m < 0$. In contrast, when $\lambda_H = 0$ induces e_H, Self 0 is better off with $\lambda_H = 0$ rather than with $\lambda_H = 1$ for $m \leq \frac{(\theta_H - \theta_L)\left((a+s)(q+\chi(1-q)) - qse_H\right)}{(1-q)+\chi q}$. This is because $E_0(U(\lambda_H = 1, e_L)) = \theta_H(a+s)e_L \leq \theta_H(a+s)e_H - se_H(\theta_H - \theta_L)p_L(\lambda_H = 0, \lambda_L = 0) - m - c = E_0(U(\lambda_H = 0, e_H))$ holds for such values of m. Thus, when $\lambda_L = 0$ Self 0 with $\theta_i = \theta_H$ is better off sending $\lambda_H = 1$ as long as $m \leq \frac{(\theta_H - \theta_L)\left((a+s)(q+\chi(1-q)) - qse_H\right)}{(1-q)+\chi q}$.

Lemma 1 shows that when $\lambda^{**}_L = 0$ and $\lambda^{**}_H = 1$, Self 1 reaction to receiving $\tilde{\theta_H}$ is setting e_L. Also, upon receiving $\tilde{\theta_L}$ Self 1's best-response is to set e_H. Finally, individuals with (θ_L, σ_L) and (θ_H, σ_H) set $\lambda^{**}_L = 1$ and $\lambda^{**}_H = 1$, to which self 1 reacts with e_H and e_L, respectively.

□

Proposition A.2 presents an equilibrium in which high and low ability individuals engage in self-deception whenever possible. This behavior makes favorable as well as unfavorable signals not credible. According to Lemma 1, this propensity to engage in self-deception from both types entails that Self 1's reaction to favorable signals is to exert low effort,e_L and also that the reaction to unfavorable signals is to set high effort, e_H.

Low ability individuals have no incentive to be truthful and deviate from this equilibrium because they derive utility gains from holding high beliefs about their ability. Similarly, high ability individuals do not deviate from this equilibrium because being truthful generates lower effort levels than not being truthful, which leads to lower utility when the costs of self-deception are moderate.

Appendix C: Experimental Instructions

This is an experiment in the economics of decision-making. The instructions are simple and if you follow them carefully and make good decisions, you might earn a considerable amount of money, which will be paid to you via bank transfer at the end of the experiment. The amount of payment that you receive depends entirely on your decisions and effort.

Once the experiment has started, no one is allowed to talk to anybody other than the experimenter. Anyone who violates this rule will lose his or her right to participate in this experiment. If you have further questions when reading these instructions please do not hesitate to raise your hand and formulate the question to the experimenter.

Part 1

In the first part of the experiment we will ask you to solve a set of 12 tasks, in each of the tasks you are asked to complete a pattern, to do so, you need to choose among some of the options that we provide. Remember that only one of the options is correct. In this part of the experiment you have 4 minutes in order to complete the set of 12 tasks. With the completion of this task we will place you in one of two groups.

At the beginning of this part of the experiment we will ask you to provide a personal goal or target, this is we would like you to estimate how many patterns you would be able to solve in that round. Please provide this goal at your best ability! We would really like to know how accurate your estimates are.

Here is an example, which option do you think is the most accurate to complete the pattern?
(Display Example 1)

Here is another example, which option do you think is the most accurate to complete the pattern?
(Display Example 2)

(Completion set I, programmed to be 5 minutes)

The following participants have a position in the GOLD group. [Call out ID numbers]. Please come up as we call your name and receive your medal. You will wear your medal for the rest of the exercise. Please remain standing at the front of the room until all medals are distributed.
Let's give the Gold group a round of applause!

Part 2

In the second and last part of the experiment you are asked to solve patterns just like the ones that you completed in the first part of this experiment. You need to solve as many patterns as you can, since for each correctly solved pattern you would receive a certain amount of points, which can be exchanged for money at the end of the experiment. Hence the money that you earn in the exercise depends on your performance in this part of the experiment.

(Display only if relative performance ranking available) While working on the patterns you can also check you ranking with respect to your peers by pressing on the button "check my ranking" located at the bottom of your screen. Mind that this descending ranking only reflects your performance in the task with respect to your peers. You can go back to complete patters by pressing the bottom "Take me back to work".

During this part of the experiment you have 5 rounds, each of 4 minutes, to complete as many patterns as you can. Feedback about your own performance, this is whether you solved correctly a pattern or not, would be given to you as soon as you solved that pattern. A summary of the number of correctly solved and incorrectly solved patterns in the round would be given to you as soon as the round ends. Your final score, this is the amount of points derived from each round, would only be shown to you at the end of the experiment. The exchange rate at which the points can be exchanged for money would be determine is of 0.50 Euro cents per point.

Finally, at the beginning of each round we will ask you to provide a personal goal or target, this is we would like you to estimate how many patterns you would be able to solve in that round. Please provide this goal at your best ability! we would really like to know how accurate are your estimates.

(Completion set II, programmed to take 25 minutes)

Appendix D: Additional regressions

Table 13: Determinants of Rank Access Experiment 2

	(1) Performance	(2) Performance	(3) Performance
High Status	-0.957	-1.413	-1.334
	(0.923)	(0.947)	(0.913)
Belief round 1		0.447	0.492*
		(0.294)	(0.293)
Session size		1.197	0.574
		(0.970)	(1.661)
Female		-1.575*	-1.680*
		(0.907)	(0.959)
Locus of control			0.490
			(0.366)
Performed task before			-1.747
			(1.384)
Session Nr.			0.076
			(0.944)
Assignment due to luck			-0.364
			(1.208)
ln(δ)	0.822***	0.4335	0.325
	(0.618)	(0.308)	(0.313)
N	58	58	58
Log-likelihood	-103.323	-97.139	-94.835

Note: This table presents marginal effects of negative binomial regressions of the model $TimesRank_i = \beta_0 + \beta_1 HighStatus + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. "High Status" is a dummy variable that captures whether the subject was assigned to the high status treatment. The controls considered in this model are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment,"Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

Table 14: Treatment Effects and Rank Access Experiment 2

	(1) Performance	(2) Performance	(3) Performance
High Status	2.869**	3.799***	3.414**
	(1.411)	(1.310)	(1.342)
High Status* Times Rank	-1.142	-1.667**	-1.551*
	(0.784)	(0.798)	(0.797)
Times Rank	0.121	0.060	0.064
	(0.181)	(0.196)	(0.204)
Session Size		-0.002	-0.005
		(0.013)	(0.013)
Female		-2.370*	-2.287*
		(1.234)	(1.278)
Belief round 1		0.315	0.311
		(0.202)	(0.205)
Session size		-0.057	-0.121
		(0.309)	(0.305)
Locus of control			0.082
			(0.473)
Session Nr.			-0.143
			(0.239)
Performed task before			1.700
			(1.704)
Assignment due to luck			-1.829
			(0.218)
ln(δ)	0.377***	.048	0.005
	(0.292)	(0.206)	(0.209)
N	138	138	138
Log-likelihood	-477.280	-454.459	-453.093

Note: This table presents marginal effects of negative binomial regressions of the model $Performance_i = \beta_0 + \beta_1 HighStatus + \beta_2 HighStatus * TimesRank + \beta_3 TimesRank + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. "Performance" is the number of correctly solved matrices in the second stage of the experiment, "High Status" is a dummy variable that captures whether the subject was assigned to the high status treatment. The controls considered in this model are "Session Size" the number of subjects in a session, "Female" whether the subject identifies with the female gender, "Session Nr." the session in which the subject participated, "Times Rank" is the occurrence of rank access by a subject in the second stage of the experiment,"Locus of Control" the score on the locus of control survey, " Performed task before" whether the subject performed the task before and " Assignment due to luck" whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.

Table 15: Beliefs and Rank Access Experiment 1

	(1) Beliefs	(2) Beliefs	(3) Beliefs
Low Ability	-1.083	-0.856	-0.902
	(2.404)	(2.392)	(2.312)
High Status	0.438	1.117	1.225
	(2.254)	(2.242)	(2.169)
Low Ability * High Status	-2.011	-2.539	-2.924
	(3.455)	(3.409)	(3.303)
Times Rank	0.413	0.387	0.330
	(0.428)	(0.429)	(0.444)
Low Ability *Times Rank	-2.932***	-3.176***	-2.878***
	(1.019)	(1.014)	(0.984)
Low Ability * High Status* Times Rank	3.945***	4.121***	3.927***
	(1.255)	(1.237)	(1.167)
High Status* Times Rank	-0.704	-0.686	-0.559
	(0.669)	(0.658)	(0.631)
Female		-1.242	-1.108
		(1.663)	(1.616)
Beliefs round 1		0.447*	0.640**
		(0.249)	(0.268)
Session Size		0.330	0.133
		(0.382)	(0.410)
Locus of control			0.249
			(0.490)
Session Nr.			0.136
			(0.269)
Performed task before			6.689***
			(2.349)
Assignment due to luck			-6.028**
			(2.497)
ln(δ)	0.432***	0.3763	0.201
	(0.206)	(0.211)	(0.228)
N	133	133	133
Log-likelihood	-475.231	-472.925	-466.576

Note: This table presents marginal effects of negative binomial regressions of the model $Beliefs_i = \beta_0 + \beta_1 HighStatus + \beta_2 HighStatus * TimesRank + \beta_3 TimesRank + Controls'\Gamma + \epsilon_i$, with $\epsilon \sim poisson(\lambda)$. “Beliefs’ is the number of correctly solved matrices the participant believed could achieve in the second part of the experiment, “High Status” is a dummy variable that captures whether the subject was assigned to the high status treatment. The controls considered in this model are “Session Size” the number of subjects in a session, “Female” whether the subject identifies with the female gender, “Session Nr.” the session in which the subject participated, “Times Rank” is the occurrence of rank access by a subject in the second stage of the experiment,“Locus of Control” the score on the locus of control survey, “ Performed task before” whether the subject performed the task before and “ Assignment due to luck” whether the subject believed that treatment assignment was due to luck. $ln(\delta)$ is the estimated dispersion from the mean. Standard errors presented in parentheses. *** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.1 level.