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experimental study**

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Wage delegation and intrinsic motivation: an experimental study

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Abstract

The aim of this study is to investigate experimentally whether and to what extent subjects' intrinsic motivation and performance change when they are allowed to self-set their own wage for performing a task; moreover, it investigates how differently motivated people react to the possibility of determining their own wage. We propose a novel experimental design, in which the subjects are asked to perform a complex real-effort task under two different conditions: wages can be either chosen by the subjects themselves, or randomly determined. With this setting, we are able to disentangle intrinsic motivation from the reciprocity concerns that are likely to characterize the standard principal-agent interaction. Our main result is that subjects increase their performance more when they are delegated the wage choice than when they receive a random payment; moreover, subjects who are both highly motivated *and* delegated their wage choice are those who perform better. Finally, subjects with higher motivation ask for lower wages.

JEL Classification: C91; J33; M52; M54

Keywords: Compensation, Incentives, Delegation, Motivation, Experiment.

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1. Introduction

In most labor relations, employees performance can be neither observed nor enforced; consequently, according to standard economic theory, employees should exert the minimum effort and there is no reason for employers to offer an above-minimum wage. Nevertheless, several experimental papers have shown a positive relation between the wage offered and the effort exerted (Fehr et al., 1993; Charness and Haruvy, 2002; Fehr et al., 2007; Falk et al., 2008; Fehr et al., 2009; Charness et al., 2012), suggesting the importance of reciprocity in employment relationships. But increasing workers' wages does not always ensure higher performance: an ever-growing number of experimental studies have found that sometimes monetary incentives and control devices can be detrimental for employees' performance, especially for those workers who are *intrinsically motivated* (Deci, 1971; Deci et al., 1999; Fehr and Falk, 2002; Falk and Kosfeld, 2006; Gneezy et al., 2011; Dessi and Rustichini, 2015). These findings suggest that when people are intrinsically motivated to perform an activity—that is, they receive no apparent reward except the activity itself (Deci, 1971:105)—an external reward is likely to crowd out their intrinsic motivation and to lead to lower performance.

This issue raises the need to find an alternative approach to motivate employees to exert the desired effort. A possible solution to the problem related to workers' motivation can be found by taking cue from some HR practices effectively adopted in the real business management; indeed, in the last few decades many companies have enhanced the discretionary power of their employees in an attempt to increase their sense of responsibility, satisfaction, motivation, and consequently, productivity. For instance, the Brazilian manufacturing company Semco is considered an example of workplace democracy: its employees work in self-managed teams that are responsible for scheduling, setting their own goals, and controlling the quality of their products. Some of them are allowed to set their own wages and to choose a preferred payment structure among several options, including the possibility to link their compensation to the achievement of self-set annual goals (Semler, 1993, 1994, 2003). A growing number of firms have started to implement empowerment policies and to increase the responsibility of their employees to the point of letting them decide their own wages; these firms notably include Skyline Construction and Virgin. Companies using wage delegation claim that this policy is highly successful in terms of employee and customer satisfaction, and company revenues.

Based on this promising anecdotal evidence, a stream of experimental literature has developed on the effect of wage delegation on employees' effort (Charness, 2000, 2004; Charness et al., 2012; Franke et al., 2016; Mellizo et al., 2014; Charness et al., 2015; Jeworrek and Mertins, 2015). By investigating this effect in a laboratory or in a controlled field setting, these studies have disentangled the wage delegation effect from the effects of other policies usually implemented in those companies with self-determined wages (e.g., more discretion about work-time or organization in self-managed teams) (Jeworrek and Mertins, 2015). Moreover, several interpretations have been proposed of the causal connection that links participation in wage choice and performance by referring mainly to (positive or negative) reciprocity (Charness, 2004; Corgnet and González, 2014; Franke et al., 2016), or to the responsibility alleviation effect (Charness et al., 2012). Only one experimental paper has interpreted the causal link between wage delegation and performance by referring to intrinsic motivation and suggesting a positive effect of wage delegation on intrinsic motivation (Mellizo et al., 2014); and suggesting that to the extent that workers' voice satisfies their basic psychological needs for autonomy, competence and relatedness, they are *intrinsically motivated* to produce more (Deci and Ryan, 1985; 2000a; 2000b)

The aim of our paper is to investigate experimentally whether and to what extent the wage delegation affects the intrinsic motivation and the performance of the delegated employees; moreover, it investigates whether people with different levels of intrinsic motivation react differently to wage delegation. In order to pursue these aims we propose a novel design with a real-effort task: the subjects are asked to write down as many words as possible that have to be related to one of these categories: movies, flora and fauna, forenames, and food and beverage. We opt for such a complex task in the hope that the participants will perceive it as interesting or even enjoyable. Indeed, several studies have shown that the initial interest in the task is a needed requirement to generate intrinsic motivation (Deci et al., 1999; Fehr and Falk, 2002; Bénabou and Tirole, 2003); moreover, they have suggested that the effects of external interventions on intrinsic motivation (either undermining or enhancing) occur only with activities of initial interest to participants (Calder and Staw, 1975; Deci et al., 1999; Weibel et al., 2007; Dessi and Rustichini, 2015; Festrè and Garrouste, 2015).

Each session of our experiment is divided into two phases: in the first one the payment is fixed, while the payment for the second one depends on the treatment. In the control treatment the subjects are given a randomly determined wage, while

in the delegation treatment the subjects are delegated the choice of their own wage.¹ Between phase 1 and phase 2, we introduce a free-choice period, that is a non-paid period in which subjects have the possibility to keep on performing the task, play tetris, or simply wait for the beginning of phase 2; the number of words written during this free-choice period represents our first measure of intrinsic motivation (the *behavioral* measure). Our second measure of intrinsic motivation (the *self-reported* measure) is derived from the questionnaire we give to the subjects at the end of the experiment; this questionnaire's items are aimed at reporting the subjects' interest/enjoyment in the task and their perceived competence.

The combination of free-choice behavior and self-reported interest is one of the most adopted solution to the well-known problem of how to measure intrinsic motivation (Deci, 1971; Ryan et al., 1991; Deci et al., 1999), although neither of these measurement tools is fully convincing (Fehr and Falk, 2002). For example, free-choice behavior can be influenced by factors which differ completely from intrinsic motivation concerns, such as loss aversion, negative reciprocity or signaling concerns (Fehr and Falk, 2002); on the other hand, the self-reported measures of interest are obtrusive and can be influenced by the subjects' attempt to avoid cognitive dissonance²: meaning that, individuals' assessments of interest can be linked to how they performed the task and not to the real enjoyment or interest. Through our experimental design, we are able to disentangle the effects of a change in intrinsic motivation from those arisen from loss aversion, negative reciprocity, or signaling concerns; unfortunately, we can not solve the problems related to the self-reported measure, but we reduce their salience by using a combination of the two measures.

Our main preliminary results show that when subjects are delegated the wage choice, they increase more their performance; moreover, subjects who are both delegated their wage choice *and* highly motivated are those who perform better. Finally, in line with the previous literature on the interaction between intrinsic motivation and external rewards, we find that more intrinsically motivated people tend to ask for lower wages.

Our study contributes to the existing literature on wage delegation and intrinsic

¹In the control treatment we randomly allocate the subjects to receive the same set of wages which the subjects in the delegation treatment have self-chosen.

²According to the cognitive dissonance theory (Festinger, 1957), an individual who experiences cognitive dissonance (that is, the mental stress or discomfort experienced in performing an action that is contradictory to one or more beliefs, ideas or values) is motivated to try to reduce it.

motivation in at least two ways. First of all, we are unaware of any other work that investigates directly the relation between wage delegation, intrinsic motivation, and performance; only Mellizo et al. (2014) have hypothesized that workers feel more intrinsically motivated when they have the right to vote for their own wage, but they have not explored the consequential link between these three variables. Secondly, we have attempted to exclude the possibility that the effect of wage delegation on performance could be mediated by positive reciprocity; that is, that agents could reciprocate to the kind and trusting behavior of principals (that allow them to self-set their own wage) by exerting higher effort. In order to pursue this aim, we decide not to implement a principal-agent setting as it has been proposed in most studies on wage delegation (Charness et al., 2012; Charness et al., 2013; Corgnet and Gonzalez, 2014; Jeworrek and Mertins, 2015), but to let the subjects play individually by excluding the principal from the setting.

The reminder of the paper is structured as follows: Section 2 examines the related literature on delegation and intrinsic motivation; Section 3 describes our experimental design; Section 4 illustrates our results and Section 5 concludes. The instructions of the experiment and the final questionnaire from which we derive the self-reported measure of intrinsic motivation are presented in the Appendix.

2. Related literature

Delegation

The economic studies that explore theoretically the effects of delegating authority to employees have focused mainly on the following trade-off (Dougcouliagos, 1995; Beckmann et al., 2015): on the one hand, the increased employees participation helps align employers' and employees' interests (Milgrom and Roberts, 1995); it offers a way to employ workers' knowledge in order to improve productivity and production (Brickley et al., 1997; Aghion et al., 2014); and it encourages workers' motivation (Bowles and Gintis, 1993; Aghion and Tirole, 1997; Deci and Ryan, 2000) and reciprocity (Homans, 1958; Blau, 1964) leading to higher effort. On the other hand, it may lead to inefficient and costly management (Kremer, 1997), to a waste of talent and resources (Williamson, 1980), and to free-rider problems (Alchian and Demsetz, 1972).

The empirical data on workplace surveys, reports, and on uncontrolled field data, have suggested a positive relation between workers' participation in the decision-

making process and their performance, but there is insufficient and inadequate data to estimate the strength and the determinants of this causal effect (Harrison, 2004; Bryson et al., 2006; Golden, 2012; Goudswaard et al., 2012; De Varo and Prasad, 2013).

Because of this promising anecdotal evidence, in the last decade several experimental studies have investigated how an increase in workers' participation can affect their performance, and have attempted to understand the causal link between participation and performance. On the one hand, the experimental settings in which workers do not have total autonomy in deciding their own wages lead to controversial results: indeed, some evidence shows that workers increase their effort when they are consulted and listened (Corgnet and González, 2014), while other suggests that workers performance is not always influenced by the identity of the proposer of the employment contract (Charness et al., 2013), or is even lower for workers having the right to participate in the wage choice (Franke et al., 2016).

On the other hand, a growing stream of experimental literature has shown that employees' performance tends to increase when they are totally delegated the choice of their own wage or payment structure. Charness et al. (2012) provided clear evidence that when employers delegated the wage choice to the employees, employees were more willing to exert high effort both with one shot and with repeated interactions. In Mellizo et al. (2014) setting, workers were assigned to groups of three to solve some mathematical problems, and when they had the opportunity to vote for the preferred compensation scheme their performance increased significantly. Finally, Jeworrek and Mertins (2015) conducted a natural field experiment by hiring employees for a half-day data entry job: they observed not only the well-studied link between wage delegation and performance, but they also noticed higher performance for those workers who did not have the decision right but knew that some co-workers did.

Intrinsic motivation

An agent is said to be intrinsically motivated when her primary focus is on rewards inherent in engagement with the activity, like novelty of the task, entertainment value, satisfaction of curiosity, and opportunities for the experience of effectance and the attainment of mastery (Gilbert et al., 1998: 566). The activity is therefore approached as "an end in itself" (Kruglanski, 1975). On the other

hand, when a person has an extrinsic motivation orientation, the primary focus is on rewards that are mediated by, but not part of the target activity: the activity is seen as a "means to an end" (Kruglanski, 1975).

In the early 1970s, several studies began to investigate the effects of the interaction between intrinsic and extrinsic motivation. The pioneering experiment presented by Deci (1971) was the first to prove the existence of the so-called *crowding out effect*: that is, by measuring intrinsic motivation as the amount of time during a free choice situation which subjects spent working on a task, Deci's experiment shown that the introduction of extrinsic rewards undermined intrinsic motivation. Following this influential paper, an extensive body of research has replicated and expanded Deci (1971)'s results by investigating in which conditions the crowding-out effect did arise and affect performance. The meta-analysis conducted by Deci et al. (1999) well-summarized the evidence collected from more than 100 empirical studies, showing that most tangible rewards significantly undermined the behavioral measure of intrinsic motivation, except for performance-contingent reward and tangible rewards connected to uninteresting activities.

One of the main theoretical arguments provided to explain these crowding out effects is based on the self-determination theory (SDT) (Deci and Ryan, 1985; Ryan and Deci, 2000; Vansteenkiste et al., 2008; Gagnè and Forest, 2011; Bowles and Polania-Reyes, 2013; Festrè and Garrouste, 2015). This theory analyzes how environment and social context affect the human innate psychological needs (Vansteenkiste et al., 2008: 196): the need for *competence* — that is, feeling effective in one's interactions with the social and physical environments (White, 1959; Deci, 1975); the need for *relatedness* — that is, caring for and feeling cared for by others (Ryan, 1995); and the need for *autonomy* — that is, feeling volitional and fully endorsing one's actions (deCharms, 1968; Deci and Ryan, 1985). The specific focus of SDT is on the conditions that diminish or enhance intrinsic motivation. For example, the external interventions are assumed to have a double meaning and their effects on intrinsic motivation depend on which aspect people perceive as more salient: to the extent that the controlling aspect is prevalent, external interventions will undermine intrinsic motivation; otherwise, to the extent that the informational or supportive aspect is preponderant, the SDT predicts that external interventions will maintain or enhance intrinsic motivation. Indeed, several studies have proved the enhancing effects of choice and the opportunity for self-direction (Swann and Pittman, 1977; Zuckerman et al., 1978), acknowledgment of feelings (Deci and Ryan, 1985), and

positive feedback (Deci, 1975), as they allow people a greater sense of autonomy and/or perceived competence (Ryan and Deci, 2000a, 2000b).

By looking at the theoretical and empirical literature on intrinsic motivation and on wage delegation, we develop three main hypotheses: first of all, we hypothesize that when people are delegated their wage choice, they exert higher effort. The second hypothesis relates motivation to performance by stating that highly motivated subjects tend to perform better than poorly motivated subjects; moreover, we hypothesize that the highest effort is exerted by those subjects who are highly motivated *and* have the possibility to choose their wage. Finally, we hypothesize that the delegation of the wage choice could be perceived as a supportive intervention and therefore enhance both subjects' intrinsic motivation and their performance; indeed, when people receive the opportunity to self-set their own wage, both their need for competence and their need for autonomy should be satisfied.

3. Experimental design

Our experimental design consists of two treatments: the Delegation treatment and the Control treatment. In both of them, subjects are asked to write down as many words as possible that have to begin with a given letter (that changes every three minutes) and have to be related to one of these categories: movies, flora and fauna, forenames, and food and beverage. The experiment is completely computerized and participants' performance is measured as the number of words written in the right category. At the end of the experiment, they are asked to respond to a questionnaire (a slightly modified Intrinsic Motivation Inventory) in order to self-set their interest in the task, their perceived competence in completing the task, and their intrinsic motivation to perform it, then they are paid. This self-assessed rate of interest is our ex-post measure of intrinsic motivation.

Delegation treatment – It is composed by two phases and both phases last for 15 minutes. Before the beginning of the first phase, subjects are told that for the first phase they will receive a fixed wage of 20 UMS (1 UMS = 0.25 euro), while for the second phase they will be delegated the choice of their own wage by deciding which wage they want to receive for the second phase into a range between 0 and 30 UMS. Then the first phase begins, and each participant has to write down words for 15 minutes without any interruption. After the first phase, a free-choice period is introduced: participants are told that for six minutes they can do whatever they

want, and they are given the possibility to choose among keep on inserting words, play tetris or simply wait for the beginning of the next phase. Participants also know that for the free-choice period they will not receive any compensation. The number of words written during this free-choice period represents the ex-ante (behavioral) measure of intrinsic motivation; we refer to the free-choice behavior as an ex-ante measure because it is collected before the introduction of the effective treatment. At the end of the free-choice period, subjects are asked to type the wage they want to receive for the second phase; after that, the second phase starts and its structure is identical to the first one. After the end of the second phase, the subjects are given the questionnaire and then paid.

Control Treatment – In this treatment, participants do not have the possibility to self-set their own wage at the beginning of phase two; instead, their wages are randomly determined from the wage distribution generated by those subjects who are delegated the choice of their wage in the Delegation Treatment. Therefore, they are told about their second phase wage only before the beginning of the second phase.

4. Results

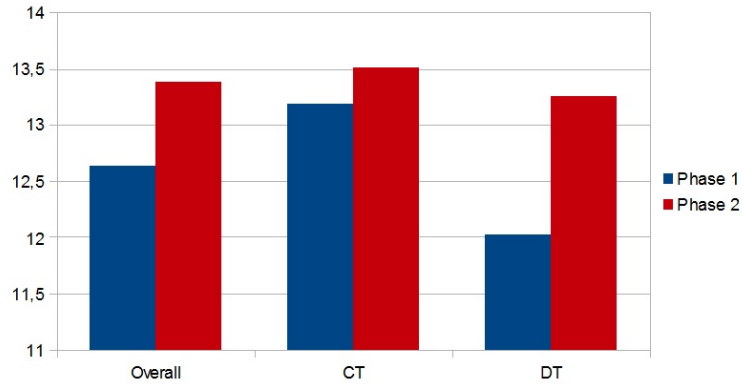
The experiment was conducted at the University of Trento with 156 participants: eighty people participated in the four sessions of the Control treatment, and seventy-six in the four sessions of the Delegation treatment. We exclude 1 observation from the Control treatment and 3 from the Delegation treatment for lack of available data, therefore we used 152 observations. All sessions were computerized and conducted in the CEEL (Cognitive and Experimental Economics Laboratory), using the Delphi software³. Participants played for 10 rounds (plus two rounds during the free-choice period) in 6 sessions and for 12 rounds (plus two) in 2 sessions, one with the Control treatment and one with the Delegation treatment. In these last two sessions we introduced a preliminary phase before the beginning of the real experiment in order to let the subjects familiarize with the task, but the results were not significantly different from those of the other sessions; therefore, we pooled all the results together. On average, each subject received 15.24 euro for a one hour/one hour and half-session. No subject participated in more than one treatment or session.

Detailed analysis of our main findings follows below.

³We warmly thank Marco Tecilla for developing the software we used for the experiment.

TABLE 1: SUMMARY OF EFFORT (N° OF WORDS PER ROUND) AND WAGE BY TREATMENT

	Overall		Control		Delegation	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
<i>N° of words in phase 1</i>	12.63	(3.63)	13.19	(3.48)	12.03	(3.73)
<i>N° of words in free-choice period</i>	7.24	(5.78)	7.1	(5.44)	7.41	(6.17)
<i>N° of words in phase 2</i>	13.38	(4.35)	13.5	(4.34)	13.25	(4.40)
<i>Wage 1</i>	20	(0)	20	(0)	20	(0)
<i>Wage 2</i>	28.98	(2.76)	28.99	(2.74)	28.97	(2.80)

FIGURE 1: *Difference in effort (n° of words per round) between phase 1 and phase 2*

Provided effort:

Table 1 summarizes the number of words written during each round across the different phases of our experiment, the average wage received in phase 1 and the average wage chosen (in Delegation treatment, from now on DT) or received (in Control treatment, from now on CT) for phase 2.

The first result that we can observe is in line with the previous literature on the gift-exchange game: when subjects are given higher wages, they exert higher effort. Indeed, Table 1 shows how overall participants earn significantly higher wages in phase 2 with respect to phase 1 ($p < 0.01$, two-tailed Wilcoxon-Mann-Whitney test) and exert higher effort ($p < 0.01$, two-tailed Wilcoxon-Mann-Whitney test). By looking at Figure 1, it becomes clear that the main driver of this result is participants' behavior in Delegation treatment: when subjects are delegated their wage choice, the increase in performance between phase 1 and phase 2 (measured as the difference in number of words written in phase 1 and in phase 2) is much higher than when they are given a random bonus ($p < 0.01$ in DT, one-tailed Wilcoxon-Mann-Whitney

test; $p = 0.38$ in CT). It is worthwhile to recall that in phase 1 subjects are paid independently from their performance in both treatments, thus we can consider the effort they exert in phase 1 as a proxy for their ability in the task; for that reason we are not interested in the absolute measure of effort exerted in phase 2, but rather on the change in performance between phase 1 and phase 2 as the effect of the introduction of our treatment.

Result 1: *People increase more their effort when they are delegated their wage choice than when they are assigned a random bonus.*

Moreover, by comparing the increase in performance between phase 1 and phase 2 in CT and DT *controlling for the ex-ante motivation*, it is clear that participants' performance is significantly higher in DT than in CT independently from their motivation ($p = 0.03$, two-tailed Wilcoxon-Mann-Whitney test); meaning that, subjects with the same ex-ante motivation tend to increase more their effort when they are given the possibility to self-set their own wage.

Result 2: *People with the same motivation tend to increase more their effort when they are delegated their wage choice.*

In order to gain some insight into the determinants of subjects' performance, we run ordinary least squares (OLS) regressions on the effort exerted in phase 2. Column (1) presents the results of an OLS regression on the effort exerted in phase 2 in both treatments, where the explanatory variables are a dummy variable which is equal to 1 in the delegation treatment (*Treatment*), the number of words written during the first phase (*Phase 1*), and the wage asked or received (*Wage*). We control also for subjects heterogeneity: our control variables are gender, age, income, education (a dummy equal to 1 when subjects attend courses of economics or management) and number of past experiments. In Column (2) we control also for the number of words written during the free-choice period (*Free-choice*), that we consider as a measure of subjects' ex-ante motivation. Column (3) adds the interactions between treatment and subjects' ability (*Phase 1 x treat*) and between subjects' ex-ante motivation and treatment (*Free x treat*). From the observation of this Table, we can derive mainly two conclusions: on the one hand, it becomes clear that the effort exerted in phase 2 is strongly influenced by subjects' ability in both treatments, although in DT the effect of subjects' ability in determining their effort is significantly lower. On the other hand, we can notice that neither our treatment

TABLE 2: OLS REGRESSION ON EFFORT EXERTED IN PHASE 2

	(1)	(2)	(3)
<i>Treatment</i>	4.137 ⁺ (2.482)	3.255 (2.388)	12.344 (8.551)
<i>Phase 1</i>	0.899*** (0.073)	0.803*** (0.074)	0.928*** (0.103)
<i>Wage</i>	-0.014 (0.456)	0.071 (0.437)	0.079 (0.432)
<i>Free-choice</i>	-	0.412*** (0.110)	0.154 (0.165)
<i>Phase1 x treat</i>	-	-	-0.249 ⁺ (0.141)
<i>Free x treat</i>	-	-	0.468* (0.222)
<i>Observations</i>	152	152	152
<i>Adjusted R²</i>	0.542	0.580	0.590

⁺ p<0.1, *p<0.05, ** p<0.01, ***p<0.001. Standard errors are in parentheses.

Our dependent variable is the number of words written in phase 2. The independent variables are a dummy variable which is equal to 1 in DT (*Treatment*) the number of words written during phase 1 (*Phase 1*), and the wage asked/received (*Wage*). In Column 2 we introduce the number of words during the free choice period (*Free-choice*); in Column 3 are added the interaction between treatment and n° of words written in phase 1 (*Phase 1 x treat*), and between treatment and n° of words written during free-choice period (*Free x treat*). Our control variables are gender, age, course of study, income and number of past experiments.

nor subjects' motivation is able to influence subjects' effort *per se*, but when we consider the interaction between these two variables, the effect on subjects' effort is positive and significant. It means that only when subjects are both delegated their wage choice *and* intrinsically motivated, they will increase their performance.

Result 3: *People who are both delegated their wage choice and highly motivated are those who perform better.*

Wage:

For what concerns subjects' wages, we have to look again at Table 1: for construction, each subject in DT has the possibility to decide his own wage for phase 2 and the wages' distribution in CT is the same of DT. Therefore, Wage 2 has almost the same mean and standard deviation in DT and CT⁴.

⁴The slight differences are due to the fact that we exclude some observations from DT and CT

First of all, it should be not underestimated the result that not all the participants in DT chose the highest possible wage : 17 subjects over 73 (almost 18%) asked for a wage which is lower than 30. Even more interestingly, the decision of asking a lower wage is not correlated with a low ability in the task; instead, we find a negative correlation between asked wage and ex-ante motivation (Spearman’s $\rho = -0.18$ and $p = 0.06$). Although this results is driven by few participants’ behavior, it suggests that more motivated people tend to ask for lower wages, and it seems to be in line with all the literature regarding intrinsic motivation.

Result 4: *People with higher motivation tend to ask for lower wages.*

Finally, we compare the increase in performance between phase 1 and phase 2 *controlling for the wage* (that is, the ratio between delta-ratio and wage) in DT and in CT; we found that it is much higher when subjects have the possibility to self-set their wage ($p = 0.02$, two-tailed Wilcoxon-Mann-Whitney test). It means that, regardless of the wage received, subjects perform better when they are given the possibility to choose it; this result seems to suggest that one powerful driver of performance could be not the wage itself, but rather the possibility to determine it.

Result 5: *Regardless of the wage received, people perform better when they have the possibility to determine it.*

Intrinsic motivation

As above mentioned, we use another measure of intrinsic motivation that is calculated starting from a questionnaire proposed at the end of the experiment, the Intrinsic Motivation Inventory (IMI), that has been proposed by several other authors (Ryan, 1982; Ryan et al., 1991; Deci et al., 1994). We use only eleven items from this 45-items inventory, 7 items from the interest/enjoyment sub-scale and 4 from the perceived competence scale;⁵ the subjects are asked to answer to each item through a 7-points Likert scale, going from "I strongly disagree"(1) to "I strongly

for lack of available data

⁵The main reason we decide to use only eleven items from the inventory is to avoid redundancy, due to the fact that the list of items is long and several items of the inventory are rather similar. Moreover, by looking at the previous studies on intrinsic motivation, it becomes clear that the authors used different items and sub-scales of the IMI inventory, depending on the experimental framework and on the tasks (Ryan et al., 1983; McAuley et al., 1989; Ryan and Connel, 1989; Monteiro et al., 2015). It suggests that it is a rather common practice to adjust the inventory according to the experimental needs.

TABLE 3: CORRELATION BETWEEN MEASURES OF INTRINSIC MOTIVATION

	Free-choice ratio	Intrinsic motivation	Competence
<i>Free-choice ratio</i>	1	–	–
<i>Intrinsic motivation</i>	0.29 (0.000)	1	–
<i>Competence</i>	0.19 (0.008)	0.47 (0.000)	1

TABLE 4: SELF-REPORTED MEASURES OF INTRINSIC MOTIVATION BY TREATMENT

	Overall		Control		Delegation	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
<i>Intrinsic motivation</i>	4.35	(1.46)	4.29	(1.55)	4.41	(1.35)
<i>Competence</i>	3.1	(1.11)	3.02	(1)	3.18	(1.22)

agree"(7). The answers to the interest/enjoyment sub-scale allow us to calculate the self-reported measure of intrinsic motivation, while the answers to the perceived competence sub-scale allow us to calculate the subjects' perceived competence, which is theorized to be positively related to both self-report and behavioral measures of intrinsic motivation.

First of all, it is important to verify whether the two measures of intrinsic motivation (the effort during the free-choice period and the self-reported measure) are correlated: Table 4 shows that the correlation is positive and significant ($\rho=0.29$ and $p=0.000$, Spearman correlation test), therefore we find some support to our choice of using these two measures together. Our results also support the theorized relation between perceived competence and free-choice behavior ($\rho=0.19$, $p=0.0008$), and between perceived competence and self-reported intrinsic motivation ($\rho=0.47$, $p=0.000$).

Result 6: *The behavioral measure and the self-assessed measures of intrinsic motivation are positively correlated.*

The next step is comparing the different self-reported measures of intrinsic motivation in DT and in CT. Table 5 summarizes the results obtained for the self-report measures of intrinsic motivation and perceived competence by treatment: as we can see, both intrinsic motivation and competence are higher in DT than in CT, but none of these differences is significant.

TABLE 5: OLS REGRESSION ON SELF-REPORTED MEASURE OF INTRINSIC MOTIVATION

	DT	CT
<i>Phase 1</i>	0.008 (0.009)	0.022* (0.011)
<i>Free-choice</i>	0.025+ (0.014)	0.036* (0.017)
<i>Wage</i>	-0.123+ (0.065)	-0.053 (0.061)
<i>Observations</i>	73	79
<i>Adjusted R²</i>	0.110	0.175

+ p<0.1, *p<0.05, ** p<0.01, ***p<0.001. Standard errors are in parentheses.

Our dependent variable is the the self-reported measure of intrinsic motivation. The independent variables are the number of words written during phase 1 (*Phase 1*), during the free choice period (*Free-choice*), and the wage asked/received (*Wage*). Our control variables are gender, age, course of study, income and number of past experiments.

In order to understand which could be the determinants of ex-post intrinsic motivation, we run some OLS regressions on the self-reported measure of intrinsic motivation both in CT and in DT. Columns DT refers to delegation treatment, while columns CT refers to control treatment; the dependent variable is the self-reported measure of intrinsic motivation. The independent variables are the number of words written during phase 1 (*Phase 1*), during the free choice period (*Free-choice*), and the wage asked or received (*Wage*). We control for subjects heterogeneity. From the observation of Table 6 it appears clearly that the ex-post measure of intrinsic motivation is positively and significantly correlated to subjects' ex-ante motivation, both in CT and in DT. For what concerns the other determinants, we need to consider separately the two treatments. The first intriguing result found in DT is that final motivation is not influenced by subjects' initial ability: it means that when subjects are delegated their wage choice for completing a task, they can report to be intrinsically motivated even if they are not so able in its completion. On the other hand, to explain the negative wage effect on ex-post motivation, it is worthwhile to remember that higher levels of ex-ante motivation are found to be linked to lower asked wages; therefore, it can be supposed that higher wages could be asked by less motivated people and could lead to lower ex-post motivation. Moreover, we can hypothesize that those subjects who ask for higher wages can be affected by an *over-justification* effect: this effect appears when motivated individuals are exposed to outside incentives, therefore their behavior becomes over-justified (by intrinsic

motivation AND external rewards). As a consequence, they reduce the factor that they can control, that is intrinsic motivation (Frey, 1997).

For what concerns the control treatment, the table shows that the other main determinant of subjects' ex-post motivation is their initial ability in the task: this result suggests that, in the control treatment, subjects' self-reported motivation in performing a task is influenced *both* by their initial motivation and their ability in completing it.

Summarizing, the self-reported measure of intrinsic motivation is positively influenced by ex-ante motivation both in DT and in CT; furthermore, when people are delegated their wage choice, those subjects who ask for higher wages report lower ex-post motivation. Finally, participants' final motivation is influenced by their initial ability only when they are not allowed to self-set their own wage.

5. Concluding remarks

By investigating the relation between wage delegation, intrinsic motivation and performance, this study attempts to help in shedding some light over the determinants that lead people to perform better when they are given the possibility to self-set their wage; moreover, it addresses the issue of how differently motivated people behave when they are given the possibility to determine their own wage. In order to pursue these aims, we used a novel experimental design in which the subjects are asked to perform a complex real-effort task under two different conditions: the subjects' wages can be either chosen by the subjects themselves, or randomly determined. Our results show that when people are delegated their own wage choice, they tend to increase more their performance than when they are assigned a random bonus; our first result clearly support what the literature on wage delegation have already suggested. Furthermore, we find that highly motivated subjects who have the possibility to self-set their wage are those who perform better. Finally, maybe the most intriguing result is that subjects with higher motivation ask for lower wages.

Nevertheless, the self-reported measure of intrinsic motivation does not seem to be much affected by our treatment. It means that subjects' final interest/enjoyment/motivation in the task does not change whether they have the possibility to determine their wage or not. Maybe the problem is in the nature itself of this measure: by deriving it from a questionnaire, it risks to be a so-fleeting kind of measure that it could be affected by other variables we cannot control for. One possible

solution is to use the behavioral measure of intrinsic motivation both before and after the introduction of the delegation treatment, in order to have a clearer idea of the impact of letting subjects decide their wage.

With this novel experiment we attempted to provide a contribution to the existing literature on the interaction between intrinsic motivation and external rewards, also from a methodological point of view. Further investigations could certainly help in understanding which could be the most appropriate task to generate intrinsic motivation, which could be most suitable experimental design for disentangling intrinsic motivation from other effects, and which are the most fitting measures of intrinsic motivation.

Bibliography

- Alchian, A. and Demsetz, H. (1972). Production, Information Costs, and Economic Organization. *American Economic Review*, 62(5), 777–795.
- Aghion, P., Bloom, N., and Van Reenen, J. (2014). Incomplete Contracts and the Internal Organization of Firms. *Journal of Law, Economics and Organization*, 30(1), i37-i63.
- Aghion, P., and Tirole, J. (1997). Formal and Real Authority in Organizations *The Journal of Political Economy*, 105(1), 1-29.
- Beckmann, M., Cornelissen, T., Kräkel, M. (2015). Self-Managed Working Time and Employee Effort: Theory and Evidence. *SOEP papers*.
- Bénabou, R., and Tirole, J. (2003). Intrinsic and Extrinsic Motivation. *The Review of Economic Studies*, 70(3), 489-520
- Blau, P.M. (1964). Exchange and power in social life. *New York*, John Wiley and Sons.
- Bowles, S., and Gintis, H. (1993). Agency Theory and the Democratic Firm, in S. Bowles, H. Gintis and B. Gustaffson (eds), *Markets and Democracy*. Cambridge, Cambridge University Press.
- Bowles, S., and Polania-Reyes, S. (2013). Economic Incentives and Social Preferences: Substitutes or Complements? *Journal of Economic Literature*, 50(2), 368–425.
- Brickley, J., Smith, C., and Zimmerman, J. (1997). *Managerial Economics and Organizational Architecture* (Chicago, Irwin).
- Bryson, A., Charlwood, A., and Forth, J. (2006). Worker Voice, Managerial Response and Labour Productivity: An Empirical Investigation. *Industrial Relations Journal*, 37(5), 438–455.
- Calder, B.J., and Staw, B.M.(1975). Self-perception of intrinsic and extrinsic motivation. *Journal of Personality and Social Psychology*, 31(4), 599-605.
- Charness, G. (2000). Responsibility and Effort in an Experimental Labor Market. *Journal of Economic Behavior and Organization*, 42(3), 375–84.

- Charness, G. (2004). Attribution and Reciprocity in an Experimental Labor Market. *Journal of Labor Economics*, 22 (3), 665–88.
- Charness, G., Cobo-Reyes, R., Jiménez, N., Lacomba, J. A., and Lagos, F. (2012). The Hidden Advantage of Delegation: Pareto Improvements in a Gift Exchange Game. *American Economic Review*, 102(5), 2358–2379.
- Charness, G., Cobo-Reyes, R., Lacomba, J. A., Lagos, F., and Perez, J.M. (2015). Social comparison in wage delegation: experimental evidence. *Experimental Economics*, 1-27.
- Charness, G., Du, N., Yang, C. L., and Yao, L. (2013). Promises in Contract Design. *European Economic Review*, 64, 194–208.
- Charness, G., and Haruvy, E. (2002). Altruism, equity, and reciprocity in a gift-exchange experiment: an encompassing approach. *Games and Economic Behavior*, 40, 203–231.
- Corgnet, B., and González, R.H. (2014). Don't Ask Me If You Will Not Listen: The Dilemma of Consultative Participation. *Management Science*, 60(3), 560–585.
- DeCharms, R. (1968). *Personal causation*. New York: Academic Press.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 105-115.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum.
- Deci, E. L., Eghrari, H., Patrick, B. C., and Leone, D. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, 62, 119-142.
- Deci, E. L., Koestner, R., and Ryan, R.M. (1999). A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation. *Psychological Bulletin*, 125(3), 627-668.
- Deci, E., and Ryan, R. (1985). *Intrinsic Motivation and Self-determination in human Behavior*. (New York, Plenum).
- Deci, E., and Ryan, R. (2000a). The "What" and "Why" of Goal Pursuits: Human Needs and the Self-determination Of Behavior. *Psychological Inquiry*, 11(4), 227–268.

- Deci, E., and Ryan, R. (2000b). Self-determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-being. *The American Psychologist*, 55, 68–78.
- Dessi, R., and Rustichini, A. (2015). Strong intrinsic motivation. *Working paper n°TSE 567*.
- DeVaro, J., and Prasad, S. (2013). The Relationship Between Delegation and Incentives Across Occupations: Evidence and Theory, *Working Papers 2013-05*, University of Sydney.
- Dickinson, D., and Villeval, M.C. (2008). Does monitoring decrease work effort? The complementarity between agency and crowding out theories. *Games and Economic Behavior* 63(1), 56–76.
- Dougcouliagos, C. (1995). Worker Participation and Productivity in Labor-managed and Participatory Capitalist Firms: A Meta-analysis. *Industrial and Labor Relations Review*, 49(2), 58–77.
- Falk, A., Fehr, E., and Fischbacher, U. (2008). Testing theories of fairness—Intentions matter. *Games and Economic Behavior*, 62(1), 287–303.
- Falk, A., and Kosfeld, M. (2006). The Hidden Costs of Control. *American Economic Review*, 96(5): 1611–30.
- Fehr, E., and Falk, A. (2002). Psychological foundations of incentives. *European Economic Review* 46, 687 – 724.
- Fehr, E., and Goette, L. (2007). Do Workers Work More if Wages Are High? Evidence from a Randomized Field Experiment. *American Economic Review*, 97(1), 298–317.
- Fehr, E., Goette, L., and Zehnder, C. (2009). A Behavioral Account of the Labor Market: The Role of Fairness Concerns. *Annual Review of Economics*, 1, 355–384.
- Fehr, E., Kirchsteiger, G., and Riedl, A. (1993). Does Fairness Prevent Market Clearing? An Experimental Investigation. *The Quarterly Journal of Economics*, 108(2), 437–459.
- Fehr, E., Klein, A., and Schmidt, K.M. (2007). Fairness and Contract Design. *Econometrica*, 75(1), 121–154.

- Fehr, E., and List, J. A. (2004). The hidden costs and returns of incentives - Trust and trustworthiness among CEOs. *Journal of the European Economic Association*, 2(5), 743–771.
- Festrè, A., and Garrouste, P.(2015). Theory and evidence in psychology and economics about motivation crowding out: a possible convergence? *Journal of Economic Surveys*, 29(2), 339–356.
- Franke, J., Gurtoviy, R., and Mertins, V. (2014). Workers’ Participation in Wage Setting and Opportunistic Behavior: Evidence from a Gift-Exchange Experiment. *IAAEU Discussion Paper Series in Economics No. 07/2014*.
- Frey, B. S. (1997). *Not just for the money: An economic theory of human motivation*. Brookfield, VT: Edward Elgar Publishers.
- Frey, B. S., and Jegen, R. (2001). Motivation Crowding Theory. *Journal of Economic Surveys*, 15(5), 589-611.
- Gagnè, M. and Forest, J. (2011). The study of compensation systems through the lens of self-determination theory: reconciling 35 years of debate. *Canadian Psychology*, 49, 225-232.
- Gilbert, D.T., Fiske, S.T., and Lindzey, G. (1998). The handbook of social psychology. *McGraw-Hill*.
- Gneezy, U., Meier, S., and Rey-Biel, P.(2011). When and Why Incentives (Don’t) Work to Modify Behavior. *Journal of Economic Perspectives*, 25(4), 191–210.
- Golden, L. (2012). The effects of working time on productivity and firm performance: a research synthesis paper. *International Labour Office*, Conditions of Work and Employment Branch, Geneva.
- Goudswaard, A., Dhondt, S., Vergeer, R. and Oeij, P. (2012). Organisation of working time: implications for productivity and working conditions. *European Foundation for the Improvement of Living and Working Conditions*.
- Harrison, G. W. (2004). Field Experiments and Control. In J. Carpenter, G.W. Harrison and J.A. List (eds.), *Field Experiments in Economics* (Greenwich, CT: JAI Press, Research in Experimental Economics, 10, 2004).

- Homans, G.C. (1958). Social behavior as exchange. *American Journal of Sociology*, 63(6), 597-606.
- Hossain, T., and Li, K. K. (2014). Crowding Out in the Labor Market: A Prosocial Setting Is Necessary. *Management science*, 60 (5), 1148–1160.
- Jeworrek, S., and Mertins, V. (2014). When Pay Increases are Not Enough: The Economic Value of Wage Delegation in the Field. *IAAEU Discussion Paper Series in Economics No. 08/2014* .
- Kremer, M. (1997). Why are Worker Cooperatives so Rare? *NBER Working Paper no. 6118*.
- Kruglanski, A.W. (1975). The endogenous-exogenous partition in attribution theory. *Psychological Review*, 82, 387-406.
- McAuley, E., Duncan, T., and Tammen, V V . (1989) . Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport*, 60: 48-58.
- Mellizo, P., Carpenter, J., and Matthews, P.H. (2014). Workplace democracy in the lab. *Industrial Relations Journal*, 45:4, 313–328.
- Milgrom, P., and Roberts, J. (1995). Complementarities and Fit: Strategy, Structure and Organizational Change in Manufacturing. *Journal of Accounting and Economics*, 19(2–3), 179–208.
- Monteiro, V., Mata, L., and Peixoto, F.. (2015). Intrinsic Motivation Inventory: Psychometric Properties in the Context of First Language and Mathematics Learning. *Psicologia: Reflexão e Crítica*, 28(3), 434-443.
- Prendergast, C. (1999). The Provision of Incentives in Firms. *Journal of Economic Literature*, 37 (1): 7–63.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43, 450-461.
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, 63, 397-427.

- Ryan, R. M., and Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57, 749-761.
- Ryan, R.M., and Deci, E.L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, 55(1), 68-78.
- Ryan, R. M., Koestner, R., and Deci, E. L. (1991). Varied forms of persistence: When free-choice behavior is not intrinsically motivated. *Motivation and Emotion*, 15, 185-205.
- Ryan, R., Mims, V., and Koestner, R. (1983). Relation of reward and interpersonal context to intrinsic motivation: A review and test using Cognitive Evaluation Theory. *Journal of Personality and Social Psychology*, 45: 736-750.
- Sansone, C., and Harackiewicz, J.H. (2000). Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance. *Educational Psychology - Academic Press*.
- Semler, R. (1993). *Maverick: The Success Story Behind the World's Most Unusual Workplace*. Century Random House.
- Semler, R. (1994). *Why my former employees still work for me*. Harvard Business Review.
- Semler, R. (2003). *The Seven-day Weekend: A Better Way to Work in the 21st Century Paperback*. UK Century.
- Swann, W.B., and Pittman, T.S. (1977). Initiating Play Activity of Children: The Moderating Influence of Verbal Cues on Intrinsic Motivation. *Child Development*, 48(3), 1128-1132.
- Vansteenkiste, M., Ryan, R. M., and Deci, E. L. (2008). Self-determination theory and the explanatory role of psychological needs in human well-being. In L. Bruni, F. Comim, and M. Pugno (Eds.), *Capabilities and happiness* (187-223), Oxford, UK: Oxford University Press.
- Weibel, A., Rost, K., and Osterloh, M. (2007). Crowding-Out Of Intrinsic Motivation – Opening The Black Box. *Working Paper, University of Zurich*.

- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66, 297-333.
- Williamson, O. (1980). The Organization of Work a Comparative Institutional Assessment. *Journal of Economic Behavior and Organization*, 1(1), 5-38.
- Zuckerman, M., Eysenck, S. B. J., and Eysenck, H. J. (1978). Sensation seeking in England and America: Cross-cultural, age, and sex comparisons. *Journal of Consulting and Clinical Psychology*, 46(1), 139-149.

Appendix A: experimental instructions

Since the experiment was conducted in Trento, the original instructions were in italian. This is a translated version.

INSTRUCTIONS

Good morning and thank you for your participation to this experiment!

You are going to take part in an experiment with scientific purposes. First of all, please read carefully the instructions that we gave to you; an experimenter will read them aloud. After that, please answer to the control questions that you will find at the end of the instructions. After all participants have answered to these questions, one experimenter will read aloud the correct answers. Please check whether your answers were correct or not. May you have any doubts, don't hesitate to ask!

During the experiment, you will receive an amount of money according to a procedure that you will be told in a while. In addition, you will receive 3 euro for arriving on time. During the experiment, your payment will be calculated in tokens (UMS) with a conversion rate of:

$$1 \text{ UMS} = 0.25 \text{ euro}$$

The experiment is characterized by anonymity. During the experiment, you are not allowed to talk to other participants; otherwise, you will be excluded from the experiment. At the end of the experiment, you will be asked to respond to a brief questionnaire; after that, you will be paid in cash in a private room.

Phases:

The experiment is composed by two phases. In both phases, you will be asked to complete a task which consists of writing words according to the following procedure. On your screen there will be four boxes, each of them corresponding to one category: *movies*, *flora & fauna*, *food & beverage*, and *forenames*. At the beginning of each phase, on the top of the screen there will be a letter, and every three minutes this letter will be replaced by another one (different from the previous one). Your task is to write down as many words as you can that have to be related to one of the four categories, and have to begin with the letter given in that moment. After three minutes, a new letter will appear on the top of the screen, and the words you write down will have to begin with this new letter.

For example, if the letter on your screen is G, you will have to write down as many words as you can that have to begin with letter G and have to be related to one of the above mentioned categories. In order to write a new word, it will be sufficient to insert it in the designated box and then push the bottom OK.

This first phase lasts for 15 minutes.

At the end of the first phase, the screen will show you the number of correct words that you will have inserted: this number represents your performance. Misspelled words, words that do not begin with the given letter or that are not related to the category in which you want to insert them, will be considered incorrect and will be not taken in consideration to compute your performance. If you try to insert an incorrect word, the sentence WORD NOT FOUND will appear on your screen, and it will prevent you from inserting the word. While you are completing the task, please remember the following rules:

- Only Italian words will be considered for computing the performance.
- Abbreviations and uncompleted forms will not be considered for computing the performance.
- Similar (but different) words will be considered separately for computing the performance.
- Capital letters will not influence words' correctness.
- Stressed words will not be considered for computing the performance. In order to write them correctly, it is necessary to write them without stress.
- If the same word is written twice in the same category, or in different categories, only one of these two forms will be considered for computing the performance.
- For what concerns *movies* category, the only punctuation marks allowed are: dot (.), comma (,), colon (:), exclamation mark (!), question mark (?), and ampersand (&). Only entirely written titles will be considered for computing the performance.
- For what concerns *flora & fauna* category, only singular forms will be considered for computing the performance.
- For what concerns *food & beverage* category, only singular forms will be considered for computing the performance, except from pasta shapes that are correct only in the plural form.

- For what concerns *forenames* category, only Italian forenames will be considered for computing the performance; moreover, compound forenames will be considered correct only if they are written as an unique word.

Example: letter G

(We substitute the original version of the example, that was in Italian, with a re-adapted example in English, in order to preserve its effectiveness)

Movies	<i>Correct?</i>	Flora&fauna	<i>Correct?</i>
Gomorra	Yes	Goat	Yes
gangs of new york	Yes	Goats	No
gangs	No	goose ⁺	only one
ghostbuster*	only one	German Pinscher	Yes
ghostbuster*	only one	German Shepherd	Yes
ghostbusters 2	Yes		
G.I. Joe: retaliation	Yes		
G.I. Joe- retaliation	No		
Food&beverage	<i>Correct?</i>	Forenames	<i>Correct?</i>
grapefruit	Yes	giulia	Yes
grapefruits	No	Giancarlo	Yes
gnocco	No	Gian carlo	No
gnocchi	Yes	Gregory	No
goose ⁺	only one		

gangs = it is the shortened version of 'gangs of new york', therefore it is incorrect;
ghostbusters, ghostbusters = it is the same word repeated in the same category, only one of them will be considered for computing the performance;
ghostbusters 2 = it is similar to ghostbusters, but they are different movies; therefore, they will both be considered for computing the performance;
G.I Joe- retaliation= there is a punctuation mark that is not allowed, therefore it will not be considered for computing the performance;
goats = it is a plural form, therefore it will not be considered for computing the performance;
goose (*Flora & fauna*), goose (*Food and beverage*) = it is the same word repeated in

different categories, only one of them will be considered for computing the performance;

German Pinscher, German Shepherd = they are similar but different forms, therefore they will both be considered for computing the performance;

grapefruit, grapefruits = only grapefruit is correct because it is the singular form;

gnocco, gnocchi = the correct form is gnocchi because it is a shape of pasta;

Gian carlo = it is a compound forename written with two separate words, therefore it will not be considered for computing the performance;

Gregory = it is not an Italian forename, therefore it will not be considered for computing the performance;

During the task completion, for each letter your screen will show you the remaining time for inserting words, which words you have already inserted and your performance, that is the number of correct words inserted.

At the end of phase 1 you will receive a fixed payment of 20 UMS, therefore your payment will not depend on your performance.

At the end of phase 1, and before the beginning of phase 2, you will be asked to wait for 6 minutes; during these minutes you will have the possibility to keep on completing the task, play tetris, or simply wait for the beginning of the next phase. You will not be remunerated for this phase.

After 6 minutes, phase 2 will begin. The task of phase 2 is absolutely identical to that of phase 1, and also phase 2 lasts for 15 minutes.

For Control Treatment:

For completing phase 2, you will receive a fixed payment within a range between 0 and 30 UMS; this payment will be determined through a random process before the beginning of phase two. Therefore, you will know your remuneration for phase 2 only after the end of phase 1, and before the beginning of phase 2. Your final payment will be equal to 3 euro for your participation + 20 UMS for phase 1 + the random payment for phase 2.

The experiment will end after phase 2.

For Delegation Treatment:

Before the beginning of phase 2, you will be asked to decide your own payment for that phase. You will have the possibility to opt for an amount included within a range between 0 and 30 UMS. Your final payment will be equal to 3 euro for your

participation + 20 UMS for phase 1 + the payment you ask for phase 2.
The experiment will end after phase 2.

CONTROL QUESTIONS

Before the beginning of the experiment, please answer the following questions in order to verify whether you comprehend the instructions.

1. During phase 1, player A writes 23 correct words and player B writes 40 correct words. Which is the player who receives the highest payment? Why?
2. (*For Control Treatment*) Before the beginning of phase 2, you are told that you will receive 25 UMS for completing the task in phase 2. Which is the total amount of money that you receive for the experiment? (*For Delegation Treatment*) Before the beginning of phase 2, you ask to be paid 25 UMS for completing the task in phase 2. Which is the total amount of money that you receive for the experiment?
3. Check whether these forms are correct or not: *Giraffes, george, gattaca, Gorilla, garlic.*

Appendix B: questionnaire⁶

For each of the following statements, please indicate how much do you agree, using the following scale:

1	2	3	4	5	6	7
I strongly disagree			I so-mewhat agree			I strongly agree

1. While I was doing this activity, I was thinking about how much I enjoyed it.
2. This activity did not hold my attention at all.
3. I thought this activity was quite enjoyable.
4. I think I did pretty well at this activity, compared to other students.
5. I thought this was a boring activity.
6. I enjoyed doing this activity very much.
7. I would describe this activity as very interesting.
8. I am satisfied with my performance at this task.
9. After working at this activity for awhile, I felt pretty competent.
10. I think I am pretty good at this activity.
11. This activity was fun to do.

⁶We created this questionnaire starting from the Intrinsic Motivation Inventory (IMI) (Ryan, 1982)