

**Department of Economics and  
Finance**

**Thesis in**

**Behavioural Economics**

**How Gender affects monitoring and management on  
the workplace: a field study**

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## *Chapter 1 – Theoretical Introduction*

### *Incentives*

The economic problem that arises in monitoring revolves around incentives.

In more general terms, an incentive is anything that motivates a person to do something. When we talk about economics, the definition becomes a little narrower: economic incentives are financial motivations that push people to take specific actions.

There are two types of incentives that influence human decision-making: intrinsic and extrinsic. The intrinsic incentives come from within. That is, persons with intrinsic motivations want to do something for themselves without external pressure or rewards. The intrinsic incentive is represented by that feeling of personal fulfillment and satisfaction that people obtain by doing what they like and, for example, following their passions.

Extrinsic incentives involve providing a material reward (such as money) for performing a task or threatening punishment for those who don't. By definition, all economic incentives are considered to be extrinsic, hence somehow monetary, motivations.

The most popular kind of economic incentive scheme is the paycheck: it moves people to show up for work and fulfill their responsibilities. However, there are also other types of economic incentive structures. Here are some common examples.

### *Tax incentives*

Tax incentives, also called "tax benefits," are tax cuts that the government makes to promote spending on specific items or activities. Tax incentives are often used as a great way to encourage economic development as they can stimulate the economy by allowing an organization to provide more jobs, as well as make goods or services more accessible for purchase.

### *Financial incentives*

A financial incentive is a more general term that includes any financial benefit granted to a customer, employer, company, or institution in order to incentivize them to do something they otherwise could not do. For employees, a financial incentive might involve stock options or a cut on sales that encourage certain conducts of work. For customers, an example of a financial incentive is a discount, which encourages more spending under the guise of saving.

### *Subsidies*

Subsidies are government incentive programs that provide precise amounts of money to businesses to help them grow. Agricultural subsidies are common in Europe, with the government giving farmers hundreds of millions of euros both to grow more of certain products and to reduce their production in times of surplus. Agricultural subsidies aren't the only type of government subsidy, of course. Other types of government subsidies support education, oil and gas, export, green energy, housing, and health care.

### *Tax rebates*

Tax rebates are incentives created to manipulate individuals' or institutions' actions in order to promote policies and politics, such as investing in solar energy. Taking as an example rebates for renewable energy, a government/institution offers a certain amount of money to consumers to purchase more environmentally friendly methods of generating electricity.

### *Negative incentives*

Negative economic incentives, or disincentives, financially punish people who take certain actions. This is a way to encourage specific actions without making them mandatory. For example, there is a fine for speeding and for not wearing a seat belt. There is also a fine for littering. Negative incentives keep people from acting unfavorably towards the greater good.

### *The Backfiring of incentives:*

There is a recent movement in the US to move away from negative incentives in the Justice System. The main argument is that negative incentives, such as littering laws and fees for broken tail lights, reinforce systems of poverty because they disproportionately affect low-income people. Moreover, another argument revolves around the fact that incentives affect what our actions signal, whether we're being self-interested or civic-minded, manipulated or trusted, and they can imply, sometimes wrongly, what motivates us. Fines or public reprimands that appeal to our moral feelings by signaling social disapproval can be very effective. However, incentives can go wrong when they hurt or touch our ethical sensitivity. As an example, R. Titmuss (1970) hypothesized that rewarding people to donate their blood reduced overall blood supply, producing the opposite of what was expected. At the beginning, economists were doubtful about Titmuss' argument, criticizing for low empirical evidence.

Nevertheless, new data and models have prompted a change in how economists think about incentives: field experiments have demonstrated how incentivizing blood donation significantly decreases the number of people willing to donate and that letting them contribute the donation charitably reverses the effect (Niza C. et al., 2013).

### *Opportunistic Behavior*

Economic models of incentives in employment relationships are based on a specific theory of motivation. There are different types of opportunistic behavior: the most common ones are shirking and free-riding.

Free-Riding is a relatively passive approach, comparable to not doing your assigned part in a group project, avoiding tasks and obligations, imposing extra responsibility and workload on the rest of the team. Peer monitoring, individual rewards and punishments could help solve this opportunistic behavior.

Shirking is a more active opportunistic behavior. Employees who shirk usually actively avoid difficult or unpleasant tasks, evade work duties and neglect responsibilities (e.g., a receptionist leaving on hold a customer and leaving the workplace).

Whenever employees find more benefit in shirking and freeriding rather than in working, overall productivity drastically declines, obliging firms to implement continuous actions in order to prevent such behaviors.

### *Models of opportunistic behavior*

Behavioral Economists have designed models that portray opportunistic behavior adopted by employees. There are different interpretations of the rationale behind the act of shirking and free riding. The Rational Cheater model, the Conscience model and the Impulse Control model propose three different interpretations, therefore leading to three different solutions to the implementation of opportunistic behavior of employees.

### *Rational Cheater Model*

Production, productivity and efficiency have always been at the foundation of businesses.

Often, economics models of employment depict the employee as the basic Homo Oeconomicus, a rational agent who simply has preferences and lives with the sole purpose of maximizing his/her utility. When employed, the Homo Oeconomicus behaves like a Rational Cheater, shirking whenever the marginal benefit of doing so exceeds the marginal cost. Firms

must then implement continuous monitoring in order to prevent opportunistic behavior and keep production at a certain standard.

However, many factors must be balanced for employment relationships to be productive and must be taken into account. The aforementioned model is not the only model of opportunistic behavior and indeed is viewed with high skepticism by human resources professionals and many non-economists who study employment relationships.

### *The Conscience Model*

In the Rational Cheater model, individuals implement behaviors based on the predicted and perceived aftermath. In the Conscience Model, on the other hand, individuals derive benefits directly from appropriate behavior. The importance of appropriate behavior is often highlighted by declaring opportunistic actions not compatible with an individual's identity. Decision scientist March G. J. (1994) describes the rationale behind appropriate behavior, in distinction from the logic of rational cheating by using the example of a doctor. The latter can visit all his patients equally regardless of their ability to pay, therefore acting consistently with his identity of a good doctor. In the Rational Cheater model, on the other hand, a doctor does not derive any benefit directly from behaving appropriately. Rather, the doctor may engage in this behavior due to the unpleasant consequences or punishments (threat of lawsuits, professional sanctions, etc.) deriving from the discrimination implemented between patients.

In the context of work relationships, the Conscience Model suggests a very different way of managing employment relations than the model of the Rational Cheater. Instead of clearly stating the future consequences of opportunistic actions, managers structure the employment relationship so that employees adopt identities incompatible with opportunism.

Some economists have integrated models of appropriate behavior into models of employment relationships. Akerlof (1982), for example, argues that paying high wages encourages employees to behave according to the "gift exchange" rules. The resulting sense of reciprocity and mutual obligation reduces opportunism and ensures correct and appropriate behavior. Moreover, according to S. J. Livingstone (1969), managers play a fundamental role in laying the foundations for employee behavior. Supervisors who expect great performances alter employees' goals and self-perception in ways that improve performance.

### *The Impulse Control Model*

The Impulse Control theories of opportunistic behavior studied in experimental economics derive from psychology. The main feature is the assumption that the appeal of a reward is negatively related to the length of time passed before receiving it. Economic agents put an excessively high value on immediate rewards, preferring the gratification in the short-term over higher profits obtained in a distant future or delayed. Frank (1988) argues that opportunism in economic relationships derives from the way human brains have evolved to react to short-term rewards. Take as an example an addict on any length of the spectrum. His/her inconsistency in discounting distant future rewards puts his/her habits before anything, subverting priorities and preferring immediate smaller benefits.

The Impulse Control Model has distinctive implications for shirking in employment relationships. Companies will try to exclude employees with impulse control problems, but none of the usual methods of scrutiny (attitudinal tests, interviews, and reference check) will be completely reliable. Businesses will then have a percentage of employees who will find short-term gains deriving from shirking irresistible. The long-term costs of shirking (i.e., the threat of job loss in the future) will have little effect on behavior. Contrary to the Rational Cheater model, we would not expect shirking behavior to be strongly correlated with the value of the employment relationship for the employee. In order to regulate such impulses, the imposition of immediate and close sanctions and fines must be implemented by the managers.

### *Monitoring and Employee Performance*

"Low employee productivity can be harmful to a business. The impact might be so significant that it brings down a particular project or even ruin the business's reputation and, as a result, lose customers. Creating a highly productive environment is important for both sides – the business and the employees." - NesterSoft Inc. CEO Kirill Nesterenko.

Monitoring is the practice of observing and keeping under regular surveillance employees in order to make sure that the quality of the output produced respects a given standard and assess whether an employee is being productive or not.

Companies need to ensure that employees follow procedures and rules in order to achieve successful results and correct functioning (Laufer and Robertson, 1997; Bell et al., 2002; Vardi and Weitz, 2004, Tyler and Blader, 2005). This represents a serious challenge for organizations as many studies have reported evidence on employees' non-compliance with their work

obligations and responsibilities (e.g., Simon and Eitzen, 1990; Mintz, 2001; Spence, 2001; Healy and Lies, 2002). To ensure correct conduct, in the corporate world, firms and institutions have developed many complex and very precise methodologies and tools to monitor employee performance and track what employees are doing, how quickly they are doing it, and how productive they are.

Even before the global pandemic, organizations were increasingly using various electronic surveillance methods to monitor their employees and the places where they work, whether in an office building or remotely. This technology encompasses numerous facets of the work environment, including email communications, browsing, the use of badges for tracking employees, and the gathering of personal information by employers. The topic of monitoring also raises some questions as to whether it is ethical and fair for employers to use these control systems. The dominant position among academics in the field of organizational behavior is that expressed by Loch, Conger, and Oz (1998), according to which managers have the right to monitor their employees as they are paid to do a job using resources, technology, and company-owned equipment. As Bijlsma-Frankema and Costa (2005) have argued, monitoring is a central element of control as it allows monitoring of potential deviations from established rules (e.g. shirking and free-riding).

Both the terms "workplace monitoring" and "surveillance" (Ball, 2010) have been used by academics to indicate the practices implemented by organizations to have control over the employee behavior. Moreover, monitoring has also been defined as the actions implemented by one party to gain information about another party's level of cooperation.

Often, this concept has been used in academic studies as performance monitoring, which refers to the assessment of the work effectiveness and quality of work.

This can be done by monitoring employees' work behavior, inspecting their output and asking for verbal reports about their progress. Numerous studies have been conducted to explain the causes and effects of monitoring of performance. The productivity of individuals and groups at work is generally assumed to be due in part to the quality of the supervision and leadership they receive. Moreover, performance monitoring is thought to affect work productivity only to the extent that it is associated with subsequent managerial actions such as providing feedback, rewarding good performance and punishing unproductive behaviors.

However, according to J. R. Larson (1990), monitoring may be beneficial to performance even without the threat of immediate managerial actions. Moreover, in his work, he underlines the non-linear relationship between employee performance and monitoring. He points out that,

although the latter appears positively correlated to productivity to some degree, an excessive level of surveillance over the employee's work may be counterproductive. Indeed, more monitoring seems to actually have negative effects on productivity, reducing the employees' sentiment of autonomy on the job, blocking efforts toward self-management, and generally having a damaging effect on overall motivation on the job.

## Chapter 2 – Literature Review

Many field studies have inspected and analyzed in various contexts the effects of monitoring on performance, studying the behavior of the participants and trying to draw some conclusions on the relationship between surveillance and productivity.

One of the most relevant papers is “Monitoring, Motivation and Management: the determinants of opportunistic behavior in a field experiment” by D. Nagin et al. (2002). The results of their experiment suggested that a relevant fraction of the employees behaves like the aforementioned Rational Cheater, responding to a reduction in monitoring by rapidly increasing their level of shirking. On the other hand, they also find that many employees do not exploit reductions in monitoring to their advantage. The ones who quickly start to shirk when unmonitored were on average the ones that perceived the manager’s actions as unfair. They also inspected the possible appliance of the conscience model discussed above in the experiment. However, employees seem not to be guided by conscience: workers guided by opportunism take advantage of given opportunities to shirk whenever their benefit would increase by doing so.

Another very relevant paper for what concerns the related literature is “Significance of Monitoring and Control for Employees’ Felt trust, Motivation, and Mastery” by Bernstrøm, Vilde & Svare, Helge. (2017). They analyzed a random sample of 3015 Norwegian employees. They discovered a negative correlation between employees’ felt trust, while employee’s control over their actions and decisions appeared to be positively correlated with self-confidence or trust. This entails the fact that managers’ trust in employees spurs autonomy and productivity, enhancing overall employee performance.

The studies above only look for correlation between monitoring and performance, without deepening the inspection on the monitoring side. It is interesting how different factors contribute to the degree of managers’ monitoring upon employees. Many factors come into the picture when studying the behavioral psychology of the work environment. It is notable how numerous biases influence our everyday actions and decision, consciously and unconsciously. Some of the most famous biases we encounter on the workplace are the unconscious stereotyping of status, the unconscious social bias and the implicit gender bias. The first one mentioned, refers to the involuntary association we make between an individual’s possession and appearance and her/his positioning in the social ladder. A research conducted by the UK Social Mobility Commission in 2016 demonstrated how one is more likely to get a job offer when wearing black or brown shoes to an interview. This is explained by the

unconscious belief that classy shoes have an historical association with professional roles and higher social class. Secondly, the unconscious racial bias refers to a person implicit decision making or attitude towards certain ethnicities. It has been shown that African American and Asian applicants to job positions were more likely to get the offer by masking their name on their resume (Kang et al., 2016). Finally, the implicit gender bias refers to the unconscious change of one's actions depending on the gender of the individual they are interacting with. As an example, a research by Baeckström (2016), published on the European Journal of Finance, showed how professional financial advisors with millionaire clients gave gender biased guidance by unconsciously considering female clients less inclined to be informed about investments than their male counterpart and have less control and ability over their portfolios. Moreover, gender biases can arise from two kind of stereotypes (Heilmann, 2012): descriptive gender stereotypes and prescriptive gender stereotypes: the former designate how women and men *are like*, while the latter prescribes what women and men *should be like*.

The aforementioned biases have appeared in numerous field studies and unconsciously influence both the managers' and the employees' decision making and thinking. The work by Johnasson and Wennblom (2017) highlighted the importance of the role played by gender in the supervisor-subordinate dyad. They argue that the understanding of gender roles implied in the manager-employee relationship is much needed to deeply understand the reactions and perceptions of management controls. Their findings deepen the studies of perceptions of evaluation fairness and trust in management under tight control regime: female employees demonstrate more negative feelings towards evaluation fairness than male employees and that male employees have more trust in the leadership of female managers when compared to males employees with male managers or female with female managers. To explain this, they hypothesized that male employees are more used to tight and strict autocratic contexts and therefore respond less negatively to management control, whereas female employees are seen as less at ease in a strict control situation and thus will have a more negative reaction than their male counterparts. Moreover, they argue that on average, male employees perceive tight control as fairer than female employees and nonetheless put more trust in it. Most importantly, the perception of strictness is not affected by subordinate or superior gender, whereas what differs is the perception of how it affects evaluation fairness.

Schoorman et al. (2007) described "trust" as the willingness to accept vulnerability, suggesting that male employees with female managers are more likely to accept greater levels of vulnerability when being supervised in a tight regime.

The effects of subordinate gender on perceptions of equity and trust in management found by the authors indicate that it is of crucial importance to include the gender of the subordinate in studies investigating how the design and implementation of formal controls in hierarchical relationships affect feeling and perception of control.

### *Monitoring and evaluation*

#### *Gender and Leadership*

Numerous studies and articles revolve around the leader expectations of employees and how they vary across gender. It is widely believed that ideal prototypes of mentorship and leadership differ between men and women. In his 1997 article, Brian Moskal explored the question of whether "women make better managers" and ultimately stated that female executives and managers shine primarily as nurturers and team players in corporate environments. Moreover, through his studies, he showed how males mainly overperform in left brain activities (i.e. more analytical tasks), whereas females primarily excel in the right brain (i.e. relationships and social activities).

Research by Alice Eagly et al. (2003) posits the thesis that female managers and supervisors are more emancipative than their male counterparts. Female leaders also are more prone to implement contingent reward behaviors. Oppositely, male leaders are more likely to adopt a more laissez-faire leadership policy.

Traditionally, women are considered good at communicating, teamwork, feedback, and empowerment, while men are highly considered for their planning and technical skills. Organizations and their role structures that are designed by males subtly incorporate a somewhat male bias in their normal functions and culture (Sundaresan, 2010). Most importantly, as women become more involved in higher-level positions in businesses, they have encountered numerous dilemmas. More specifically, they face role overload, regulatory and identity dilemmas.

The working woman has to deal every day with the limitation of time and energy available as she takes considerable time and effort, both in the workplace and at home playing the multiple roles of colleague, partner, parent, friend, relative, etc. Unlike their male counterparts, pursuing a career did not exempt women from staying involved in all other roles, constantly switching from one role to another. The dilemma of role overload is therefore of great concern to all female executives. The dilemma of identity, triggered by the chaos created by roles, does not

coincide with the obligations of being a manager. Regulatory dilemmas relate to the struggles or discrepancies that exist between the lifestyles that women managers personally would fancy and the norms of conduct imposed by society (Sundaresan 2010).

#### *Same Gender Relationships*

Articles have suggested that same gender managers and employee enjoy better performing relationships as compared to opposite gender (Varma & Stroh, 2001). Tsui and O'Reilly (1989) even showed that gender likeness is one of best predictors of employees performance. Moreover, Pelled (1999) found that employees have a harsh time in identifying themselves with managers of different age and gender. Vecchio and Bullis (2001), studied gender in the context of US Army, finding that dissimilarity in gender in the supervisor-supervised relationship enhanced a sentiment of discontent. However, opinions on the topic are discordant as Orbell, Dawes and Schwartz-Shea (1994) showed that gender cannot be used as a predictor for performance on the workplace.

#### *Female Subordinate - Female Manager*

Many working papers stated that females are more likely to prefer a male superior (Liden, 1985). According to Terborg (1977), one reason of female employee preferences for male managers may arise from the fact that the male managers have more influence corporate-wise than female managers. Restrictions such as personnel policies and a lack of authority seemed to limit female managers, making them unable to provide appropriate support to subordinates. However, here also, many different opinions go against each other, as some research also showed that female supervisors drive women more than males (Ragins & Scandura, 1994) and female subordinates also give preference to female supervisors (Kram, 1985).

#### *Male Subordinate – Male Manager*

There are an extensive evidence and numerous investigations conducted in different researches concerning male-male relationships on the workplace. It has been shown that male supervisors adopt stricter and tighter leadership when dealing with male subordinates when compared to the female staff. In his study, Goh (1991) found that male supervisors always tend to involve male subordinates to handle managerial functions, somehow implicitly expressing a gender bias.

## *Cross Gender Relationships*

### *Male Subordinate – Female Manager*

In the research conducted by Williams (1999) on the effect of supervisor and subordinate gender on perceived mentoring, it was concluded that female subordinates would receive the less mentoring behavior from supervisors than their male counterparts. Regarding male subordinates, they receive the best mentorship from a female supervisor. O'Neill and Blake-Beard (2002) studied that the relationship between female supervisor and male subordinate is influenced by physiological and social gender. Factors influencing the relationship are gender stereotypes regarding women, the perspective that male mentors are more influential and have more power corporate-wise and the organizational demographics that there are few women in senior management. People are more attracted to likeness in terms of demographics, sexual relationships and gender behavior.

### *Female Subordinate – Male Manager*

An interesting study conducted by Goh (1991) argued that male managers tend to provide inferior levels of tutoring to female employees than to male subordinates. Prejudice against women by male supervisors is very common, as has been noted in the literature. If a woman does her job well, it is considered to be luck or a one-shot event, instead of appreciating her talent (Heilman, 1983). Concerning male employees, it has been argued that male success is more likely to be attributed to their ability, especially when estimated by male managers (Kaufman & Shikiar, 1985). Additional works revealed that female employees favored male executives, not because of gender but due to the fact that it is wide-thought that male directors have more influence within the company. In addition, female employees observe higher barriers in receiving good mentorship than males since they believe that mentors would be reluctant to create a relationship with them and people would misinterpret their relationship as being sexual rather than work-related (Ragins & Cotton, 1991).

### *Supervisory Behavior Male and Female.*

Powell (1990), on the other hand, observed in his study that males and females act similarly as supervisors and that their management style are much alike. Another investigation done by Trempe, Rigny, and Haccoun (1985), infers that even for blue-collar employees, gender plays a minor role in the perception and satisfaction of the subordinate. In contrast, upward influence

(i.e actively demonstrating interest and taking action) is important to the subordinate's perception of satisfaction and felt trust. Moreover, it is important to highlight the key differences between male and female supervisors found in the literature, as Witherspoon (1997) did. In general, according to his findings, men are more argumentative, share their direct opinion and tend to avoid sharing any irrelevant personal information. On average, they try to take over decision-making discussions and are critical towards other people's ideas, adopting autocratic behavior.

As for females, they believe in nurturing roles, they interrupt for explanation, and more supportive towards other speakers. They also try to avoid conflict by compromising and talking through problem. These qualities are in favor of females as young girls are socialized to be cooperative, understanding, supportive, interpersonally sensitive and flexible, they are more inclined to develop different managerial styles when they grow up and assume leadership positions in organizations. These qualities are more in line with organizations which value information sharing, participative decision making, developing relationships, and resolving conflict in non confrontational ways. According to Baird and Bradley (1979), female supervisors communicate differently than their male counterparts. They tend to provide information to their subordinates; they are more welcoming to ideas, build deeper interpersonal relationships with employees, boost effort of subordinates, monitor employees and are more concerned about their spirit. As for male supervisors, they adopt a more dominant behavior. Another point of view of interesting research conducted by Maier (1992) argues that in order to be a great administrator, men should learn from women and vice versa, taking the best of both sides.

### *Aim of the Work*

A manager's evaluation or feedback towards an employee has a substantial degree of subjectivity.

Therefore, with this study, I want to inspect how and by which degree gender plays a role in monitoring on the workplace and employee evaluation. More specifically, I would like to explore the hypothetical reasons behind the variance in evaluation - when performing the same task - and how the manager's characteristics, such as gender and age, play their roles. To further investigate the topic, I will rely on the setting and data of an experiment conducted at the Laboratorio Cesare, by D. Di Cagno and L. Ferrari in 2020. Laboratorio Cesare is an experimental research center founded to study economic behavior, hot topics in social sciences such as experimental economics, finance, political sciences, sociology, anthropology, and marketing. Experiments are conducted in controlled environments so that the behaviors under scrutiny can be fully observed and understood. During sessions, participants are put in front of a series of choices, enabling supervisors of the experiment to study how people perceive incentives differently, enabling the formulation of behavioral economic theories.

### Chapter 3 - The Experiment

The experiment had the primary aim of studying how individuals performed a task when given a time constraint and evaluated by both their peers and a supervisor.

The single experimental sessions consisted in 4 rounds, in which participants were assembled in groups of 4 people. During each round, the 4 individuals were randomly nominated either employees or managers, in a 3:1 ratio, and completed the same task for 5 times. The entire experiment was computerized and participants did not know who were they working with. Each round consisted of two different phases: task and evaluation.

During the task phase, employees or “officials” are asked to count the exact number of green squares portrayed on a grid composed by 240 red and green squares mixed together, as shown in Figure 1.

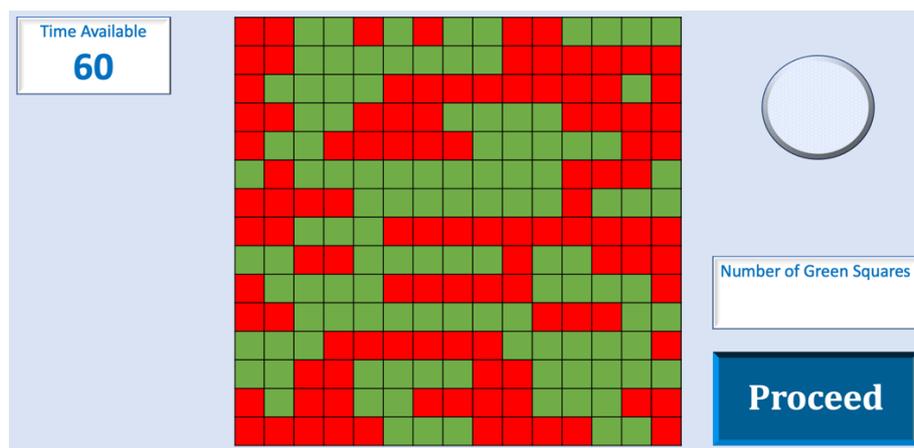


Figure 1

“Officials” also had an “help button”, which automatically counted 100 green squares and turned them blue. During this phase, “managers” only had to allocate part of their given budget as a shared reward to the “officials” who properly completed their task on time and met the requirements. Once the “officials” finished their counting, the evaluation phase started, with the “managers” being asked to evaluate on three consecutive screens the three employees, with a score from 1 to 4 based on their work, according to 3 criteria:

- *Result orientation,*
- *Compliance with procedures*
- *Teamworking.*

Some information regarding how the “officials” played the round was provided to each manager on the screen at the time of evaluation:

- If the "official" met the requirements to access the reward;
- The percentage of squares counted correctly;
- Use of the button for the automatic counting of 100 squares.

In the meantime, “officials” are asked to do the same and evaluate their two fellow peers, once given the information also available to the “manager”.

Participants of the experiment were handed instructions before starting, to help them better understand the functioning and their roles in it (see APPENDIX 1). Moreover, once concluded, they were given a survey to fill, so that the examiner could have some insight about their main personality traits and characteristics (see APPENDIX 2).

#### *Demographics of the experiment*

The experiment organized by the Laboratorio Cesare took place in 5 different sessions. The overall number of participants summed to 108, with the following characteristics.

Out of the 108 participants, 60 are Female (55.56%) and 48 are Male (44.44%)

<b>Gender</b>	<b>Frequency</b>	<b>Relative Frequency</b>
Female	60	55.56
Male	48	44.44
<b>Total</b>	108	100

*Table 1*

Over the five sessions, the gender classification followed distribution below.

<b>GENDER</b>	<b>SESSIONS</b>					
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Total</i>
Female	<b>14</b>	<b>15</b>	<b>9</b>	<b>13</b>	<b>9</b>	<b>60</b>
%	<i>58.33</i>	<i>62.5</i>	<i>45</i>	<i>65</i>	<i>45</i>	<i>55.56</i>
Male	<b>10</b>	<b>9</b>	<b>11</b>	<b>7</b>	<b>11</b>	<b>48</b>
%	<i>41.47</i>	<i>37.5</i>	<i>55</i>	<i>35</i>	<i>55</i>	<i>44.44</i>
<b>Total</b>	24	24	20	20	20	100

*Table 2*

The participants to the five sessions were students, with an average age of 23.88 years. Their academical background obeyed to the following distribution.

<b>Faculty</b>	<b><i>Frequency</i></b>	<b><i>Relative Frequency</i></b>
Economics	60	55.56
Law	25	23.15
Political Sciences	15	13.89
Other	8	7.41
<b><i>Total</i></b>	108	100

Table 3

To inspect and analyze the data in order to run a statistical analysis, I have used Stata. I ran three different regressions to explore the impact of several variables on three separate dependent variables. The following tables describe both the dependent and independent variables of the regressions, illustrating their names, explaining them through a brief description, and stating their names when used in STATA.

<b>Dependent Variables</b>	<b>Description</b>	<b>Stata Name</b>
Result Orientation	Numerical Variable indicating the result given from a managers to an official's Result Orientation in the experiment	<code>results_from_manager</code>
Compliance with Procedures	Numerical Variable indicating the result given from a managers to an official's Compliance with Procedures in the experiment	<code>procedures_from_manager</code>
Teamworking	Numerical Variable indicating the result given from a managers to an official's Teamworking in the experiment	<code>teamwork_from_manager</code>

Table 4

<b>Independent Variables</b>	<b>Description</b>	<b>Stata Name</b>
Manager's Gender	Dummy Variable which takes the value of "1" if the manager in the group is male	<b>managersgender</b>
Average Right Squares per Round	Numerical Variable indicating the squares counted correctly per round, expressed as a percentage	<b>percrightsquares_n</b>
Manager's Age	Numerical Variable indicating the age of the Manager of the group	<b>managersage</b>
Help Button	Dummy variable which takes the indicating value of "1" if the employee pressed the help button during the round.	<b>help_used</b>

*Table 5*

Moreover, inserting into Stata the command "**summarize**" followed by the variables taken into consideration, we get the following table, which briefly describes them by displaying the number of observations, mean, standard deviation and extreme values.

```
. summarize results_from_manager procedures_from_manager teamwork_from_manager
```

Variable	Obs	Mean	Std. Dev.	Min	Max
results_fr~r	<b>1,620</b>	<b>3.283951</b>	<b>.8819733</b>	<b>1</b>	<b>4</b>
procedures~r	<b>1,620</b>	<b>3.262346</b>	<b>.9889766</b>	<b>1</b>	<b>4</b>
teamwork_f~r	<b>1,620</b>	<b>3.123457</b>	<b>.9481</b>	<b>1</b>	<b>4</b>

*Table 6*

### *Regressions*

Since the dependent variables range take values in a finite interval from a minimum of 1 to a maximum of 4, a linear regression model would have a very low goodness of fit. Therefore in order to better extrapolate the effects of the independent variables, since we have data on individual outcomes, where the participant performs a task 5 times repeatedly for 4 rounds, we

will adopt a Multilevel Ordered Logistic Regression, which allows to control for task and round.

First, to inspect the effects of `managersgender`, `percrightsquares_n`, `managersage` and `help_used` on `results_from_manager`, `procedures_from_manager` and `teamwork_from_manager`, we run the regression by typing the following code:

1. `xi: meologit results_from_manager managersage  
i.ManagersGender percrightsquares_n i.help_used || subject:,  
difficult`
2. `xi: meologit procedures_from_manager managersage  
i.ManagersGender percrightsquares_n i.help_used || subject:,  
difficult`
3. `xi: meologit teamwork_from_manager managersage  
i.ManagersGender percrightsquares_n i.help_used || subject:,  
difficult`

The code lines above set up three distinct logistic regressions: the command `meologit` fits mixed-effects logistic models for ordered responses. The conditional distribution of the response given the random effects is assumed to be multinomial, with success probability determined by the logistic cumulative distribution function. The coefficients will be interpreted probabilistically, and a 95% confidence interval will be adopted to test the significance of the estimates.

## Result Interpretation

results_from_manager	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
_Imanagersg_2	.2692456	.4523805	0.60	0.552	-.617404	1.155895
managersage	.122714	.0851148	1.44	0.149	-.0441079	.2895359
perc_rightsquares_n	.0439259	.0121112	<u>3.63</u>	<u>0.000</u>	.0201884	.0676633
_Ihelp_used_1	.1946271	.4214641	0.46	0.644	-.6314274	1.020682
/cut1	3.377832	2.345111			-1.218502	7.974166
/cut2	4.971468	2.350773			.3640382	9.578898
/cut3	7.299748	2.380624			2.63381	11.96569
<b>subject</b>						
var(_cons)	2.768252	.8178537			1.551409	4.939523

LR test vs. ologit model:  $\text{chibar2}(01) = 52.73$

Prob >= chibar2 = **0.0000**

Table 7

Concerning the first regression, we see in *Table 7* how an increase in manager's age is positively correlated with a higher evaluation in *Result Orientation* awarded to an employee. This applies also to managers's gender: having a male manager implies the probability of a higher expected score regarding the result orientation. As we could expect, the use of the help button by an employee is also positively related with an higher expected evaluation. However, the coefficients result as not statistically significant on a 95% confidence interval. This may be due either because the data might be too limited to respond to the research question or to the fact that manager's age and gender do not significantly influence the way they evaluate employees, or both.

Nevertheless, we find a strong significance in the correlation between an increase in the percentage of squares counted correctly and a higher evaluation in *Result Orientation*. A 1% increase in the numbers of squares counted correctly, increases by 4,3% the probability of receiving a higher evaluation: as we approach 100% of squares counted correctly, each percentage point increases by approximately 4,3% the probability of being evaluated 4 out of 4.

Concerning the second regression, the results are as follow:

procedures_from_manager	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
managersage	<b>-.0292978</b>	<b>.0960887</b>	<b>-0.30</b>	<b>0.760</b>	<b>-.2176281</b>	<b>.1590325</b>
_Imanagersg_2	<b>.014177</b>	<b>.5269866</b>	<b>0.03</b>	<b>0.979</b>	<b>-1.018698</b>	<b>1.047052</b>
perc_rightsquares_n	<b>-.0081267</b>	<b>.0106495</b>	<b>-0.76</b>	<b>0.445</b>	<b>-.0289992</b>	<b>.0127459</b>
_Ihelp_used_1	<b>-1.411304</b>	<b>.3968191</b>	<b>-3.56</b>	<b>0.000</b>	<b>-2.189055</b>	<b>-.6335526</b>
/cut1	<b>-5.46153</b>	<b>2.595237</b>			<b>-10.5481</b>	<b>-.3749578</b>
/cut2	<b>-3.79172</b>	<b>2.575677</b>			<b>-8.839953</b>	<b>1.256514</b>
/cut3	<b>-2.156922</b>	<b>2.562581</b>			<b>-7.179488</b>	<b>2.865645</b>
<b>subject</b>						
var(_cons)	<b>3.958695</b>	<b>1.23846</b>			<b>2.144162</b>	<b>7.308808</b>

LR test vs. ologit model: **chibar2(01) = 57.77**                      Prob >= chibar2 = **0.0000**

Table 8

In the table above, we see that the usage of the help button is negatively correlated with the results awarded by the managers in the field of *Compliance with Procedures*. The estimate appears to be statistically significant. As expected, the coefficient indicates a strong correlation in pressing the button and obtaining a lower evaluation. Opting for a shortcut and automatically counting 100 squares is punished by the managers, as expected. Apparently, once again male managers seem to be more generous in awarding evaluations, even though the estimate is not statistically significant. This time, manager's age is inversely related to *Compliance with Procedures*, implying that managers become more severe with age. When measuring Compliance, managers neglect the percentage of squares counted correctly: the only relevant correlation appears to be the one with pre usage of the help button.

Finally, the third regression yields the results of *Table 9*:

teamwork_from_manager	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
managersage	.0200981	.0701287	0.29	0.774	-.1173516	.1575478
_Imanagersg_2	-.1270137	.385361	-0.33	0.742	-.8823073	.62828
perc_rightsquares_n	.0072998	.0108547	0.67	0.501	-.0139751	.0285746
_Ihelp_used_1	-.6157907	.3627841	-1.70	0.090	-1.326834	.095253
/cut1	-2.080174	1.990003			-5.980509	1.820161
/cut2	-.615426	1.981914			-4.499905	3.269053
/cut3	1.375382	1.981533			-2.508352	5.259116
<b>subject</b>						
var(_cons)	1.878232	.5765961			1.029058	3.42814

LR test vs. ologit model: **chibar2(01) = 38.46**

Prob >= chibar2 = **0.0000**

*Table 9*

The results awarded in the field of Teamworking seem to be not significantly correlated with any of the independent variable, at 95% confidence interval. However, this time, managers' overall evaluation concerning *Teamworking* is negatively correlated with managers' gender, implying that males were less prone to awarding high results in this field compared to females. Moreover, age also appears positively correlated: contrary to results concerning *Compliance with Procedures*, older managers award slightly higher results.

### *Conclusion*

Unfortunately, field experiment did not expose any significant correlation with manager's gender and age. The hypothesis that men and women differ in evaluating their employees is therefore rejected, implying high similarity in managing style. Being the experiment completely computerized, the participants did not know their colleagues' age and gender: this entailed the impossibility in asserting whether managers adopted different treatments or evaluations when dealing with different individuals. The main conclusion to the investigation drawable with the available data is that managers, whether being male or female, young or old, mostly reward their employees based on their skill appliance and overall performance.

Concluding, the simulated and controlled work environment could not highlight the impact of executives' gender in the workplace. Even though some of the results suffer from lack of significance, female managers appear as more generous when judging an employee's effort

towards teamworking. On the other hand, male managers rewarded employees with relatively higher feedback when judging their result orientation and compliance with procedures.

A greater amount of data collected could shed some light on the effects of gender on monitoring and managers' evaluation. Moreover, it would be interesting to carry out the experiment in a non-computerized manner or, alternatively revealing the identities of the group members to each other, so that implicit biases in judging could arise and impact overall managers' evaluation and rewarding.

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## APPENDIX 1

Before starting the experiment, participants were handed the following instructions, in order to gain an initial understanding of the procedure and play consciously.

\*\*\*\*\*

*Welcome to this experiment.*

### *Instructions*

*Please read the following instructions carefully. All participants are reading the exact instructions and taking part in this experiment for the first time.*

*During this experiment, you and the other participants will be called to make some decisions. Your decisions and those of the other participants will determine your earnings for the experiment, which will be calculated as explained below.*

*The experiment is entirely computerized. Therefore, from this moment on, and for the entire duration of it, any communication between the participants is prohibited, as is the use of mobile phones. Those who violate these rules will be excluded from the experiment without receiving any payment. If you have any doubts about the experiment, contact the experimenters via chat, who will immediately and privately answer your question.*

*Once the experiment is finished, you will need to fill out a short questionnaire whose information is strictly confidential and will be used anonymously and exclusively for research purposes.*

*The experiment consists of 4 Rounds. At the beginning of the first Round, the computer will randomly form groups of 4 participants in the experimental session. The group you belong to will remain the same for the entire duration of the experiment. The computer will then randomly assign the roles within the group: 1 manager and 3 officials. Each group will interact in unchanged roles for all the rounds of the experiment.*

*Concerning the final payment, the computer will randomly select one of the Rounds in which you participated at the end of the experiment. The amount earned at the end of the experiment will depend on what you have done and decided in the selected Round and, in the event that the role assigned to you is that of "official", on the decisions taken by the person assigned to the role of "manager" in the your group.*

### *Conduct of each Round*

*Each Round consists of 2 phases: the "task phase" and the "evaluation phase".*

#### *Task Phase*

##### *Manager*

*At the beginning of the Round, the participants selected as "manager" are assigned an endowment of 500 tokens (experimental unit of account). Each "manager" will then have to decide how much of this endowment, in multiples of 100 (0, 100, 200, 300, 400, 500), to allocate as a "reward" for the participants designated as "officials" who will be able to carry out the 5 tasks assigned to them in compliance with certain requirements, defined below. The choice of "manager" is communicated to the three "officials" of the same group before they begin to perform the task.*

*Please note: the prize awarded will be equally distributed to all "officials" who will be able to carry out their task respecting the requirements. For example, if the award allocated by the "manager" amounts to 200 tokens and 2 "officials" meet the requirements, each of them will get a reward of 100 tokens.*

*At this stage the "managers" have no other actions to perform.*

*When all "officials" have completed a certain task, a feedback screen will appear for the group "manager" that will show him/her some information about each "official"'s task (as explained below). Once the three "officials" have completed all 5 of their tasks, the evaluation phase will begin.*

##### *Official*

*Each participant selected as an "official" is asked to perform the following task 5 times.*

*A rectangle will appear on the screen, with a variable number of rows and columns, made up of 240 red and green squares mixed together. The "official" will have to count the green squares and write the result (an integer between 1 and 240) in a special box. A timer will indicate to the subject the time available, which varies in each task, to count the squares. In each period, there will be a button on the screen which, if pressed by the "official", will automatically count one hundred squares, changing their color to light blue.*

*Note: If the "official" decides to click the button for automatic counting, the score obtained in the corresponding task could be canceled if the latter is audited after the evaluation phase, as explained below.*

*Once the number has been entered and the "Proceed" button clicked, a feedback screen will open, which will indicate to each "official" how many green squares were present, how many green squares he counted, and the score he obtained in the task just performed. A feedback screen will also appear to the manager, showing the number of green squares present, the green squares counted, the score obtained, and the time taken in seconds by each "official" of the group in that task.*

*The score is determined by the number of green squares present minus a penalty assigned to each square counted over or under. This penalty is -10 for the first square, -9 for the second, and decreasing to the tenth square, starting from which the penalty becomes -1 for each additional square. The score is standardized to 100 tokens.*

*Example: if there are 129 green squares in the rectangle relating to a given task and the official has 130, the score for that official in that task will be given by:*

$$(129 - 10) \times (100/129).$$

*If the time available for the completion of the task ends before the "official" has pressed the "Proceed" button, the rectangle with the green and red squares will disappear, and the official will have to enter an integer between 1 and 240 in the appropriate box. The time taken to complete each task is recorded by the computer and will contribute to the determination of the possibility of accessing the prize.*

*The prize will be awarded to all officials who complete each of the five tasks at least 20% in advance of the time available and for which the ratio between the score obtained and the green squares present is at least 95% in each of the 5 tasks. The next task will start immediately after the feedback screen is displayed.*

*Once the three "officials" have completed all 5 of their tasks, the evaluation phase will begin.*

## *Evaluation Phase*

### *Manager*

*At the end of the "task phase", the "manager" will see three consecutive screens, one for each "official" of his group. Each of these screens contains the following information relating to each task performed by that "official":*

- *If the "official" meets the requirements to access the award;*
- *The percentage of right squares counted;*
- *Use of the button for the automatic counting of 100 squares.*

*In the same screen, there is a special space in which the "manager" is asked to evaluate the official based on the information above, on a scale of 1 to 4, in relation to the following performance categories:*

- *Result orientation;*
- *Compliance with procedures;*
- *Teamworking.*

*The "manager" will be able to take the time to complete this phase. Once the evaluation of all "officials" in the group has been completed, the "manager" will be privately disclosed his total score in the Round, as explained below.*

#### *Official*

*At the same time, at the end of the "task phase", two consecutive screens will appear , one for each "official" in his group. Each of these screens contains the following information regarding each single task performed by that "official":*

- *If the "official" meets the requirements to access the award;*
- *The percentage of correct squares counted;*
- *Use of the button for the automatic counting of 100 squares.*

*On the same screen, there is a particular space in which the "official" is asked to evaluate the other "officials" of his group on the basis of the information reported above, on a scale of 1 to 4, in relation to the following performance categories:*

- *Result orientation;*
- *Compliance with procedures;*
- *Teamworking.*

*The "official" will be able to take the time to complete this phase. Once the evaluation of all other "officials" in the group has been completed, he/she will be privately disclosed his total score in the Round, as explained below.*

#### *Determination of the Total Score of the Round*

##### *Official*

*At the end of the "evaluation phase", the computer will randomly choose which tasks of each "official" to be audited. If the he/she pressed the button for the automatic count of 100 green squares in a task that is audited, the relative score will not be considered for the calculation of the total score of the Round.*

*Therefore, the total score of the Round for each "official" will be given by the sum of the scores obtained in each task of the Round and any prize, minus the scores obtained in the audited tasks in which the he/she pressed the button.*

#### *Manager*

*The total score of the Round for the "manager" will be the average of the sum of the scores obtained by the "officials" in each task of the Round plus any unallocated prize (if at least 2/3 of the officials in the group have reached the reward).*

#### *Your earnings for the Experiment*

*For payment, the computer will randomly select one of the Rounds in which you participated at the end of the experiment. The total score you have obtained in the Round selected for payment will be converted into euros in the ratio 100 points / 1.5 euros (rounded to the nearest whole number), to which is added a show-up fee of 6 euros provided for the experiment.*

## APPENDIX 2

After having participated in the experiment, individuals were given a survey to fill, so that the examiner could have some insight about their main personality traits and characteristics.



### **Final Survey (Evaluation ISPRA/SNA)**

**1. Gender**

- Male
- Female

**2. Age [...]**

**3. Faculty**

- Economics
- Law
- Political Sciences
- Other

**4. Level of Education**

- Bachelor's
- MSc
- Master
- PhD

**5. Would you label the experiment as easy?**

- Yes
- No

**6. Up until today, how many experiments at laboratorio CESARE have you taken part in?**

- 1 to 5
- More than 5

**7. Please state your Region.**

**8. Please indicate how well the following statements describe your person. Please indicate how much, on a scale of 1 to 10, you agree with each statement (where 1 means "I totally disagree" and 10 means "I totally agree").**

I see myself as...

- a) reserved
- b) trustful
- c) lazy
- d) relaxed, handles well stress
- e) with few artistic interests
- f) outgoing
- g) picky
- h) mindful when working
- i) easily anxious
- j) with a colorful imagination
- k) trustworthy
- l) a creature of habit

**9. Please indicate how well the following statements describe your person. Please indicate how much, on a scale of 1 to 10, you agree with each statement (where 1 means "I totally disagree" and 10 means "I totally agree").**

I tend to always carry out an activity in the same way regardless of the circumstances that arise from time to time.

- I tend to achieve the goals I set myself by adopting all the means necessary to achieve them.

- I consider teamwork the most important part of any job.

10. Please reflect on yourself about your being prepared to take risks or your willingness to avoid taking them and express a preference on a scale from 0 to 10, where 0 stands for "I don't want to take any risks" and 10 stands for "I am very willing to take risks".
11. I find it right to make a uniform (  ) differentiated evaluation (  )
12. What do you think other participants feel is right to do? (  ) differentiated evaluation (  )  
uniform evaluation
13. What do you think the other participants do? (  ) differentiated valuation (  ) uniform