

Does Trust Lead to Honesty: Experimental Evidence from the Monitoring Game

Yoav Wachsman

Assistant Professor of Economics

Department of Accounting, Economics and Finance

E. Craig Wall, Sr., College of Business Administration
Coastal Carolina University

119 Chanticleer Dr., East
Conway, SC 29526

Phone: (843) 349-2683

Fax: (843) 349-2455

E-mail: yoav@coastal.edu

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Abstract

Most principals can monitor their agents, but monitoring is usually costly and imperfect. This paper reports the experimental results of a Monitoring Game. In this sequential game, principals must decide whether to monitor an agent that they are randomly paired with and the agent decides whether to cheat or not. Monitoring is costly, but it increases the probability that the agent will get caught. The experiment shows that cheating is commonplace, although most participants do not cheat if they are being monitored. Additionally, cheating is more common when neutral terms are used in the instructions.

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1. Introduction

Most principals such as managers or instructors face an interesting dilemma, should they monitor their agents (i.e., workers or students), which typically requires them to pay a monitoring cost, or not monitor their agents and hope that they will not cheat. This question is particularly difficult to answer when monitoring is imperfect, which means that the probability of catching the agent when he cheats is less than one.

This paper reports the experimental results of a sequential game called the Monitoring Game. In the Monitoring Game each principal must decide whether to monitor or not monitor an agent that she is randomly paired with and then the agent decides whether to cheat or not. Monitoring is costly for both the principal and the agent but it increases the probability that the agent would get caught if he cheats. If the agent cheats and is not caught, his payoff is increased and the principal's payoff falls. However, if the agent is caught he receives a payoff of zero for that period.

Although several other experiments examined principal agents game and the issue of trust, the experiment reported here is an original one. The Monitoring Game simulates a situation that many principals face. For instance, managers have to decide whether to monitor to monitor when their workers arrive and leave, the workers' activities on the Internet and so on. Monitoring workers imposes a cost on employers such as additional mid-level managers, new software and surveillance equipment. Workers also incur a cost from increased monitoring since monitoring makes the work environment less comfortable and may subject workers to additional requirements like punching their time and reporting their activities.

Instructors face a similar dilemma. They can increase the probability of catching students who cheat by using an additional monitor, creating different version of an exam or comparing the answers of different students. However, during so requires more time and effort out of the instructor and the probability of catching cheaters is always less than

one. Consequently, managers, instructors and other principals would prefer not to monitor their agents if they could trust them, but can they?

The objective of the experiment is to investigate two important questions. First, are agents more or less likely to cheat if the principal that they are paired with decides to trust them and not monitor them? Answering this questions can help principals decide whether to and under what circumstance they should monitor their agents. For example, are agents more likely to cheat in the last period of play when principals can no longer responds by monitoring them.

Secondly, the experiment seeks to investigate under what circumstances agents are more likely to monitor their agents. For instance, do principals respond to whether the agent that they were paired with was caught cheating or to the total number of agents who cheated in previous sessions? Similarly, are principals more likely to monitor the agent they are paired with in the last period of play when the agent has a stronger incentive to cheat?

2. **Experimental Design and Procedures**

Participants in the experiment were students from the E. Craig Wall, Sr. College of Business Administration at Coastal Carolina University who were solicited from various undergraduate classes. Upon arriving, students were randomly divided into eight “employers” and eight “employees”. Employers received a number from 1 to 8 and employees received a letter from A to H. The two groups were seated facing away from each other and were instructed not to communicate or to reveal their number or letter to any other participant. Then, the instructions for the experiment (Appendix A) were read out loud and the participants were asked to complete a couple of exercises to make sure that they knew how to calculate their payoff.

Each session consisted of 8 decision periods. During each period each employer was randomly paired with an employee, but the employer did not know who she were paired with. Each employer was paired with each employee once and only once. The employers had 2 minutes to indicate, on a slip of paper, whether they were going to or not going to monitor the employee that they were paired with. Monitoring would cost both the employer and the employee she was paired up with 3 Experimental Pesos. At the end of the session participants received 10 cents for every Experimental Peso that they earned throughout the experiment.

The slips were handed over to a researcher who inputted the information into an Excel spreadsheet. Then another researcher distributed each of the slips to the employee that the employer was paired up with. After the employee found whether he was monitored or not, he had two minutes to decide whether to cheat or not. If the employee decided to not cheat she or he would place a blue chip inside an opaque envelope. If the employee decided to cheat she or he would place a red chip inside the envelope. The envelopes were then collected and the chips were slipped (without anyone seeing what the color of the chips were), into the box of the corresponding employer.

Each of the employers' boxes already contained three blue chips. Once all the chips that the employees selected were placed in the employers' boxes, a researcher shoveled the chip in each box. If an employer decided not to monitor the employee that she was paired with, the researcher would take one chip out of her box. If the employer decided to monitor her employee, the researcher took two chips out of her box.

If an employee decided not to cheat, then both he and the employer would receive 15 Experimental Pesos if the employer decided not to monitor the employee and 12 Experimental Pesos if the employer decided to monitor the employee. Cheating would increase the employee's payoff by 6 Experimental Pesos and reduce the employer's payoff by 6 Experimental Pesos if the employee was not "caught". The employee was considered caught if he placed a red chip in the box and the researcher randomly took that chip out. If the employee were caught he would get zero Experimental Pesos for that period and the employer would not see a change in his payoff. Consequently, if the employee decided to cheat and was caught the employer would get 15 Experimental Pesos if he did not monitor the employee and 12 Experimental Pesos if he did monitor the employee. The payoffs are summarized in Table 1.

Table 1 – Experimental Payoffs

<i>Employer's Decision</i>	<i>Employee's Decision</i>	<i>Prob. of being caught</i>	<i>Result</i>	<i>Employer's Payoff</i>	<i>Employee's Payoff</i>
Monitor	Cheat	2 in 4 (.50)	Caught	12 EP	0 EP
			Not Caught	6 EP	18 EP
	Not Cheat	0 in 4 (.00)	–	12 EP	12 EP
Not Monitor	Cheat	1 in 4 (.25)	Caught	15 EP	0 EP
			Not Caught	9 EP	21 EP
	Not Cheat	0 in 4 (.00)	–	15 EP	15 EP

Participants were reminded at the end of every decision period how many of the employees were caught cheating during that period. Note that employer did not know if the employee that they were paired with cheated or not unless the employee was caught. Therefore, the employees could calculate their earnings throughout the experiment while the employers could not. At the end of the session, all the participants were paid their earnings plus a \$5 fee for showing up on time.

The experiment was repeated in a total of 8 sessions. 4 of the sessions were conducted as a No Framing Treatment and the other 4 sessions were conducted as Framing Treatment. In the No Framing Treatment the instructions and the communication throughout the experiment used neutral terms, so to not create any biases. For example, in the No Framing Treatment employers were called “observers” and employees were called “agents”. Similarly, monitoring and not monitoring was referred to as “observing” and “not observing”, while cheating and being honest was referred to simply “action red” and “action blue” respectively. Other than the framing the structure of the experiment was completely identical for both treatments. Interestingly, participants in the Framing Treatment acted in a different way than participants in the No Framing Treatment as discussed in the next section.

3. **Basic Results and Extensions**

There was a considerable amount of cheating in the experiment. Overall, the employees cheated 42.8% of the time. Cheating was far more common in the No Framing Treatment where employees cheated 50.8% of the times compared to only 34.8% in the Framing Treatment. The instances of cheating fell mainly because participants were far less likely to cheat when they were monitored in the Framing Treatment. In the Framing Treatment, employees cheated only 4.6% of the times when they were monitored compared to 31.1% of the time in the No Framing Treatment. Framing the instruction also slightly decreased the portion of the time that the employees cheated when they were not monitored.

As theory predicts, cheating was far less common when the participants were monitored because the probability that they would get caught was higher. Overall, employees cheated 58.1% of the times when they were monitored and only 17.9% of the times when they were not monitored. Cheating did not uniformly increase in the last period of play, probably because the amount of monitoring increased in the last period. The number of employers who opted to monitor their employee rose in the last period of play in six out of the eight sessions and in the other two sessions it remained the same.

In general, employers monitored employees less often than they did not monitor them, despite the fact that theory predicts that a risk-neutral employer will always observe the agent she is paired up with. Employers elected to observe employees 34.6% of the times. There was little difference between the numbers of time employers monitored employees in the Framing Treatment compared to the No Framing Treatment. Employers monitored employees slightly more in the Framing Treatment; perhaps because monitoring was a lot more effective in the No Framing Treatment – it almost eliminated cheating.

There was a slight positive correlation of 0.018 between the number of employers who decided to observe the employee that they were paired up with and the number of employees who were caught in the previous period. There was also a negative

correlation of -0.10 between the number of employees who elected to cheat and the number of employees who were caught in the previous period. This occurred even though the probability of getting caught in a given period is independent of the probability of getting caught in the previous period.

In addition to these basic observations, I intend to run a probit regressions to investigate what affects the probability that an employer would choose to monitor the employee and a second regression to examine what affects the probability that an employee will cheat. I theorize that an employer is more likely to monitor an employee if several employees were caught in the previous period, but not necessarily if she caught an employee cheating. The probability that an employee will cheat probably depends on whether he is being monitored and the number of times he was caught.

Additionally, I intend to investigate whether gender plays any role in participants decisions. Furthermore, I am planning to investigate how changing the cost of monitoring, creating a game in which only employers bear the cost and changing the probability of getting caught will affect the participants behavior. Finally, I intend to examine a Monitoring Game in which employers and employees are paired up and then get to repeatedly interact with one another over a period of time.

Appendix A – Instructions for the Employees¹

Please listen to the following instructions carefully. From this point onwards you are NOT allowed to communicate with any other participant. If you have any clarifying questions raise your hand and we will answer your questions in private.

This is an experiment in decisions making. Depending on the decisions that you and other participants in the experiment make you can earn money that will be paid to you IN CASH at the end of the experiment. Throughout the experiment all units of account will be in Experimental Pesos. At the end of the experiment you will receive \$1 for every 10 Experimental Pesos that you collect (10 cents per Experimental Peso). Your cumulative earnings plus a lump sum amount of \$5 for showing up will be paid to you IN PRIVATE. Payoffs will be rounded to the nearest dollar.

There are a total of sixteen participants in this experiment. The participants were randomly divided into two groups of 8 employers and 8 employees. You are an employee. You will be referred to as Employee ____ throughout this experiment (remember this letter). You are not allowed to share this letter with anyone.

The experiment consists of 8 decision periods. Before each period, each employer will be randomly paired with one employee. However, neither the employer nor the employee will know who they were paired with. Each employer will be paired with each employee once and ONLY ONCE during the experiment.

At the beginning of each decision period each employer will decide whether to “Monitor” or “Not Monitor” the employee that she or he was randomly paired with. Observing costs both the employee and the employer 3 Experimental Pesos. The employers will have up to minute and a half to make their decision.

After all the employers make their decision, each employee will be informed, on a slip of paper, whether the employer he or she is paired with has decided to Monitor or Not Monitor him/her. Then the employee will have a minute and a half to decide between two actions “To Cheat” or “To Be Honest”. Choosing “To Cheat” will increase the employee’s payoff by 6 Experimental Pesos and decrease the employer’s payoff by 6 Experimental Pesos if the employee does not get “caught”. However, if the employee gets “caught” he or she will receive zero Experimental Pesos.

If the employee chooses “To Be Honest” s/he will place one “Blue” chip inside an envelope. If the employee chooses “To Cheat” s/he will place one “Red” chip inside an envelope. Employees will have chips and envelopes available on their desk.

A researcher will collect the envelopes from the employees and will place each chip (without looking at the chip) inside the box that belongs to the employer that the employee is paired with. Each box will already have 3 blue chips in it.

¹ Frame Treatment

If the employer chose to Not Monitor, then the researcher will take one chip out of the employer's box. If the employer chose to Monitor, then the researcher would take two chips out of the employer's box. If the researcher takes out a Red chip out of the box, then the employee is considered "caught". Note:

1. If the employee places a blue chip in the envelope, then s/he is not cheating and, therefore, can not be "caught".
2. If the employee places a red chip in the envelope and the employer chose to Not Monitor, then there is a 1 in 4 probability that the employee will be caught.
3. If the employee places a red chip in the envelope and the employer chose to Monitor, then there is a 2 in 4 (or $\frac{1}{2}$) probability that the employee will be caught.

The payoff from each period is as follows:

If the employer decides to Not Monitor and the employee decides To Be Honest

Both the employer and the employee will receive 15 Experimental Pesos

If the employer decides to Not Monitor and the employee decides To Cheat

1. The employer will receive 9 Experimental Pesos and the employee will receive 21 Experimental Pesos if the employee is NOT caught.
2. The employer will receive 15 Experimental Pesos and the employee will be punished and receive 0 Experimental Pesos if the employee is caught.

If the employer decides to Monitor and the employee decides To Be Honest

Both the employer and the employee get 12 Experimental Pesos.

If the employer decides Monitor and the employee decides To Cheat

1. The employer will receive 6 Experimental Pesos and the employee will receive 18 Experimental Pesos if the employee is NOT caught.
2. The employer will receive 12 Experimental Pesos and the employee will be punished and receive 0 Experimental Pesos if the employee is caught.

To assure that you know how to calculate your earnings, please complete the following exercises. Raise your hand when you are done. Do NOT communicate with other participants in any verbal or non-verbal way while working on these exercises and throughout the experiment. If you have a question raise your hand and a researcher will answer your question in private.

Exercise 1: If the employer you are paired with decides to Monitor and you decide To Cheat and place a red chip in the envelope, how many Experimental Pesos will you receive if you are caught? What is the probability that you will be caught?

Exercise 2: If the employer you are paired with decides to Monitor and you decided To Be Honest and place a blue chip in the envelope, how many Experiment Pesos will you receive? What is the probability that you will be caught?