

Working paper series

## WP FIECAC 12.05

# Honesty and Management Control System Design: An experimental study

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## HONESTY AND MANAGEMENT CONTROL SYSTEM DESIGN: AN EXPERIMENTAL STUDY

July, 2012

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#### Abstract

The manipulation of performance measures is a central theme in management accounting research. Individuals have private information that can be used for their own benefit; and thus they can falsify their performance reporting. Psychology literature asserts that the attitude of individuals to maximize their own interests or common benefits depends on their cognitive orientation. Accounting literature argues that management control systems can motivate individuals to act for the organization benefit. This paper analyzes how management control systems (beliefs system vs. boundary system) and cognitive orientation of individuals affect honesty in performance reporting. Hypotheses were tested using an experiment among post-graduate students. Results showed that a boundary design of management control systems moderates the negative relationship between the individualist cognitive orientation and the honesty in performance reporting.

Keywords: Honesty, management control system design and cognitive orientation.



## HONESTY AND MANAGEMENT CONTROL SYSTEM DESIGN: AN EXPERIMENTAL STUDY

#### 1. Introduction

Due to the existence of several accounting scandals, the reporting performance behavior has captured the attention of both the accounting researchers and the general public (Mittendorf, 2006). Managers have private information they can use to their selfinterest, even if it harms the organization. They can, for example, select depreciation methods or make provisions and reservations in anticipation of future expenses (Bowen, Rajgopal and Venkatathalam, 2008; Burgstahler and Dichev, 1997). Accordingly, it is key to analyze how the honesty on performance reporting of individuals can be increased in organizations (Evans, Hannan, Krishnan and Moser, 2001; Rankin, Schwartz and Young, 2008).

We define honesty as the tendency of individuals to avoid making untrue factual assertions, despite explicit or implicit incentives to the contrary (Baiman and Lewis, 1989; Evans et al., 2001; Rankin et al., 2008). The economic literature states that people are dishonest when they benefit from it, regardless of effects on the other side. That is, it does not consider that there are negatives outcomes associated to dishonest behavior (Gneezy, 2005). Agency theory assumes that when there are not incentives or contracts that induce an honest behavior, subordinates falsify or misrepresent their performance to serve their own interest (Rankin et al., 2008). However, several studies have found that people are not completely dishonest as is predicted by the agency theory (Evans et al., 2001; Hannan, Rankin and Towry, 2006; Rankin et al., 2008). These findings can be



explained by equilibrium models, where individuals balance the utility of the gain and the disutility of being dishonest (Brickley, Smith and Zimmerman, 1997; Luft, 1997). Individuals have preferences both as being honest as benefits that they obtain of their dishonest behavior (Luft, 1997). On the one hand, they can prefer to behave honestly to meet with their value systems. In this vein, almost all cultures see honesty as an ethically desirable trait (Murphy, 1993). On the other hand, individuals are tempted by economic benefits of behaving dishonestly. In this line, an honest report can be induced by monetary incentives, but this can be expensive (Luft and Shields, 2009). Thus, it is important to analyze how different control systems, beyond the conventional monetary incentives, affect the behavior of performance reporting (Evans et al., 2001). In this paper, we analyze the beliefs control systems and boundary control systems (Simons, 1995).

Simons (1995) suggest that beliefs and boundary systems create opposite forces. A beliefs system creates positive attitudes by signaling the values and direction that managers want subordinates to adopt. On the other hand, a boundary system creates negative attitudes by constraining to ensure compliance with orders. Unlike beliefs system, which specifies positive ideals, boundary system establishes limits, which are usually stated in negative terms or as minimum standards. An appropriate design of management control systems design can play a key role to encourage honest behavior, since at the moment of temptation, individuals can think about desirable or standards behavior. Thus they can compare them with their own behavior (Mazar, Amir and Ariely, 2008). Belief control system, through the definition of the values and direction that individuals have to adopt, and boundary control system, by dictating what individuals should not do, could facilitate remember what are desirable behavior



(Simons, 1995). However, we propose in this study that beliefs and boundaries control systems will not work the same way in all individuals. Xie, Roy and Chen (2006) state that incentive and control systems will be more effective when they are adapted to cognitive orientation of individuals. This paper test directly this proposition, and thus we propose that the management control systems has different effect on individuals according to their cognitive orientation..

The cognitive orientation of individuals can be defined as the degree to which an individual directs its actions towards its own benefit (individualism) or towards the benefit of a group (collectivism) (Drach-Zahavy, 2004). Therefore, in an environment in which the interests of individuals and those of organization are in conflict, we propose that cognitive orientation (individualism-collectivism) would play a key role in the honesty performance reporting.

The main aim of this paper is to analyze how the design of management control systems moderates the relationship between the cognitive tendency of individuals and their honesty in performance reporting. We seek to contribute to the demand for more research about the factors that influence honesty in organizations (Evans et al., 2001). Furthermore, we try to clarify how others control systems, rather than conventional monetary incentives, affect honesty in performance reporting (Evans et al., 2001). To analyze the relationship between management control system design, cognitive orientation and performance reporting honesty we used an experiment carried out with postgraduate students. The results indicate a negative relationship between individualist cognitive orientation and honesty in performance reporting. Furthermore, our results show that a boundary design of management control system moderates the negative effect of individualist orientation on performance reporting honesty, such that



individualists will show lower honesty in performance reporting under a boundary system than under a belief system.

The rest of the paper is structured as follows. In the next section we develop the hypothesis about the relationship between cognitive orientation, management control systems, and honesty. The third section describes the experimental methodology. The fourth section presents the results and the final section presents the discussion and conclusions of this study.

#### 2. Hypotheses Development

#### 2.1. Cognitive orientation and honesty

Concerns over managerial reporting behavior have long been recognized in the accounting literature (Birnberg, 2011; Mittendorf, 2006). If the individual and organizational goals are different, individuals may withhold or misrepresent their private information in order to satisfy their own interests (Hannan et al., 2006; Rankin et al., 2008). Traditional economic theory assumes that self-interest and wealth-maximizing are the sole motivators of choice (Birnberg, 2011). In contrast, many studies have found that individuals do not misrepresent their private information to the extent predicted, despite financial incentives to do so (Chow, Cooper and Waller, 1988; Evans et al., 2001; Hannan et al., 2006; Waller, 1988). Equilibrium models in which individuals balance the utility of the gain and the disutility of lying (Brickley et al., 1997; Luft, 1997) may potentially explain the existence of partially honest reports.

Honesty can be defined as the willingness of individuals to avoid making false claims, regardless of benefits to do the opposite (Baiman and Lewis, 1989; Evans et al., 2001; Rankin et al., 2008). In an environment in which the interest of individuals and



those of organization are in conflict, cognitive orientation could play a key role in honesty in reporting their results. Cognitive orientation influences the attitudes individuals, such as loyalty (Ramamoorthy and Flood, 2004), prosocial behavior (Moorman and Blakely, 1995; Ramamoorthy and Flood, 2004) and commitment (Clugston, Howell and Dorfman, 2000; Ramamoorthy and Flood, 2002). Cognitive orientation reflects the extent to which people prefer to be treated as unique individuals or as members of a group, the extent to which they value the individual or group goals and the extent to which the behavior is driven by social norms or individual attitudes (Triandis, 1995). Individualism-collectivism theory distinguishes two major behavior types or tendencies in people (Chow, Lindquistm and Wu, 2001; Llies, Wagner and Morgeson, 2007). Individualists emphasize the self; they emphasize individual initiative, personal development, individual achievement, autonomy, self-reliance, privacy and self-respect (Hofstede, 1991). Collectivists, however, emphasizes belonging to one or more groups (Xie et al., 2006), give priority to group goals over individual and emphasizes the group's performance (Earley, 1994).

In this study, we have considered cognitive orientation as a continuous term. Individuals with lower cognitive orientation toward individualism will be called as collectivist individuals and individuals with higher cognitive orientation toward individualism will be called individualist individuals.

Individuals with a collectivist orientation benefit the group interaction, cooperation and enhance performance personal and team (Driskell and Salas, 1992; Earley, 1993; Eby and Dobbins, 1997; Stout, Driskell and Salas, 1997). Individuals with lower cognitive orientation towards individualism, due to the fact that they prioritize the objectives of the group, tend to exhibit higher commitment to organizational goals than



individualists (Parkes, Bochner and Schneider, 2001). That is, individuals with a collectivist orientation prefer to act in a way that will not jeopardize the group to which it belongs, even if it means the renunciation of higher individual benefits (Drach-Zahavy, 2004; Xie et al., 2006).

Xie et al. (2006) find evidence to support that individualists overstate more his self-rating than collectivists. Individuals with higher individualism orientations, in order to achieve their own goals, are motivated to express their positive attributes (Triandis, 1996), even to inflate their self-evaluation (Farh and Dobbins, 1989). That is, due to the fact that they put their own interests above those of the organization (Drach-Zahavy, 2004; Xie et al., 2006), individuals with a predominant cognitive orientation towards individualism could be less willing to exert effort or sacrifice their own goals to achieve organizational purposes; therefore, individualists could prefer to make false claims although this will damage the organization they belong, encouraged by the explicit or implicit benefits that this entails, because individualists look after themselves and tend to ignore group interest if they conflict with personal desires (Wagner, 1995). Individualists have been shown to place a greater emphasis on self-interest and personal achievement compared with collectivists (Ramamoorthy and Flood, 2004).

Therefore, we could expect that individuals with an individualist cognitive orientation will be less intrinsically motivated to report their results honestly, since they will tend to behave opportunistically to meet their own interest. So, we formulate the following hypothesis:

*H1:* There is a negative relationship between individualist cognitive orientation and honesty in performance reporting.



#### 2.2. Cognitive orientation, the design of management control systems and honesty

Simons (1995) states that there are different types of management control systems, which are able to reconcile the tensions between self-interest and innate desire to contribute to the organization (p. 29). That is, these management control systems are able to incentive and motivate behavior in individuals so that they act in one direction, that of the organization (Henri, 2006; Naranjo-Gil and Hartmann, 2007). In this line, management control and incentive systems will be more effective when they are adapted to the cognitive orientation of individuals (Xie et al., 2006).

Simons (1995) defined four types of management control systems: belief system, boundary system, diagnostic control and interactive control. The first two are related to the design and the last two with the use of management control systems. Following Evans et al. (2001), who called for further research to analyze how reporting behavior is affected for other factor different from conventional monetary incentives, this paper focused on analyzing the beliefs system and boundaries system, which are not based on monetary incentives but on values and rules. Beliefs system is a formal system used to define, communicate and reinforce the core values, purpose and direction of the organization. This system is created and communicated through formal documents such as credos, mission statements and statements of purpose (Simons, 1994; 1995). In contrast, boundary system communicates the actions that employees should avoid (Widener, 2007). It is a formal system used to set explicit limits and rules that must be respected. Boundary systems are design in negative terms or as standards limits and they are created through codes of conduct or business rules (Simons, 1994; 1995).

Recently, several studies (see Hannan et al, 2006, Rigdon, 2009) have begun to suggest that incentives and control systems that are designed based on the assumption



that managers only value their own gain and that they act opportunistically to maximize their profits are not always optimal (Rankin et al., 2008; Hannan, 2005). Luft (1997) theorized that individuals balance the financial benefits of lying with the psychic benefits of honesty, whereby they will not be completely honest, but will not be as dishonest as predicted by pure selfishness, as has been demonstrated in studies by Evans et al. (2001), Hannan et al. (2006) and Rankin et al. (2008). Individuals, therefore, are faced with a conflict of priorities or dilemma, they prefer to be honest, but they are tempted too by gains of behaving dishonestly (Mazar et al., 2008; Mittendorf, 2006). The management control systems are able to reconcile the tensions between self-interest of individuals and collective or organizational goals (Simons, 1995). Mazar et al. (2008) stated that at the moment of temptation, individuals think about the standards and compare them to their behavior. These standards of behavior may be showed by both the belief systems and the boundary systems. Thus, beliefs and boundary systems can facilitate the alignment of employee behaviors, which minimizes the possibility that organization can be harmed (Widener, 2007).

When individuals do not share the organization's mission and goals, it may result in self-interested behavior overriding organizational interest (Simons, 1995), as such dishonesty in the reporting of results. Strong boundary and beliefs systems are intended to counteract undesirable behavior (Widener, 2007). Therefore, the management control systems could moderate the negative effect of individualist cognitive orientation on honesty in performance reporting.

A Belief design of management control system communicates core values in order to inspire and motivate employees to expend effort engaging in appropriate actions (Widener, 2007). Therefore, the use of a belief system could facilitate that



individuals think about the desirable behaviors and compare then with their behavior. However, individualists are characterized by prioritizing their own interest above the goals of the organization. Thus, although individualists are informed of the values and purposes of the organization, when they come into conflict with their own goals, individualists will not be motivated to be willing to exert efforts to achieve the objectives of the organization (Drach-Zahavy, 2004; Xie et al., 2006).

On the other hand, a Boundary design of management control system limit individual's behavior by norms which must be respected (Simons, 1995). Boundary system set up what the individuals should not do. However, individualists emphasize on behavior consistent with their self-interest, unlike collectivists who emphasize on behavior consistent with norm, role and obligations (Triandis, 1995). That is, individualist will not meet the norms when these come into conflict with their own interest. Even, the use of restrictive systems, such as boundary system, could have negative consequences on individualists' behavior because of could arouse psychological reactance.

Boundary system establishes clear limits on behavior (Simons, 1995, p. 41). The most basic boundary systems are those that impose codes of business conduct (Simons, 1995, p.42). Codes of business conduct inevitably limit freedom of action (Simons, 1995, p.47). So, autonomy of individuals is limited with a boundary system. Autonomy is a necessary and important aspect for individualists, since they are characterized as valuing freedoms (Hofstede, 1991). The limits set by a boundary system will likely be viewed by individualists as a threat to freedom and therefore arouse psychological reactance (Shen and Dillard, 2005). Brehm and Brehm (1981, p.37) defined psychological reactance as "the motivational state that is hypothesized to occur when a



freedom is eliminated or threatened with elimination". Reactance produces a desire to restore one's attitudinal or behavioral freedom (Shen and Dillard, 2005), which can cause behaviors that are at odds with the desired behaviors (boomerang effect). The boomerang effect occurs when the individuals' acts against the direction of a coercive message after encountering a threat that limits the freedom to choose (Seeman, Carrol, Woodard and Mueller, 2008). In this vein, several studies have supported that when it is perceived that constraints on freedom are imposed to produce cooperation or helping, the resulting feelings of psychological reactance will actually reduce the probability of prosocial behaviors (Waterman, 1981).

In conclusion, the systems which impose limits on behavior, such as boundary system, will be complying in a less extent, specifically in the case of individuals with a predominant cognitive orientation towards individualism, due to more emphasis placed on individuality and autonomy by individualists (Hofstede, 1991). Therefore, we could expect that a boundary system could be perceived as constraints on freedom and it could produces feelings of psychological reactance in individuals with individualist cognitive orientation, which would reduce the probability that an individualist enhanced the honesty in performance reporting. Thus, we expect that the relationship between individualist cognitive orientation and honesty in performance reporting will be moderated by a boundary system rather than a beliefs system. We expect that the relationship will be more negative under a boundary system, due to the fact that this design of management control system could arouse psychological reactance. However, we expect that beliefs system do not affect honesty in performance reporting when individualists. Individuals with predominant cognitive orientation towards individualist will put their self-interest above interest of organization although



core values, purpose and direction of organization were communicated. So, we formulate the following hypothesis:

H2: The relation between individualist cognitive orientation and honesty in performance reporting will be moderated by the design of management control system, such that individualists will show lower honesty in performance reporting under a boundary control system rather than a belief control system.

Figure 1 shows the research model we examined.





## 3. Empirical study

To test our hypothesis we run an experiment with 83 post-graduate students from the Pablo de Olavide University in Seville. These subjects were chosen since no specific knowledge was necessary to perform the experimental task and no accumulated experience or professional knowledge was necessary to know the individuals' cognitive orientation. The independents variables were management control systems (beliefs



system or boundary system) and individual's cognitive orientation (cognitive orientation toward individualism). The dependent variable was honesty in performance reporting.

Subjects participated in the experiment voluntarily. Each subject was paid a "show-up" fee of 5 $\in$ . Subjects could increase their payoff depending of the results obtained in this activity. Furthermore, all subjects took part in the draw for 200 $\in$ .

Before of individuals performed the main experimental task, subjects filled in a questionnaire to ascertain their cognitive orientation. Then, we meet subjects in a different day in order to perform the experimental task. The experiment was programmed and conducted with the software z-Tree (Fischbacher, 2007). We conducted the experiment over several sessions, each of which ran a single condition of the experiment.

Follow Maas and Van Rinsum (2011), the task consisted in to answer the maximum number of questions at a given time. The total number of questions was 75, for which the individuals had 10 minutes in total. Next, the actual number of correct answer was communicated to each individual. Then, they had to report how many questions they had solved correctly, but taking into account that their payoff was determined by this report and not by the actual number of correct answers (Maas and Van Rinsum, 2011). That is, the number of correct answer that they reported did not necessarily have to be the same as the actual number of question answered correctly.

The experiment was conducted following the study by Maas and Van Rinsum (2011). First, subjects were entered in a room in which we provided them the instructions (Appendix A). After all subjects read and understood the instructions, they were randomly provided with a participant code which matched with the code of the computer in which they had to do the task. The task started at the same time in all



computers. Subjects answered up seventy-five multiple choice questions for a maximum of ten minutes (Maas and Van Rinsum, 2011). All subjects got the same questions and they were always provided in the same order. Subjects could move to the next question without picking an answer, but they could not go back (Maas and Van Rinsum, 2011). For each question, they had 20 seconds and although they would not have answered the question, after these 20 seconds, they automatically moved to the next question. At the end of the 10 minutes, subjects received a message in which was communicated the actual number of questions that they have answered correctly. Next, we asked to each individual the number of answers that he or she has answered correctly, taking into account that they will be paid by the number which they said and not by the actual number of correct answers. We noted them that it was this reported figure and not the actual number of correct answered calculated by the computer, which determined the payoffs (Maas and Van Rinsum, 2011).

We measure the level of honesty, based on the ratio established by Evans et al. (2001) and used by Maas and Van Rinsum (2011) to measure the same variable, as follows:

Level of Honesty = 1 - ((number of questions that the subject reported as answered correctly - the actual number of questions answered by the subject correctly) / (total number of questions – the actual number of questions answered by the subject correctly).

All subjects were rewarded for the amount reported that he or she had answered correctly, so that everyone has the same motivation to distort information about their results (Maas and Van Rinsum, 2011). To preserve the anonymity of the subjects and they do not feel inhibited when reporting their outcome, these were not asked the name,



but an identification code (Evans et al., 2001; Maas and Van Rinsum, 2011). This was reinforced, making the payment to subjects in a separate room by a different assistant of the responsible of the experiment (Evans et al., 2001).

### 3.1. Manipulation of independent variables

Our independent variables were cognitive orientation and management control systems design. We used the multitrait-multimethod approach recommended by Triandis, Chen and Chan (1998) to measure cognitive orientation. This test combined three instruments to capture the multidimensionality of individualism and collectivism: social content; behavior content (Kim et al., 1994); and the Yamaguchi (1994) collectivism scale adaptation. We communicate to subjects that they must answer the questions based on what they think they would actually do, not on what they think they should do. Some questions that they had to answer were: "Are you the kind of person who is likely take time off from work to visit an ailing friend"; "You show resentment toward visitors who interrupt your work"; or, "You sacrifice self-interest for your parents" (Naranjo-Gil et al., 2012).

Since the questionnaire instruments had different ranges and measurement values, we standardized each instrument score by subtracting the grand mean for all subjects from each individual subject's score and dividing this result by the standard deviation for all subjects (Naranjo-Gil et al., 2012). All standardized score were summed, providing an overall score for each subject.

On the other hand, the manipulation of management control system it was made following Simons (1995). To our knowledge this is the first paper that analyzes empirically the effect of belief and boundary system with using of experiments. Mazar



et al. (2008) used experiments to show that when attention to standards of behavior increases, individuals' dishonesty will decrease. In the first experiment, Mazar et al. (2008) asked subjects to remember the Ten Commandments. On the other hand in the second experiment, the standards of behavior are remembered through an honor code, that is, they asked subjects to sign a statement in which they declare their commitment to honesty before taking part in a task. Although the systems used by Mazar et al. (2008) in order to remember desirable bahavior are not a boundary system or a beliefs system exactly; we could find similarities between them. On one hand, the Ten Commandments, like boundary system, establish clear limits on behavior and they are stated in negative terms. On the other hand, an honor code communicates and reinforces the values that must be adopted, which coincides with the main aim of belief system.

In our experiment, we created a belief control system through a mission statement (Appendix B) and a boundary system control through a code of conduct (Appendix C). In the case of beliefs system we provided the statement mission of Pablo de Olavide University in which were included sentences as: "...with the promotion of solidarity and human values such as honesty and justice" or "University hopes to form an honest, tolerant and responsible university community". A statement mission is a way to create and communicate a formal beliefs system (Simons, 1995). In this document are defined the values, purpose and directions of the university, main characteristics of a beliefs systems that Simons (1995) defined. In contrast, in the case of boundary system we provided the duties of students in the Pablo de Olavide University, some of these duties are: "Students should not neglect or harm the conservation of heritage and university funds" or "Students must not use or cooperate in fraudulent procedures in the evaluation tests in the work being undertaken or in official



documents of the university". This document tell to students what they do not have to do, that is, these rules establish clear rules on behavior and it stated in negative terms, which are key characteristics of a boundary systems according to Simons (1995).

#### 4. Results

#### 4.1. Descriptive Statistics and Manipulation Checks

Data acquired through the post-experimental questionnaire shows that subjects had a good understanding of the procedures and that the manipulations were successful. Subjects understood that they would be paid by the number of reported questions; regardless of actual number of correct answers and that this communication would be anonymous. The average score of these items is 3.98 and 4.70, respectively, on a scale on 1 to 5.

The manipulation check of belief systems was carried out by four items. The results indicate that the mission statement of the university defines basic values, purpose and direction of it (3.92, SD = 1,050), these are defined in positive terms (4.37, SD = 0.675) and that it does not specify the behavior that the student must have (2.37, SD = 1.384) neither limit the behavior of the same (1.55, SD = 1.005).

On the other hand, the manipulation check of boundary systems was carried out by other four items. From the results we can conclude that the responsibilities statement of the students set limits on their behavior (3.66, SD = 0.936) and are defined in negative terms (3.24, SD = 1.455).

Table 1 provides the descriptive statistics. Honesty in reporting measures the degree to which subjects are not willing to exaggerate their results, taking into account their actual scores. It is calculated as 1 minus the overstatement of individuals divided



by the maximum number of questions minus their actual score. The mean value of honesty in reporting is 73.43 percent. This value is lower under a boundary system (70.72%, SD=0.387) than under a beliefs (75.49%, SD=0.280). The lowest value is showed under boundary system when subjects were female (63.37%, SD=0.402) and the most under boundary system too, but when subject were male (78.6%, SD=0.368). In general, the data shows that woman (71.93%, SD=0.332) were less honest in reporting than men (75.28%, SD=0.329). In spite of this, depends on the management control system the average of honesty in reporting is higher when subjects were male or female. Under a beliefs system, woman (77.76%, SD=0.269) were more honest in reporting than men (72.38%, SD=0.301), but under a boundary system, men were more honest in reporting (78.6%, SD=0.368). However we did not find any significant differences.

	BELEIEFS SYSTEM			BOUNDARY SYSTEM			TOTAL		
	MALE	FEMAL	TOTAL	MALE	FEMAL	TOTAL	MALE	FEMAL	TOTAL
	(N=16)	E (N=22)	(N=38)	(N=14)	E (N=15)	(N=29)	(N=30)	E (N=37)	(N=67)
HONESTY IN	0.7238	0.7776	0.7549	0.7860	0.6337	0.7072	0.7528	0.7193	0.7343
<b>REPORTING (SD)</b>	(0.301)	(0.269)	(0.280)	(0.368)	(0.402)	(0.387)	(0.329)	(0.332)	(0.329)
YEARS	21.94	21.55	21.71	21.79	20.60	21.17	21.87	21.16	21.48
	(4.203)	(1.711)	(2.977)	(2.155)	(1.957)	(2.106)	(3.350)	(1.849)	(2.631)
MISREPORT	12	14	26	4	8	12	16	22	38
(%)	(75%)	(63.64%)	(68.42%)	(28.57%)	(57.33%)	(41.38%)	(53.33%)	(59.46%)	(56.72%)
MAXMISREPORT	0	1	1	1	0	1	1	1	2
(%)		(4.54%)	(2.63%)	(7.14%)		(3.45%)	(3.33%)	(2.70%)	(2.99%)

 Table 1: Descriptive statistics



Misreport in Table 1 shows the number of subjects who overstate their results and Maxmisreport indicates the number of subjects who reported that they answered correctly the maximum number of questions available (they report that they answered correctly 75 questions). In our experiment 38 (56.72%) people misreported their results, but only 2 (2.99%) reported that their score in the task was 75. This is consistent with previous results found. People are not completely honest, but they are not as dishonest as predicted by pure selfishness (Evans et al., 2001; Hannan et al., 2006 and Rankin et al., 2008). The most percentage of people who misreport their results we found under a beliefs system (68.42%), concretely when the subject were men (75%). However, under a boundary system the lowest percentage is showed when subjects were men (28.57%).

## 4.2. Hypotheses tests

Our first hypothesis states that honesty in performance reporting is lower when individuals have a higher individualist orientation. Table 2 shows The Pearson correlation coefficient, which supports a negative and significant relationship between an individualistic orientation and honesty in performance reporting (-0.248, p<0.05). Therefore, support was found for our first hypothesis.

Table 2: Correlation analysis (N=67)

		Honesty in reporting
Cognitive orientation	Pearson correlation coefficient	-0.248
toward individualism		
	Sig.	0.043



Our second hypothesis states that boundary control system moderate the negative relationship between the level of honesty in reporting and cognitive orientation toward individualism. Hypothesis 2 states that individuals with higher cognitive orientation toward individualism will show lower level of honesty under a boundary system. We calculated Pearson correlation coefficient in each subsample (belief control system and boundary control system).

		Honesty in reporting
Cognitive orientation	Pearson correlation coefficient	-0.354
toward individualism		
	Sig.	0.059

 Table 3: Correlation analysis under boundary system (N=29)

 Table 4: Correlation analysis under a belief system (N=38)

		Honesty in reporting
Cognitive orientation	Pearson correlation coefficient	-0.147
toward individualism		
	Sig.	0.379

Results show that this relationship is negative and significant under a boundary system (-0.354, p<0.10) (table 3). We found that the negative relationship between individualist cognitive orientation and honesty in reporting was more negative under a boundary system. On the other hand, results also show a negative but non significant relationship between individualist cognitive orientation and honesty in reporting under a beliefs



control system (-0.147, p>0.1) (table 4). Therefore, we found support to our second hypothesis. A boundary system, rather than a beliefs system, moderates the negative relationship between individualist cognitive orientation and honesty in reporting, so that individualists will show lower honesty in performance reporting under a boundary system.

### 5. Discussion and Conclusions

In this study we analyzed how individuals' cognitive orientation influences the level of honesty of individuals when they report their results. We also analyzed the moderating effect of management control systems on the relationship between cognitive tendency and honesty in performance reporting. We use Simons' framework (1995) to analyze the design of management control system. In this line, we extend the levers of Simon's framework to individual reporting behavior in organizations, rather than strategic control. We analyze how beliefs system and boundary system could influence on opportunistic behaviors, such as dishonesty of individuals when they report their results. With this study we contribute to the demand which exist in the accounting literature on what factors influence the honesty and how different systems to conventional monetary incentives influence the honest behavior of individuals when they report their results (Evans et al., 2001).

Our results support generally our hypotheses. We found that an individualistic cognitive orientation affect negatively the level of honesty in performance reporting. Furthermore, we also found that this relationship is moderated by a boundary design of management control design rather than by a belief control system. The use of a boundary system, it increases the negative influence of individualist orientation on



honesty in performance reporting. Due to the fact that limits setting by boundary system can impose constraints on freedom, a boundary system produces feelings of psychological reactance in individualists, which will reduce honesty in performance reporting. On the other hand, beliefs system does not moderate the relationship between cognitive orientation and honesty in performance reporting. Although individuals with higher cognitive orientation toward individualism were informed about values, purposes or direction of the organization, they prioritize their own interest above the goals of the organization.

Mazar et al. (2008) found that when individuals remember the standards of behavior and compare them with their own behavior, individuals' dishonesty will drop. However, in our experiment we show that not all individuals behave in the same way. We found that the tendency of individuals to avoid making untrue factual assertion, despite explicit or implicit incentives to the contrary, depends on individuals' cognitive orientation. Mazar et al. (2008) showed that when subjects remember the Ten Commandments, which establish clear limits in behavior, honesty will increase. On the other hand, we found that the reminder of desirable or standards behaviors through a restrictive system, such as boundary system, will have negative consequences for individuals' honesty when they are individualists. These results could seem contradictory. However, our different results could be due to the consideration in our study of the individuals' cognitive orientation. In this line, we could conclude that the restrictive systems could have or not negative effects on individuals' honesty depending on cognitive orientation of them. However, further research is necessary about under what circumstances a restrictive system, such as a boundary system, could arouse individuals' dishonest behavior.



On the other hand, our results are in line with recent research that show that individuals do not misrepresent their results in the extent predicted (Matuszewski, 2010). This implies that people do not only value their own material payoffs. Future research should take into account these implications because, as suggest other studies (Fehr and Fischbacher, 2002; Hannan, 2005) incentives and control systems are not always optimal if they are designed based on the assumption that people only care their own gain and that they act opportunistically to maximize their profits (Rigdon, 2009). Future research should also focus on how social preferences, such as complying with established value systems, and not only monetary incentives, influence the behavior of individuals.

Our findings also have practical implications. Managers and controllers should consider the predominant cognitive orientation of individuals when they design the management control system. They should consider that control systems which impose coercive constraints encourage feelings of psychological reactance.

At the same time, our study has several limitations, apart from those inherent to the experiment methodology, such as generalizability to a real-world setting. In our experiment we did not set any punitive sanction for the non-compliance of such rules. In setting difficult targets and linking rewards with performance create pressures for people to act in ways that superiors would deem inappropriate (Simons, 1995). Boundary system warns that some types of behaviors or activity will not be tolerated (Simons, 1995). However, boundary system cannot be effective without credible sanctions (Coleman, 1990). Future research could analyze the effectiveness of the boundary system when it is accompanied by penalties for breaching the rules of that system of control.



More research, both theoretical and empirical, is required in order to analyze the influence of design of management control system on opportunistic behaviors. Furthermore, empirical studies which analyze the relationship between psychological reactance and boundary system could complement the results of our study.

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## **APPENDIX A: EXPERIMENTAL INSTRUCTIONS**

Please read the following instructions in the next 5 minutes. If you have any doubts, ask the people responsible for the activity.

**TASK:** The task consists of answering multiple-choice questions. The set of questions is composed of a wide variety of categories such as math, language, questions of logic and general knowledge.

- There is a maximum of 75 questions to be answered.
- You start at question 1 and move to the next question by clicking the OK button.
- You cannot go back.
- Each question has 4 possible answers, of which only one is correct.
- You can also choose not to answer a question and directly move to the next question.
- For each question, you have exactly 20 seconds to provide your answer. After these 20 seconds you automatically go to the next question, even if you did not yet provide an answer.
- You have a total of 10 minutes to complete the task. After these 10 minutes are over, the task finishes automatically, even if you did not yet answer all 75 questions.
- After the task is finished, the computer calculates the number of correct answers.

**<u>PAYOFF</u>**: The reward you receive will depend on the results of the work done in this activity.

**PROCEDURE:** You must answer the most questions in the given time. After the task is complete, the computer calculates the number of correct answers you have obtained. Then you should send a message to the central computer to report the number of correct



answers. This central computer will calculate your final payment and send a message to the computer that you occupy informing you of the reward you receive for participating in this activity. After you know about your reward, you will be asked to fill in a questionnaire.

The score you get will not be known by other participants. The researchers responsible for this activity or any other person cannot, addition, join the responses to any particular individual, due to the fact that you will be identified by a code and not by your name.



## **APPENDIX B: BELIEFS SYSTEM**



## MISSION

As an educational space for higher education, the University Pablo de Olavide is in the service of society and is defined as a place of reflection and critical thinking committed to contributing to progress, with the teaching of respect for fundamental rights and civil liberties with the promotion of solidarity and human values such as honesty and justice, and the response to the needs and problems of contemporary society. The University will seek the widest social projection of its activities, by establishing the channels of cooperation and assistance to the society to contribute and support the social, economic and cultural. University hopes to form an honest, tolerant and responsible university community, capable of caring for and ensure the conservation of heritage and university funds.



## **APPENDIX C: BOUNDARY SYSTEM**



## **DUTIES OF STUDENTS**

- a) Students should not disobey the laws in force, the Statutes, regulations and other rules that implement them.
- b) Students should not violate on their academic obligations, contributing their efforts to the quality of public university education.
- c) Students must not violate the participation in the electoral process led to the election of their representatives.
- d) Students should not disregard the responsibilities of the positions for which they had been selected and appointed.
- e) Students should not irresponsibly participate in assessment processes of educational activities and services.
- f) Students should not neglect or harm the conservation of heritage and university funds.
- g) Students should not disparage, insult or belittle the members of the university community, the staff of the collaborating or who providing services at the university.
- h) Students must not use or cooperate in fraudulent procedures in the evaluation tests in the work being undertaken or in official documents of the university.
- i) Students should not affect the improvement of the purposes and operation of the university.