THE HIDDEN BENEFITS OF CONTROL: THE EFFECT OF PEER COMPETITION ON EMPLOYEE RESPONSES TO RESTRICTIVE CONTROLS

A Dissertation
Presented to
The Academic Faculty

by

Jordan Samet

In Partial Fulfillment
of Requirements for the Degree
Doctor of Philosophy in Accounting in the
Scheller College of Business

Georgia Institute of Technology
May 2020

THE HIDDEN BENEFITS OF CONTROL:
THE EFFECT OF PEER COMPETITION ON EMPLOYEE RESPONSES TO RESTRICTIVE CONTROLS

Approved by:

Dr. Jeffrey Hales, Advisor
McCombs School of Business
The University of Texas at Austin

Dr. Shankar Venkataraman
McCallum Graduate School of Business
Bentley University

Dr. Xi (Jason) Kuang
Scheller College of Business
Georgia Institute of Technology

Dr. Robbie Moon
Scheller College of Business
Georgia Institute of Technology

Dr. Kristy Towry
Goizueta Business School
Emory University

Dr. Eric Condie
Scheller College of Business
Georgia Institute of Technology

Dr. Kathy Rupar-Wang
Scheller College of Business
Georgia Institute of Technology

Date Approved: [November 15, 2019]

AKNOWLEDGEMENTS

I am profoundly thankful for the guidance I received from my advisor Jeffrey Hales and my dissertation committee members Eric Condie, Xi (Jason) Kuang, Robbie Moon, Kathy Rupar, Kristy Towry, and Shankar Venkataraman. In addition, I would also like to thank Joe Burke, Jeremy Douthit, Kathryn Holmstrom, Michael Majerczyk, Di Yang, and Jacob Zureich for their helpful comments as well as workshop participants at the Georgia Institute of Technology, University of Amsterdam, Tulane University, University of Pittsburgh, University of Nevada Las Vegas, University of Iowa, University of Alberta, University of Washington, University of Illinois at Urbana-Champaign, Western University, and the 2018 GRACE Conference at Emory University. I am also forever indebted to Philipp Chapkovski and Tommaso Batistoni for their programming assistance.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUMMARY

Managers must decide whether to grant their employees the freedom to make their own choices or to restrict their employees' decision rights by proscribing specific actions, behaviors and decisions. Prior research finds that employees perceive restrictive controls as a signal that their manager does not trust them to behave appropriately. While this might be true sometimes, I argue that an employee's belief as to why a restriction was imposed could depend on contextual factors, such as how competitive the workplace is. Specifically, I predict that, compared settings where there is little peer competition or the competition is not salient, experiencing stronger peer competition will push employees to view a restrictive control through a lens of how it affects their performance relative to their peers, increasing the likelihood that employees will view a restrictive control as improving fairness. If so, employees might respond positively to the imposition of a restrictive control rather than negatively, as suggested by prior research. The results of a laboratory experiment suggest that employee reactions to a control decision depends not only on the presence of peer competition, but also on the perceived cost incurred by management to impose the control.

CHAPTER 1. INTRODUCTION

Organizations use a myriad of controls and other tools to influence employee behavior, collectively described as management control systems (MCS), to help organizations reach their goals. One important design choice of a MCS is whether to grant employees the freedom to make their own decisions and choose their own actions and behaviors or to **directly** restrict the range of actions, decisions, and behaviors employees may engage in via a restrictive control. For example, a pharmaceutical company could accept their salespersons' reports identifying the number of potential customers they meet with each week. Alternatively, the company could verify their salespersons' reports by using GPS tracking or directly following up with the potential customers (e.g., Puri 2019). This restrictive control would increase the chances of future revenue streams for the organization as well as reduce the risk that a given salesperson fall below their individual sales targets. Nevertheless, a growing body of research suggests that the use of restrictive controls may lead to negative unintended consequences.

Prior research suggests that when managers directly restrict employee behavior, those employees respond in ways that are counterproductive to the organization such as by slacking off, engaging in sabotage, or directly stealing from the organization (e.g., Falk and Kosfeld 2006). Christ (2013) shows that these negative behavioral responses occur when the employee views the control (1) as a mechanism that reduces their own autonomy and (2) as a signal that management does not trust them to behave appropriately otherwise. These behavioral costs to using restrictive controls increase as the coerciveness of the control becomes more explicit (Christ et al. 2008). However, the prior studies identifying

this relationship were conducted under stark settings where there was little to no opportunity (i.e., other organizational context) for employees to view the restrictions as anything other than a signal of distrust. I look to investigate whether an organization feature, the strength or saliency of peer competition, affects how employees view and respond to restrictive controls.

Peer competition is when individuals, at the same hierarchical level, are trying to perform better than each other in a similar or equivalent task. This competition can arise naturally within an organization's culture or can be induced by an organization's performance evaluation system. While the intentional induction of peer competition has been found to affect employee behavior and organizational performance (e.g., Tafkov 2013), it is helpful to understand how peer competition affects the efficacy of other MCS levers. These levers do not exist in a vacuum (Libby, Rennekamp & Seybert 2015), but are part of a network of controls that should work in accord with each other. In this study, I am interested in understanding how the intensity of peer competition affects employee perceptions and reactions to management's decision to use or not use restrictive controls.

I investigate this question using an experiment in which student participants were randomly placed into groups of four, with three assigned to the role of employee and one assigned to the role of manager. The employees generated wealth for the organization (group of four participants) by performing a real-effort task. The employees reported their performance to the manager, which included an opportunity to misreport their own performance to benefit themselves. Before the real-effort task, the manager could choose to restrict employees' reporting behavior ex ante by requiring a completely accurate performance report (i.e. a restrictive control). Finally, after learning the manager's control

decision and reporting their performance, employees had the opportunity to benefit or harm the manager in a follow up real-effort task. I manipulated whether employees earnings depended upon their peer employees' performance in the initial task and whether employees were matched with a manager who chose to enact the restrictive control.

I argue that peer competition shifts employee focus from the manager to their peer employees, causing them to think about how the restrictive control affects themselves in relation to their peers. As a result, in settings where peer competition is quite strong or salient employees will view the restrictive control as more beneficial because the restriction is restricting their peers from overreporting thus increasing the fairness of the competition. In contrast, with weak or low peer competition, employees are less likely to focus on their peer employees, thus are less likely to perceive a benefit from the imposition of a restrictive control. Thus, I predict that, in a follow up task, employees experiencing strong competition will reward their manager more (less) than employees experiencing weak competition when their manager chose to (not) impose a restrictive control.

Results from two experiments largely support my predictions. In the first experiment, findings show that when managers chose to restrict employees, employees under strong peer competition rewarded their manager more in a subsequent task than employees under weak peer competition. However, in the first experiment, all managers elected to deploy the restrictive control (i.e., require a completely honest performance report).

To ensure the findings in the first experiment were a result of peer competition moderating employee responses to the managers' control decision, I conducted a second

experiment with the aim of increasing managers' propensity to choose to NOT impose the restrictive control. To encourage this decision, a fee was assessed to those managers who did choose to restrict employees. This change in the second experiment was successful in encouraging a significant proportion of manager participants to not restrict their employees, thus allowing me to observe the conditions that went unobserved in the first experiment.

In this newly observed condition (i.e., managers choosing not to restrict employees), as predicted, employees under strong peer competition rewarded their manager less than employees operating under weak peer competition. However, when the manager did choose to restrict employees in the second experiment, employee responses were opposite to those under the same manipulation in the first experiment. Specifically, opposite to my prediction, in the second experiment employees under strong peer competition rewarded their manager less than employees under weak peer competition. Incorporating results from both experiments, these findings provide some indication that the fee assessed on managers, in the second experiment, when imposing the restrictive control appears to affect employee behavior. I provide a post-hoc theoretical discussion of this unexpected finding in the Results section.

I contribute to the literature in several ways. First, prior literature investigating the behavioral effects of intra-organizational controls has primarily focused on the cost or downside to using controls. This study adds to the literature by identifying an organizational feature, peer competition, that can cause employees to be more receptive to a restrictive control, thus leading to more positive uncontracted employee behavior. In addition, prior research focuses on how controls affect employee behavior via (dis)trust,

with the general takeaway being when a manager restricts employees, employees see this decision as a signal the manager does not trust them. This study looks to understand how a different other-regarding preference, fairness, affects employee responses to managerial control choices. I find evidence that, under certain circumstances, when employees are under strong competitive settings, a restrictive control may be seen by employees as promoting fairness.

I also contribute to the performance evaluation literature. Prior research indicates that managers should consider features of the task (e.g., systematic noise in the task, sabotage capabilities) when deciding whether and to what degree to utilize relative performance in evaluations. This study suggests organizations should also consider what types of controls they plan to influence employees with when deciding how much to incorporate relative performance in evaluating these employees. In addition, while not a research question of the study, I find evidence that the amount of cost incurred by the organization to impose controls over employees appears to affect employees' perceptions of those controls and their subsequent responses to the managers.

CHAPTER 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Restrictive Controls

A goal of MCS is to gather and distribute information to both influence and facilitate employee behavior (Baiman and Demski 1980). One of these levers is deciding whether to delegate employees the right to make their own decisions and choose their own behaviors and actions or to directly **restrict** these employees' actions via a restrictive control (e.g., Indjejikian and Matějka 2012). Other terms have been used to describe similar forms of controls including *action control* (Merchant and Van der Stede, 2012) and *behavioral control* (Christ et al. 2008). Restrictive controls can take many forms such as requiring specific procedures or processes, monitoring, reviews, and approval requirements. The fundamental goal of these controls is to ensure employees act in the best interest of the organization.

Harris and Raviv (1979) show that such monitoring procedures can provide value if (1) agents are risk averse and (2) the relationship between effort and performance is noisy. However, because a manager(s) decides to impose such a restriction, employees may make attributions about the manager from their decision, potentially influencing employee subsequent actions that affect the manager. Stiglitz (1975) notes that there may be negative consequences to restricting employees, ex ante. An economic argument for this is the idea of employees learning from their experiences. For example, Ichino and Muehlheusser (2008) show that if employees are unable to learn from their mistakes because they were

forced to do the "appropriate" action, employees will not learn **how** to determine what the appropriate action is without prescriptive guidance.

Behavioral models have also suggested that restrictive controls may also lead to negative consequences, specifically via the principal-agent relationship. Frey (1993) suggests that restricting employees can send a signal that the manager does not trust employees to engage in "appropriate" behaviors without the restriction present (also see Sliwka 2007). Given prior evidence and theory showing individuals' preference for being viewed as trustworthy (e.g., Berg, Dickhaut and McCabe 1995), this sense of distrust may lead employees to withhold effort, or more generally respond negatively. This negative response could be achieved in the restricted task by performing the minimum required or via other employee roles that do not have similar restrictions.

Falk and Kosfeld (2006) provide some of the first experimental evidence of this phenomena. Specifically, they find that employees exert less total effort when they are required to put forth a minimum amount of effort versus when no minimum is set, effectively harming the manager who put the minimum in place. Importantly, employees respond this way when the manager actively sets this requirement as opposed to the requirement being randomly imposed, suggesting that employees punish the manager for their decision, and not for the benefit the manager accrues from the control. Interestingly, when there is uncertainty as to who imposed the restriction (i.e., the minimum requirement), employees tend to give the benefit of doubt and not hold the potential culprit (i.e., the manager) accountable (Christ 2013). This suggests that as firms dissociate the decision to control employees from a specific manager or individual, counterproductive employee behavior may be somewhat reduced.

In addition, prior theory suggests that when such restrictions are placed over a larger number of individuals perceptions of distrust may dissipate. The theory argues that a given employee is likely to attribute the control decision to the manager distrusting their peers, or at least the group as a whole on average, instead of distrusting the employee in question, via a self-serving bias (e.g., Mezulis et al. 2004). However, Garrett (2017) finds that individuals still reduce effort whether a group of employees or just an individual employee are restricted at a time intimating that egocentrism can sometimes overpower self-serving attributions in organizational control settings. Thus, the extant literature seems to suggest that as long as an identifiable manager is choosing to impose the restriction, employees will react negatively, regardless of the breadth of the restriction.

2.2 Peer Competition

Peer competition, sometimes referred to as horizontal competition (e.g., Luft 2016), is when individuals strive to outperform others at the same hierarchical level in an equivalent or similar task. Peer competition can be induced explicitly by an organization's MCS and/or performance evaluation system. For example, a manager can choose to award a bonus to the salesperson with the most sales dollars in a set period of time (i.e., a tournament incentive scheme). Alternatively, peer competition can develop naturally in organizations wherever resources or opportunities are saliently limited. For example, organizations often compare peer employees in selecting individuals for promotion or compare project proposals to determine which project to allocate limited capital resources to (Luft 2016).

Peer competition has been found to increase employee effort by harnessing individuals' risk aversion. Specifically, because employee rewards, monetary or otherwise, are determined not only by their own performance but also by the performance of their peers, an uncontrollable factor, employees exert more effort to increase their chances of accruing the reward (Lazear and Rosen 1981; van Dijk, Sonnemans, and van Winden 2001; Avrahami et al. 2017). However, it has been shown that this greater effort due to risk aversion may come at a cost as employees may channel this effort towards overly risky task strategies (e.g., Hannan, Krishnan, and Tafkov 2008) or efforts to sabotage their fellow peer employees (e.g., Harbring and Irlenbusch 2011).

Peer competition also leads to increased effort because employees are driven by the innate motive to outperform others, as described by social comparison theory (e.g., Hannan et al. 2013), because the comparison of one's performance, relative to their peers, can help improve one's self-concept (e.g., Tafkov 2013). For example, regardless of economic incentives, Brown et al. (2014) show that employee reporting behavior in a budgeting task varies depending what dimension of performance they are ranked upon: firm performance versus individual performance.

Thus, as described by social comparison theory, when peer competition is strong or made salient, employees will focus on their peer competitors to a greater extent because they are trying to acquire information that will allow them to determine their own relative performance in the hopes of improving their self-concept. I suggest that, because of this social comparison effect and subsequent focus on their peers, when other management control levers are implemented within a highly competitive setting, employees are more

likely to perceive these control devices through the lens of how the control affects their expected relative performance in the peer competition.

Considering a saliently competitive setting where employees are not restricted, employees may be concerned that their peers would engage in behaviors that give them a potentially unfair advantage in the competition. For example, imagine a setting where employees are competing on performance and each employee has private information regarding their own performance. Employees would likely be concerned that their peers will exaggerate the extent of their own performance, thus putting the employee in question at a disadvantage, without that employee exaggerating themselves.

A manager could choose to utilize a restrictive control in this setting by requiring all employees to report only their true performance. To work, this control would need to reduce the amount of private information between manager and employee. For example, managers could require supporting documentation, validation from other parties, or directly observe employee actions to verify the reported performance. Even if the employee's private information is itself somewhat noisy, management could use restrictive controls to ensure the report of that performance is less biased. For example, if a project manager is reporting the percentage completed on a long-term project, management could employ a cost engineer to complete an independent evaluation of the percentage of the project completed, thus reducing the degree of private information and reducing the opportunity for a biased report from the project manager.

I suggest that in such a setting with strong competition, employees are more likely to believe/infer that a manager who chose to use such a restrictive control did so because

the manager wanted to increase the procedural fairness of the peer competition. Procedural fairness is the degree to which an individual believes the procedures used to determine an outcome are appropriate, both in design and operation (Colquitt 2001).

Employees are likely concerned with whether their peer employees would exaggerate their own performance thus harming the employee in question. Thus, employees are more likely to prefer a restriction over performance reporting, even one that restricts their own reporting behavior, to ensure the competition operates on an "even" playing field. In addition, prior research has shown that individuals prefer procedural fairness even if they do not directly benefit from it (e.g., Greenberg 1986), suggesting that even if a restrictive control is perceived to hurt an employee's chances at a successful outcome, they may still appreciate the increased fairness in procedures.

However, if there is weak peer competition, employees are less likely to focus on their peer employees as they are less likely to use that information to evaluate their own self-concept. Thus, employees under weak competitive settings are less likely to perceive managerial control devices through a lens of how the control affects themselves relative to their peers. As a result, employees are less likely to believe a manager chose to use the restrictive control to increase fairness. Therefore, I hypothesize:

> H1: Employees are more likely to view restrictive controls as increasing fairness when they are in strong competitive settings than when they are not.

> H2: Employees are more likely to attribute the imposition of restrictive controls to a manager's concern for fairness when they are in strong competitive settings than when they are not.

2.3 Employee Reciprocity

Positive reciprocity is doing a kind act for someone who intentionally did something to help you, while negative reciprocity is doing an unkind act for someone who intentionally did something to harm you (e.g., Hannan 2005, Rabin 1993, Cox and Deck 2005). By definition, acts of reciprocity are voluntary, driven by an individual's desire to repay the kind or unkind act. In an organizational setting, motivations and actions based on reciprocity are an economically relevant factor as few workspaces are completely contractible. Reciprocity becomes more pertinent the less complete employee contracts are, or more simply, as MCS's become less thorough, reciprocity has a greater impact on organizational outcomes.

Acts of reciprocity are driven not just by whether the initial act is helpful or harmful, but also whether the act is perceived to have been intended to help or harm the recipient. What I suggest above is that the same action of a manager, imposing (or not imposing) a restrictive control over employees, is perceived to be driven by different motives depending on whether peer competition is strongly salient or not. Specifically, when peer employees are under strong competitive settings, employees are more likely to presume the manager's motive for imposing a restrictive control is to make the peer competition fairer. As a result of these attributions of the manager's control decision, I expect employees operating under strong peer competition to positively reciprocate to a greater degree towards a manager who chose to impose a restrictive control than a manager who chose not to impose a restrictive control.

However, when employees are operating under weak peer competition, the above relationship should dissipate as a result of the reduced perceived relevance of fairness between peers. It is also possible that the relationship could reverse. When employees are under weak competitive settings or the competition is not a salient aspect of the workplace, employees are more likely to make different attributions regarding a manager's motives behind their control decision. As I suggest above, employees are more likely to focus on how the restrictive control affects themselves in relation to how it also affects the manager.

MCS mechanisms are designed and operationalized to ensure employees do what is in the best interest of the organization. In this setting, the restrictive control ensures employees reveal their private information to the benefit of the manager. Since it is within the capabilities of employees to reveal this private information absent the restrictive control, employees are likely to attribute the manager's decision to impose the control to the manager not trusting employees to reveal their private information absent the control (e.g., Christ 2013, Falk and Kosfeld 2006).

Conversely, if the manger chooses to not restrict the employees, employees may attribute this decision to the manager trusting employees. Numerous studies have shown that individuals reciprocate positively when another individual trusts them and reciprocate negatively when another individual distrusts them (e.g., Cox, Kerschbamer, and Neururer 2016, Colquitt, Scott and LePine 2007). Thus, I expect that when peer competition is not salient, employees will positively reciprocate towards a manager who chose not to impose a restrictive control to a greater degree than a manager who chose to impose a restrictive control. Therefore, I hypothesize:

H3a: Employees operating under weak peer competition will positively reciprocate to a greater degree when the manager chose to not impose a restrictive control as compared to when the manager chose to impose a restrictive control.

H3b: Employees operating under strong peer competition will positively reciprocate to a greater degree when the manager chose to impose a restrictive control as compared to when the manager chose to not impose a restrictive control.

CHAPTER 3. EXPERIMENTAL DESIGN AND PROCEDURES

3.1 Experimental Design

I conducted a 2 x 2 (*peer competition* x *restrictive control*) between-subjects experiment with participants randomly assigned into groups of four. Each group member was assigned a role, one member was assigned the role of manager, *Orange Player*, with the remaining three group members assigned the role of employee, *Blue Player*. The neutral terms, *Orange* and *Blue Player* were used in lieu of manager and employee, respectively, to mitigate any effects from connotations associated with the terms manager and employee.[1]

These roles were randomly assigned and were not based on any knowledge, skill, or other individual characteristics, revealed or reported. By doing so, I sought to remove the possibility that participants would perceive others as having earned their position or status. It is likely that perceptions of earned status would affect employee attributions, beliefs and responses to managers and their control implementation decisions. However, this was not part of my research question, so I chose to experimentally remove this aspect by randomly assigning participant to roles.

The study consists of two stages. The first stage includes a real-effort task (i.e. decoding task, explained in detail in the following section) and a reporting task (reporting one's performance from the decoding task). The second stage consists of an additional

[1] For clarity, I use manager(s) and employee(s) throughout the manuscript.

round of the decoding task intended to measure levels of positive or negative reciprocity. Afterwards, participants respond to a post-experimental questionnaire (PEQ).

Each group of four participants was randomly assigned to one of two *peer competition* conditions, either to *strong peer competition* condition or *weak peer competition* condition. In the *weak peer competition* condition employees earned $0.50 for every puzzle **reported** in Stage 1. Thus, in the *weak peer competition* condition employee earnings were independent of their peer employees. Conversely, for those assigned to the *strong peer competition* condition, employee earnings were dependent on peer employee reports. Specifically, in the *strong peer competition* condition the employee who **reported** the greatest number of puzzles solved within each group earned $19.00, while the other two employees in the group each earned $6.00. Thus, while competition can be induced in many ways, I selected to induce it via an explicit tournament-based incentive scheme. To keep the magnitude of incentives approximately equal across conditions while minimizing the salience of competitive cues, I provided those in the *weak peer competition* condition a piece-rate incentive scheme.

Theory and prior evidence suggest that for individuals to hold another accountable for the imposition of a control, it must be completely clear that the other individual chose to implement the control (Christ 2013). As a result, instead of assigning employees to *restrictive control* conditions, I randomly assigned them to groups, and the manager in that group, prior to the decoding task, chose whether or not to impose the restrictive control over employees' reporting behavior (*no restrictive control* vs. *yes restrictive control*). The restrictive control, when imposed, restricted employees to **report** the number of puzzles **solved** in the decoding task completely accurately. When the restrictive control was not

imposed, employees could **report** anywhere between zero and two times (2x) the number of puzzles actually **solved** in the decoding task. I chose to operationalize the restrictive control via a restriction over reporting (i.e., a control to reduce private information). At a construct level, this is consistent with past operationalizations as the restrictive control reduces the options employee can engage in, and the options no longer available to the employee were harmful to the manager and beneficial to the employee in question.

Beyond knowing he/she was in a group with three other individuals, participants had no information about the other participants in their group. Thus, this design allows me to achieve the necessary setting (i.e., a fellow participant making the control decision) while maintaining random assignment of employees to *restrictive control* conditions, by randomly assigning them to managers. In addition, by having no other information beyond what is described above, I ensure there is a greater competitive sentiment in the *strong peer competition* condition.

3.2 Procedures

Participants were recruited via an experimental lab participant pool at a large south-eastern university in the US. In total, 268 undergraduate students participated in one of ten experimental sessions, earning on average $15 including a $5 participation fee. Participants arrived at the lab and were seated at individual computer terminals. The study was run on *oTree*, an open source online software program designed to run interactive studies and experiments (Chen, Schonger, and Wickens 2016). In total, 268 students participated in the study. Of these, 67 were assigned the manager role, and 201 assigned the employee role. One employee participant left the lab prior to completing the study. As

a result, I ended with a sample size of 200 employees. After reading the consent form and agreeing to participate, participants were notified that they were (1) randomly placed into groups of four with other participants in the computer lab and (2) assigned one of two roles: manager or employee.[2]

Groups of four were used for at least three reasons. First, to ensure employees felt they had a reasonable chance at winning the higher wage in the *peer competition present* condition, I did not want groups to be too large. However, one participant per group, the manager, was there to initiate the restrictive control decision thus not providing an observation of employee response. As a result, I wanted to minimize the number of participants used in this role, relative to the employee role. In addition, prior literature investigating the effects of restrictive controls in group settings used a similar group size (e.g., Garrett 2017).

All participants were then provided the rules of the decoding task (e.g., Chow 1983) and engaged in a four-minute practice round. This was to ensure all participants, regardless of role, were familiar with the task that would generate earnings for participants in the study. The decoding task was structured such that individuals were provided (1) a key in which each digit, zero through nine, was matched with a letter of the English alphabet, and (2) a puzzle: a series of randomly ordered 8 digits (0 through 9, with replacement). The goal of the task was to solve as many puzzles as possible in four minutes by submitting the correct sequence of letters corresponding to the puzzle, based on the key. This task was selected because performance is chiefly driven by effort intensity as opposed to individual

[2] The study was approved by the institutional review board at the author's home university.

ability or skill, therefore reducing the potential that individual participants thought themselves or others had an unfair (dis)advantage in the task (Choi, Clark and Presslee 2018). In addition, by using a relatively challenging task where mistakes and errors could be made, I created the opportunity for participants to self-justify overreporting performance.

Participants were provided a counter indicating the number of puzzles they had correctly **solved**, updated instantly during the task, as well as a countdown clock to ensure they were aware of their remaining time. Participants were able to submit incorrect solutions to puzzles and were provided immediate ex-post feedback evidenced by the counter of total puzzles solved not increasing after submitting the puzzle. The instrument did provide some ex ante feedback: participants were (1) alerted if they attempted to submit an incorrect **quantity** of letters (e.g., if they typed in nine letters instead of eight) and (2) inhibited from typing anything but letters into the text space.

After a practice round, participants were provided the procedures and incentives for Stages 1 and 2 of the experiment. First, they learned how both manager and employees earned their compensation in Stage 1. Employee stage 1 earnings depended on which *peer competition* condition their group was assigned (explained in the previous section). Regardless of condition, manager stage 1 earnings increased $1.00 for every puzzle their associated employees **solved** and decreased $0.50 for every puzzle **reported** by their associated employees'. Thus, managers had an economic interest in employees reporting truthfully, giving them some motivation to impose the restrictive control.

All participants were informed that prior to the "live" round of the decoding task the manager would choose whether to implement the *restrictive control*. The restrictive control was labeled "Reporting Rule" in the experiment. This term was used to reduce potential negative effects triggered by using the terms "restrictive" and "control," while "Reporting Rule" seems both descriptive and relatively neutral. If the manager chose to enact the control, each employee was required to **report** the number of puzzles they **solved**. If the manager chose to not impose the control, employees were free to **report** an amount ranging from 0 (zero) up to two times (2x) the number of puzzles they actually **solved**. The manager's *restrictive control* decision would apply to all three employees in his/her group.

The employees were aware the manager was making this decision but would not be informed of the decision outcome until after the "live" round of the decoding task was completed. Employees were informed of the *restrictive control* decision after performing the stage 1 decoding task to ensure reciprocity did not play a role in their stage 1 effort as any positive reciprocity would be conflated with employee self-interested behavior. In addition, employees were informed of the *restrictive control* decision before reporting stage 1 performance to create a strong manipulation of a *restrictive control* (i.e., the control restricts employee behavior prior to employees choosing their behavior). Importantly, the manager could never view the individual employee **reports** but only learned, in aggregate, how employees affected manager earnings. This design choice was made to ensure an employee's decision whether to overreport was not influenced by an external social pressure to be honest.

Participants then learned about the second stage of the study. All participants were informed that each employee would have the choice to either increase, decrease, or not

affect the manager's earnings and that the manager had no recourse or decision-making power to influence the employees' actions in the second stage. Finally, all this information was summarized, and participants responded to comprehension and manipulation check questions. If a participant responded incorrectly to any of the comprehension or manipulation check questions, they were presented with a message indicating why their response was wrong and needed to correctly re-respond to all questions before proceeding with the study.

Employees then participated in the "live" round of the decoding task. After completing the four-minute "live" round, employees were presented with the number of puzzles he/she actually **solved** and learned the manager's *restrictive control* decision. After being reminded of each players earnings function and reiterating what the scenario would be like if the manager had made a different *restrictive control* decision, employees submitted their **reports**.

Employees were then provided the detailed instructions to the second stage of the study, which consisted of a modified version of the Moonlighting Game (Abbink, Irlenbusch, and Renner 2000). Employees were informed that they could affect the manager's earnings by participating in another round of the decoding task. The same task from Stage 1 was used in Stage 2 to minimize participants viewing the two stages as separate settings or experiments. Each employee could elect to have solved puzzles in this additional round either increase or decrease (positive and negative reciprocity, respectively) the manager's earnings by $0.50 a puzzle. Alternatively, they could choose not to participate in the additional round and not affect the manager's earnings at all.

In Stage 2, solved puzzles had no effect on employee earnings. However, to ensure reciprocity was a costly action beyond that of the real effort put forth by employees, time spent participating in the additional round affected employee earnings.[3] Specifically, at the beginning of Stage 2 each employee was endowed with an additional $1. Then, for every three seconds an employee participated in the additional round, $0.01 was deducted from their endowment, such that if an employee participated in the additional round for the maximum time (five minutes), the full $1.00 endowment would be lost. Employees were free to engage in the additional round for as long as they wanted up to the five-minute maximum. Employees were informed that managers would earn at least the $5 participation fee. Thus, employees knew they could not reduce a manager's earnings below $5. However, employees were not aware of the manager's aggregate Stage 1 earnings, creating uncertainty on the net affect any positive or negative reciprocity would have on the manager.

After making their Stage 2 decisions and participating in the additional round of the decoding task, if selected, all participants responded to a post-experimental questionnaire. Finally, participants learned their total earnings broken down by participation fee, stage 1 earnings, and stage 2 earnings and were paid in cash prior to leaving the laboratory.

[3] Since participants had to wait till the experimental session was complete to receive payment, the participants may have viewed their time spent in the lab as a fixed cost. Thus, they may have engaged in the Stage 2 task to pass the time. To ensure that Stage 2 effort was costly, I imposed an explicit cost of time spent in the Stage 2 task.

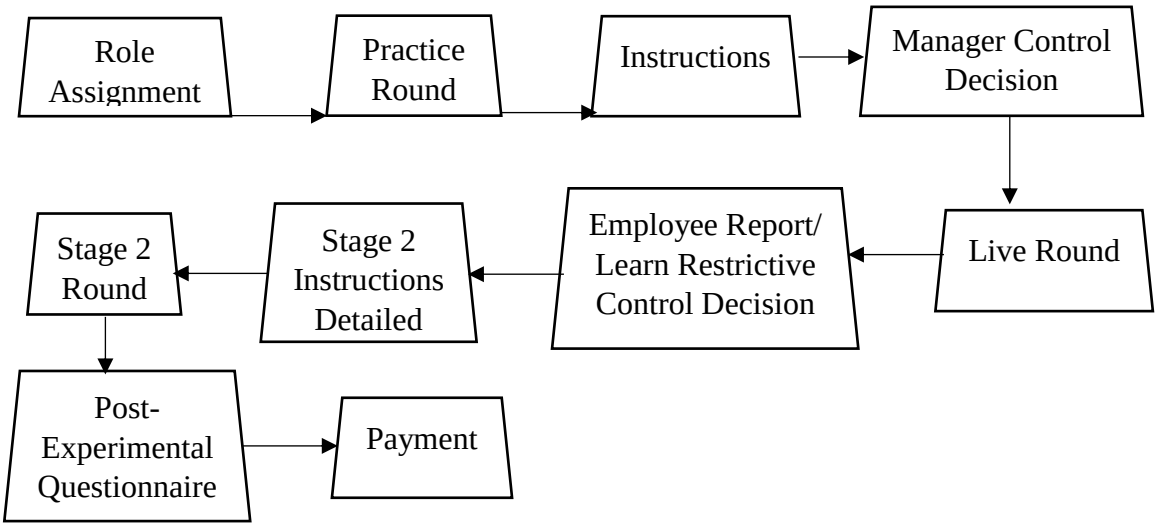

Figure 1: Sequence of Procedures

CHAPTER 4. RESULTS

4.1 Introduction

As noted in the introduction, I ran the study under two different parameters (*cost regime*). In the first experiment, managers could impose the *restrictive control* at no cost (i.e., $0); in the second, managers were assessed a fee of $6 to impose the *restrictive control*. In the $0 *cost regime* all managers chose to impose the *restrictive control*, meaning I only observe two of the intended four conditions under the *$0 cost regime*. Thus, all statistical test under the *$0 cost regime* are testing the simple main effect between *peer competition* conditions under the *yes restrictive control* condition. In the *$6 cost regime*, I observe both *Yes* and *No restrictive control* conditions. However, cell sizes are significantly unbalanced. Therefore, I first present the test of hypotheses within the two *cost regimes*, respectively. I then provide an exploratory comparison across *cost regimes*.

4.2 $0 Cost Regime

4.2.1 Stage 1 Performance

Before testing the hypotheses, I first evaluate whether employee participants solved approximately the same number of decoding puzzles in the first stage of the study. This is to ensure that (1) *peer competition* conditions did not lead to significantly different effort levels and (2) random assignment adequately spread high and low ability individuals across conditions. In untabulated results, Stage 1 decoding task performance did not differ across conditions (11.44 vs. 11.61, p = .850, two-tailed). Thus, I do not find evidence to suggest a difference in effort or ability levels across conditions.

4.2.2 Test of Hypotheses

Recall, H1 predicts *peer competition* will moderate the effect of the manager's *restrictive control* decision on employee fairness perceptions of the control decision, such that employees in the *strong peer competition* condition will perceive the manager's decision **to impose** the *restrictive control* as fairer than employees in the *weak peer competition* condition. To test this, I elicited the following question, "To what extent do you believe this aspect of the study was fair: The Manager's Reporting Rule Decision." arranged as a 7-point likert-type question ranging from "Very Unfair" to "Very Fair." The responses were coded from -3 to +3, respectively. As predicted, employees in the *strong peer competition* condition found the manager's decision to impose the *restrictive control* to be (marginally) fairer than those in the *weak peer competition* condition, (Table 1, Panel B, t = -1.477, p = .075, one-tailed).

Table 1: Experiment 1 – Cost Regime = $0, Perceived Fairness of Restrictive Control Outcome

Panel A: Descriptive Statistics

		Cost Regime = $0	
		Restrictive Control Decision	
		Yes	No
Peer Competition	Weak	-0.61 [1.50] N = 18	
	Strong	0.22 [1.86] N = 18	

Table 1 (continued): Experiment 1 – Cost Regime = $0, Perceived Fairness of Restrictive Control Outcome

Panel B: Peer Competition | Restrictive Control Decision = Yes

	df	t-stat	p-value
Peer Competition	34	-1.477	**.075**

*Bold p-values represent 1-tailed test

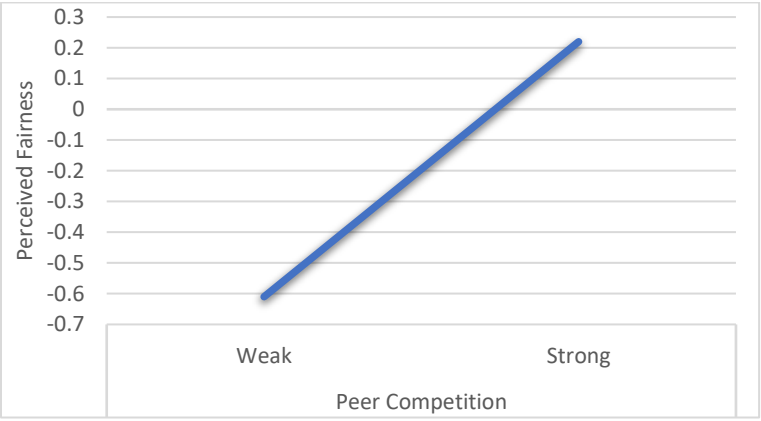

Figure 2a: $0 Cost Regime - Perceived Fairness of Restrictive Control Outcome

H2 goes on to predict that *peer competition* will moderate the effect of the manager's *restrictive control* decision on employee attributions as to why the manager made their *restrictive control* decision, such that employees in the *strong peer competition* condition will infer that the manager's decision **to impose** the *restrictive control* was motivated more so by fairness concerns than those in the *weak peer competition* condition. To test this, I elicited the following question, "How much do you think the Orange Player was concerned with how fair the study was?" arranged as a 7-point likert-type question ranging from "None at all" to "A great deal." The responses were coded from -3 to +3,

respectively. Counter to my prediction, those in the *weak peer competition* condition believed their manager was more concerned with fairness than those in the *strong peer competition* condition, however, this difference was not statistically significant (Table 2, Panels A & B). Therefore, while I find marginal evidence that employees in the *strong peer competition* condition view the imposed *restrictive control* more so as a mechanism of fairness, they do not attribute this improvement to the manager or their motivations.

Table 2: Experiment 1 – Cost Regime = $0, Attribution of Manager's Fairness Motivation for Restrictive Control Decision

Panel A: Descriptive Statistics

		Cost Regime = $0	
		Restrictive Control Decision	
		Yes	No
Peer Competition	Weak	-0.06 [1.92] N = 18	
	Strong	-0.56 [2.23] N = 18	

Panel B: Peer Competition | Restrictive Control Decision = Yes

	df	t-stat	p-value
Peer Competition	34	0.720	**.762**

*Bold p-values represent 1-tailed test

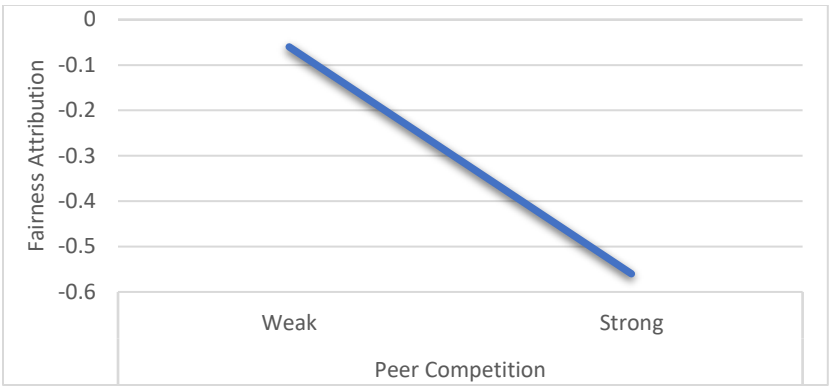

Figure 2b: $0 Cost Regime - Attribution of Manager's Fairness Motivation for Restrictive Control Decision

As a result of the increase in perceived fairness from the imposition of the *restrictive control* in the *strong peer competition* condition, H3b predicts that employees in the *strong peer competition* condition will positively reciprocate toward their manager to a greater degree than those in the *weak peer competition* condition. To test this, I use the number of puzzles employees solved in the second stage of the study. Recall, in Stage 2 employees could choose to increase or decrease manager earnings by solving puzzles in an additional round of the decoding task. Employees could also choose to do neither and not affect manager's earnings. Puzzles solved to increase (decrease) manager earnings were coded as positive (negative) values. Employees who chose to not affect manager earnings by not participating in the Stage 2 decoding task were assigned a value of zero (0) for this measure. As predicted employees in the *strong peer competition* condition positively reciprocated to a greater degree than those in the *weak peer competition* condition (Table 3, Panel B, $t = -3.258$, $p = .001$, one-tailed), providing support for H3b.

Table 3: Experiment 1 – Cost Regime = $0, Reciprocity

Panel A: Descriptive Statistics

		Cost Regime = $0	
		Restrictive Control Decision	
		Yes	No
Peer Competition	Weak	-2.33 [5.05] N = 18	
	Strong	3.44 [5.76] N = 18	

Panel B: Peer Competition | Restrictive Control Decision = Yes

	df	t-stat	p-value
Peer Competition	34	-3.258	**.001**

*Bold p-values represent 1-tailed test

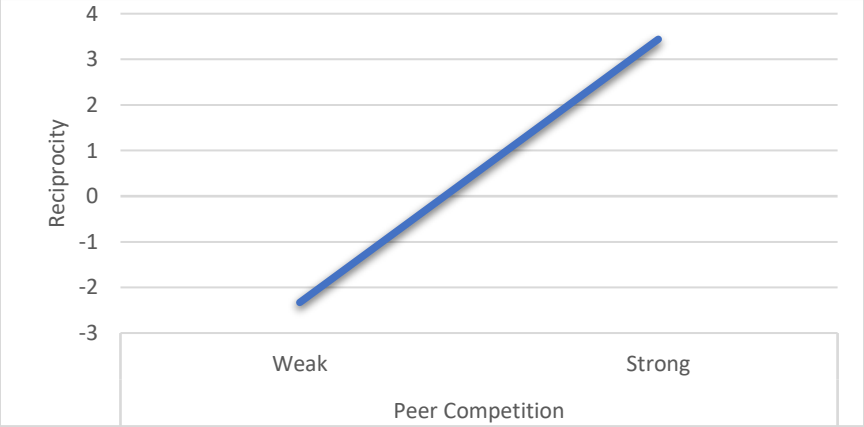

Figure 2c: $0 Cost Regime - Reciprocity

While there does not appear to be any difference in decoding task ability between conditions, it is possible that individuals with greater ability in the decoding task could solve more puzzles in the second stage of the study, and this ability may be associated with levels of reciprocity. To address this, I construct an additional measure of reciprocity in an attempt to control for differences in ability. Specifically, I take the number of puzzles solved in the second stage of the study (*Reciprocity*) and divide it by the number of puzzles solved in the first stage of the study, generating a measure of reciprocity scaled on each employee's ability (*Reciprocity Ratio*). While I suggest Stage 1 performance is primarily driven by effort intensity, I believe this is the best proxy for task ability that I have available in the study. Specifically, I believe Stage 1 performance is more informative than the practice round performance as practice round performance is likely noisy due to participants learning how to perform the task and developing a strategy that works for them. As predicted, Employees in the *strong peer competition* condition positive reciprocated to a greater degree than those in the *weak peer competition* condition (Table 4, Panel B, $t = -3.265$, $p = .001$, one-tailed), again providing support for H3b.

Table 4: Experiment 1 – Cost Regime = $0, Reciprocity Ratio

Panel A: Descriptive Statistics

		Cost Regime = $0	
		Restrictive Control Decision	
		Yes	No
Peer Competition	Weak	-0.198 [0.436] N = 18	
	Strong	0.288 [0.457] N = 18	

Panel B: Peer Competition | Restrictive Control Decision = Yes

	df	t-stat	p-value
Peer Competition	34	-3.265	**.001**

*Bold p-values represent 1-tailed test

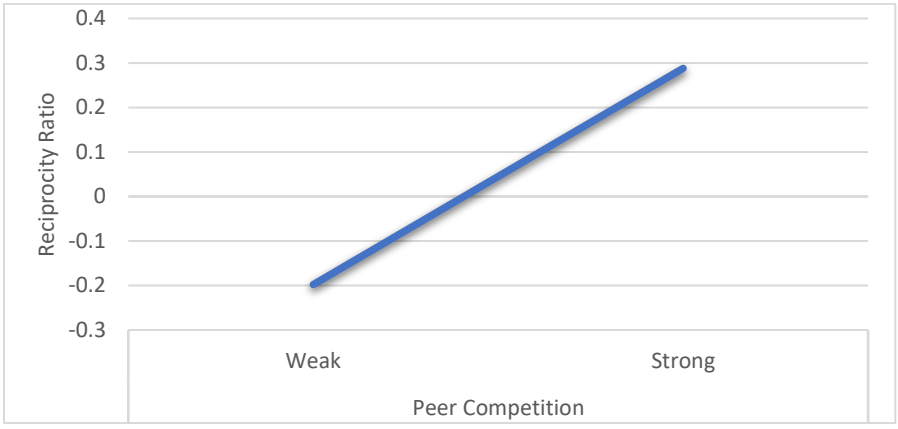

Figure 2d: $0 Cost Regime - Reciprocity Ratio

In total, these results suggest that employees respond more positively to a manager's decision to impose a restrictive control when employees are under strong peer competition versus weak peer competition, because the restrictive control increases perceived fairness, even though the employees do not believe the manager's decision was motivated by fairness. I am also interested in how employees react to a manager decision to **not** impose a restrictive control. However, in the first experiment, no managers make this choice and thus I was unable to fully test H1 and H2, nor test H3a at all. To address this, I ran the study again under modified parameters in an attempt to observe both conditions of the *restrictive control* decision.

4.3 $6 Cost Regime

My goal in running the study under modified parameters was to observe approximately equal observations of *yes* and *no restrictive control* conditions. Recall, each manager chooses whether to impose the restrictive control over their employees. To encourage more managers to choose *no restrictive control* I made two modifications. First, managers were assessed a fee if they chose to impose the restrictive control ($6); this information was known to all participants. In addition, I also expanded the initial instructions detailing how employees could affect manager earnings in Stage 2.

The modifications did increase the rate of managers choosing *no restrictive control*. Specifically, 78% (22%) of managers chose to not impose (impose) the restrictive control under the *$6 cost regime*. Ex ante, I did not expect these modifications to have a moderating effect on employee fairness perceptions and reciprocity behavior. However, this expectation did not hold.

4.3.1 Stage 1 Performance and Reporting

Again, I evaluate whether employees solved approximately the same number of decoding puzzles in the first stage of the study. To test this, I run an OLS regression with two fixed factors: *peer competition* and *restrictive control*. In untabulated results, I find no significant main effects or interaction. Therefore, there I find no evidence to suggest employee ability or effort differed between manipulated conditions.

I also compare the rate at which employees over-reported their Stage 1 performance. This comparison only includes employees in the *no restrictive control* conditions because those in the *yes restrictive control* conditions did not have the opportunity to misreport. I do not make an explicit hypothesis, but it is likely individuals in the *strong peer competition* condition would misreport to a greater degree than those in the *weak peer competition* condition because of the additional competition-based motivations. To test this, I construct a measure of actual misreporting divided by the total amount an individual could potentially misreport (*Misreport %*). While employees in the *strong peer competition* condition do misreport to a greater degree, the difference does not reach conventional levels of statistical significance (untabulated: 0.696 vs. 0.755, t = -.777, p = .439, two-tailed).

4.3.2 Test of Hypotheses

Recall, H1 predicts that employees under the *strong peer competition* condition will perceive the manager's decision to impose (not impose) the restrictive control as fairer (less fair) than employees in the *weak peer competition* condition. Per Table 5, Panel A and B, the pattern of results do not match my prediction. First, perceived fairness does not

differ across *peer competition* conditions in the *no restrictive control* condition. Second, and surprisingly, employees view the manager's decision to **impose** the *restrictive control* as fairer in the *weak peer competition* condition as compared to *strong peer competition* condition. While this simple main effect does not reach conventional levels of significance, the means are in the opposite direction of my prediction and opposite of those found under the *$0 cost regime*. In addition, similar to the first run of the experiment, I do not find results consistent with H2 (see Table 6, Panel A and B).

Table 5: Experiment 2 – Cost Regime = $6, Perceived Fairness of Restrictive Control Outcome

Panel A: Descriptive Statistics

		Cost Regime = $6	
		Restrictive Control Decision	
		Yes	No
Peer Competition	Weak	0.92 [1.68] N = 12	1.12 [1.55] N = 69
	Strong	0.25 [2.05] N = 24	1.39 [1.47] N = 59

Panel B: Peer Competition x Restrictive Control Decision

	Coefficient	Std. Err	t-stat	p-value	Conf. Interval
Peer Competition	0.274	.286	0.96	0.340	(-0.291, 0.839)
Restrictive Control	-0.199	.505	-0.39	0.693	(-1.196, 0.797)
Interaction	-0.941	.638	-1.47	0.142	(-2.201, 0.320)
Intercept	1.116	.194	5.75	<0.001	(0.732, 1.500)

*Bold p-values represent 1-tailed test

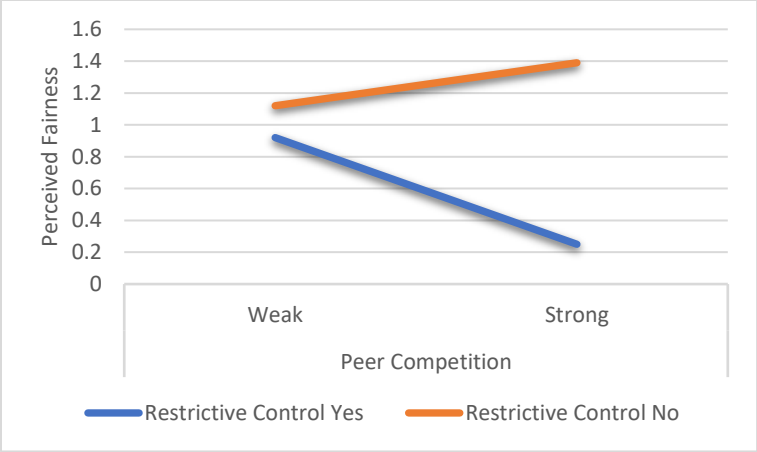

Figure 3a: $6 Cost Regime - Perceived Fairness of Restrictive Control Outcome

Table 6: Experiment 2 – Cost Regime = $6, Attribution of Manager's Fairness Motivation for Restrictive Control Decision

Panel A: Descriptive Statistics

		Cost Regime = $6	
		Restrictive Control Decision	
		Yes	No
Peer Competition	Weak	0.17 [2.52] N = 12	0.72 [1.77] N = 69
	Strong	0.17 [2.08] N = 24	0.83 [1.66] N = 59

Panel B: Peer Competition x Restrictive Control Decision

	Coefficient	Std. Err	t-stat	p-value	Conf. Interval
Peer Competition	0.106	.327	0.32	0.746	(-0.539, 0.751)
Restrictive Control	-0.558	.576	-0.97	0.334	(-1.696, 0.580)
Interaction	-0.106	.729	-0.15	0.885	(-1.545, 1.333)
Intercept	0.725	.222	3.27	0.001	(0.287, 1.163)

*Bold p-values represent 1-tailed test

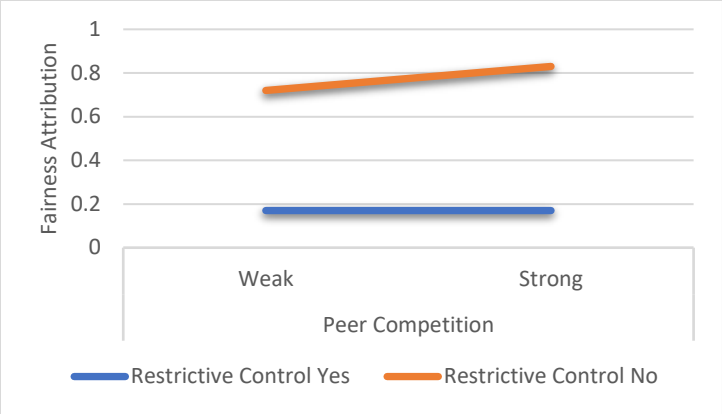

Figure 3b: $6 Cost Regime - Attribution of Manager's Fairness Motivation for Restrictive Control Decision

H3a predict that employees will positively reciprocate more under *weak peer competition* as compared to the *strong peer competition* condition within the *no restrictive control* condition. As a reminder, this hypothesis was untestable under the *$0 cost regime* as all managers chose to impose the restrictive control. H3b predicts that this behavior should flip when the restriction is **imposed**: those in the *strong peer competition* condition will positively reciprocate more as compared to those in the *weak peer competition* condition, as was observed within the *$0 cost regime*. Since in summation H3a and H3b suggest an interaction, I first run an omnibus test with a 2x2 full factorial OLS regression, and then test each hypothesis individually with a t-test.

Per Tables 7 and 8, Panel B, the OLS omnibus regression analysis shows no significant interaction effect. Surprisingly, there is a marginally significant main effect: employees in the *weak peer competition* condition positively reciprocated to a greater extent as compared to those in the *strong peer competition* condition, regardless of whether

or not the *restrictive control* was imposed. While I do not find support for the combined prediction of H3a and H3b, I go on to test each hypothesis separately.

Table 7: Experiment 2 – Cost Regime = $6, Reciprocity

Panel A: Descriptive Statistics

		Cost Regime = $6	
		Restrictive Control Decision	
		Yes	No
Peer Competition	Weak	2.25 [5.46] N = 12	2.09 [5.28] N = 69
	Strong	-0.87 [5.58] N = 24	0.53 [4.90] N = 59

Panel B: Peer Competition x Restrictive Control Decision

	Coefficient	Std. Err	t-stat	p-value	Conf. Interval
Peer Competition	-1.562	.923	-1.69	0.093	(-3.384, 0.261)
Restrictive Control	0.163	1.628	0.10	0.920	(-3.051, 3.378)
Interaction	-1.563	2.058	-0.76	0.449	(-5.628, 2.502)
Intercept	2.087	.626	3.33	0.001	(0.850, 3.324)

*Bold p-values represent 1-tailed test

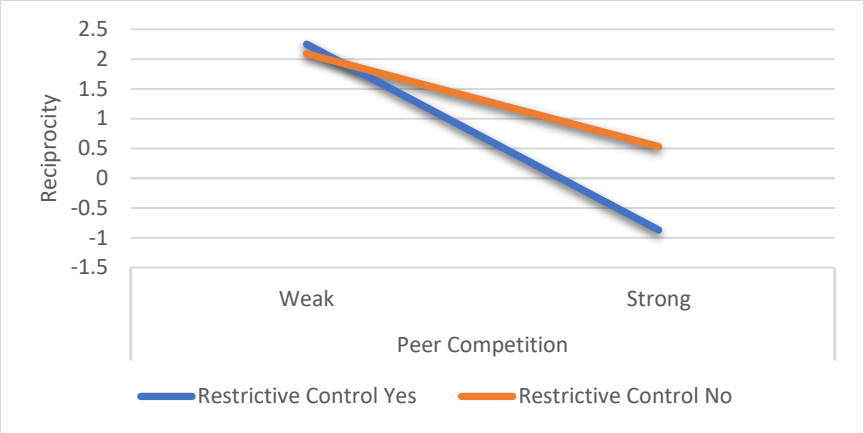

Figure 3c: $6 Cost Regime - Reciprocity

Table 8: Experiment 2 – Cost Regime = $6, Reciprocity Ratio

Panel A: Descriptive Statistics

		Cost Regime = $6	
		Restrictive Control Decision	
		Yes	No
Peer Competition	Weak	0.259 [0.648] N = 12	0.169 [0.431] N = 69
	Strong	-0.071 [0.530] N = 24	0.041 [0.438] N = 59

Panel B: Peer Competition x Restrictive Control Decision

	Coefficient	Std. Err	t-stat	p-value	Conf. Interval
Peer Competition	-0.128	.083	-1.55	0.124	(-0.291, 0.035)
Restrictive Control	0.090	.146	0.62	0.538	(-0.198, 0.378)
Interaction	-0.201	.184	-1.09	0.276	(-0.566, 0.163)
Intercept	0.169	.056	3.00	0.003	(0.058, 0.279)

*Bold p-values represent 1-tailed test

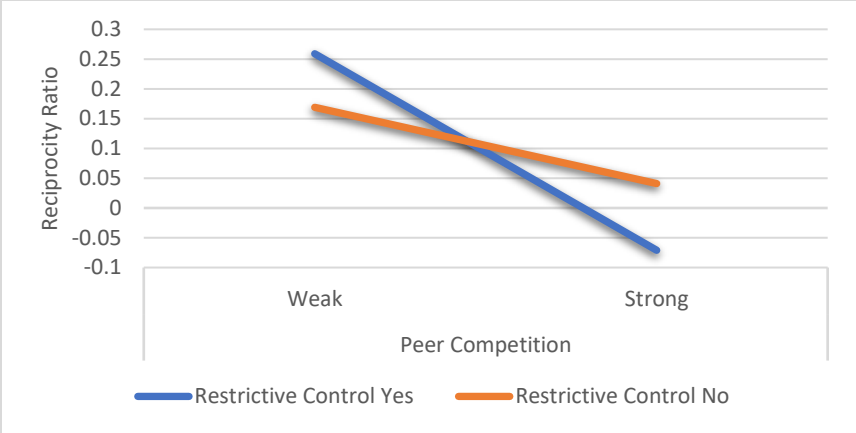

Figure 3d: $6 Cost Regime - Reciprocity Ratio

To test H3a I compared *weak peer competition* to *strong peer competition* under the *no restrictive control* condition. The results support my prediction that when the restrictive control is **not imposed,** employees reward their manager more so when they operate under the *weak peer competition* condition versus those operating the *strong peer competition* condition (reciprocity: Table 7, Panel C, t = 1.724, p = .044, one-tailed; reciprocity ratio: Table 8, Panel C, t = 1.663, p = .049, one-tailed).

Table 7: Experiment 2 – Cost Regime = $6, Reciprocity

Panel C: Peer Competition | Restrictive Control Decision = No

	df	t-stat	p-value
Peer Competition	126	1.724	**.044**

*Bold p-values represent 1-tailed test

Table 8: Experiment 2 – Cost Regime = $6, Reciprocity Ratio

Panel C: Peer Competition | Restrictive Control Decision = No

	df	t-stat	p-value
Peer Competition	126	1.663	**.049**

*Bold p-values represent 1-tailed test

To test H3b I compared *weak peer competition* to *strong peer competition* under the *yes restrictive control* condition. The results do not support my prediction and are marginally significant in the opposite direction, directly counter to the results found under the *$0 cost regime*. Specifically, under the *$6 cost regime*, when the restrictive control is **imposed**, employees reward their manager less so in the *strong peer competition* condition versus those in the *weak peer competition* condition (reciprocity: Table 7, Panel D, t = 1.594, p = .940, one-tailed; reciprocity ratio: Table 8, Panel D, t = 1.631, p = .944, one-tailed).

Table 7: Experiment 2 – Cost Regime = $6, Reciprocity

Panel D: Peer Competition | Restrictive Control Decision = Yes

	df	t-stat	p-value
Peer Competition	34	1.594	**.940**

*Bold p-values represent 1-tailed test

Table 8: Experiment 2 – Cost Regime = $6, Reciprocity Ratio

Panel D: Peer Competition | Restrictive Control Decision = Yes

	df	t-stat	p-value
Peer Competition	34	1.631	**.944**

*Bold p-values represent 1-tailed test

This suggests that the level of cost incurred by the manager to impose the restrictive control (i.e., the *cost regime*) affected employees' perceptions and reactions to the manager's restrictive control decision. To further investigate this unexpected difference, I go on to compare the two *cost regimes* when the restrictive control **is imposed**.

4.4 Exploratory Analysis Across Cost Regimes

Ex ante, I did not predict a moderating effect of assessing the manager a fee (to impose the restrictive control) on employee fairness perceptions and reciprocity. However, based on the above results this actually appears to be the case. Before performing exploratory analysis in an attempt to understand the different results across *cost regimes*, I first confirm that reciprocity behavior within the *yes restrictive control* condition flips across *cost regimes* as is descriptively observed in the above results. To test this, I run an OLS regression with two fixed factors: *peer competition* and *cost regime*, under the *yes restrictive control* condition. Per Table 9, Panel B, the *cost regime* significantly moderates the effect of *peer competition* on *reciprocity* (t = 3.37, p = .001, two-tailed). Results are inferentially equivalent for *reciprocity ratio* (Table 10, Panel B: t = 3.27, p = .002, two-tailed). This result suggests that as the cost incurred by the firm to restrict employees increases, employees who are restricted become relatively more accepting of the restriction

when they are under weak competitive settings. However, employees who are restricted become relatively less accepting of the restriction when they are under strong competitive settings.

Table 9: Exploratory Analysis - Reciprocity

Panel A: Descriptive Statistics

		Restrictive Control Decision = Yes	
		Cost Regime	
		$6	$0
Peer Competition	Weak	2.25 [5.46] N = 12	-2.33 [5.05] N = 18
	Strong	-0.87 [5.58] N = 24	3.44 [5.76] N = 18

Panel B: Peer Competition x Cost Regime

	Coefficient	Std. Err	t-stat	p-value	Conf. Interval
Peer Competition	-3.125	1.921	-1.63	0.108	(-6.958, 0.708)
Cost Regime	-4.583	2.025	-2.26	0.027	(-8.624, -0.543)
Interaction	8.903	2.640	3.37	0.001	(3.635, 14.171)
Intercept	2.250	1.568	1.43	0.156	(-0.880, 5.380)

*Bold p-values represent 1-tailed test

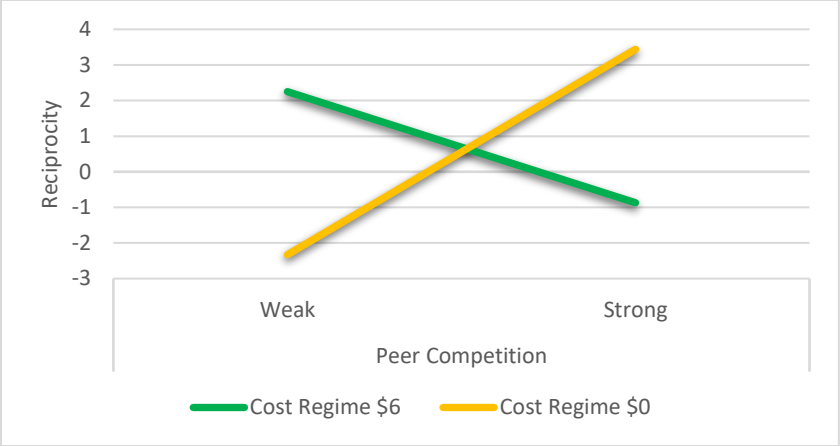

Figure 4a: Exploratory Analysis - Reciprocity

Table 10: Exploratory Analysis - Reciprocity Ratio

Panel A: Descriptive Statistics

		Restrictive Control Decision = Yes	
		Cost Regime	
		$6	$0
Peer Competition	Weak	0.259 [0.648] N = 12	-0.198 [0.436] N = 18
	Strong	-0.071 [0.530] N = 24	0.288 [0.457] N = 18

Panel B: Peer Competition x Cost Regime

	Coefficient	Std. Err	t-stat	p-value	Conf. Interval
Peer Competition	-0.329	.181	-1.82	0.074	(-0.691, 0.032)
Cost Regime	-0.457	.191	-2.39	0.019	(-0.838, -0.076)
Interaction	0.815	.249	3.27	0.002	(0.318, 1.312)
Intercept	0.259	.148	1.75	0.085	(-0.037, 0.554)

*Bold p-values represent 1-tailed test

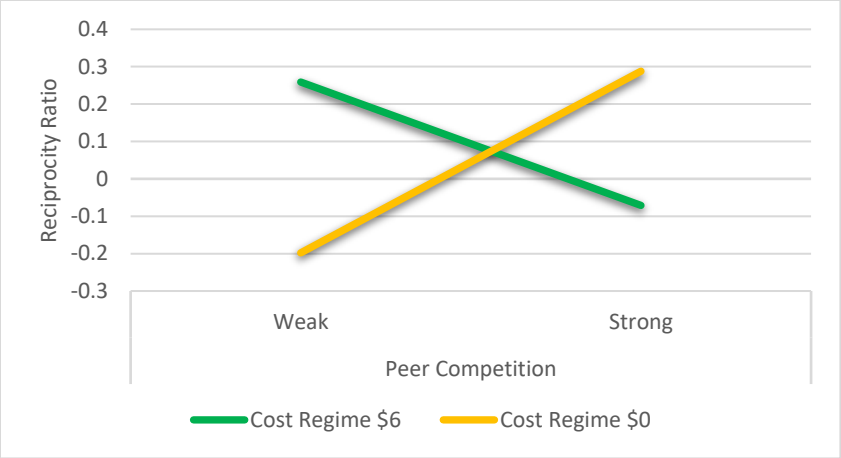

Figure 4b: Exploratory Analysis - Reciprocity Ratio

To better understand the effect the *cost regime* had on employees, I also compare the perceived fairness of the restrictive control decision across *peer competition* conditions. The results show a marginally significant interaction between *peer competition* and *cost regime* (Table 11, Panel B, t = 1.70, p = .094, two-tailed). Looking at the simple main effects, under the *weak peer competition* condition employees perceived the manager's decision to impose the restrictive control to be fairer when the cost to implement control was greater (untabulated: 0.92 vs. -0.61, t = 2.608, p = .015, two-tailed). Thus, this suggests that for employees in weak competitive settings, the cost incurred by the firm to restrict employees affects employee perceptions of how fair that restriction is. However, this same analysis yields no differences when comparing the *cost regimes* under the *strong peer competition* condition (untabulated: 0.22 vs. 0.25, t = 0.045, p = .964, two-tailed). Therefore, something else besides explicit perceived fairness may explain the differences in employee reciprocity across *cost regimes* within the *strong peer competition* condition.

Table 11: Exploratory Analysis - Perceived Fairness of Restrictive Control Outcome

Panel A: Descriptive Statistics

		Restrictive Control Decision = Yes	
		Cost Regime	
		$6	$0
Peer Competition	Weak	0.92 [1.68] N = 12	-0.61 [1.50] N = 18
	Strong	0.25 [2.05] N = 24	0.22 [1.86] N = 18

Panel B: Peer Competition x Cost Regime

	Coefficient	Std. Err	t-stat	p-value	Conf. Interval
Peer Competition	-0.667	.643	-1.04	0.303	(-1.949, 0.616)
Cost Regime	-1.528	.678	-2.25	0.027	(-2.880, -0.176)
Interaction	1.500	.884	1.70	0.094	(-0.263, 3.263)
Intercept	0.917	.525	1.75	0.085	(-0.131, 1.964)

*Bold p-values represent 1-tailed test

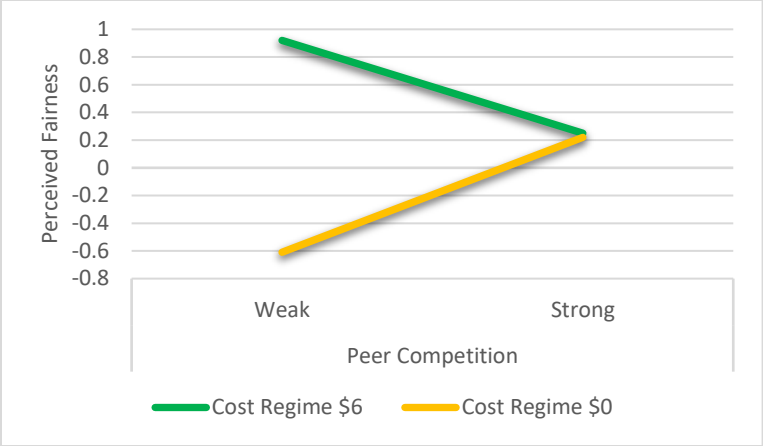

Figure 4c: Exploratory Analysis - Perceived Fairness of Restrictive Control Outcome

I also elicited a measure as to how much employees contemplated the manager's restrictive control decision, "How much did you think about/care about the Orange Player's Reporting Rule decision?" arranged as a 7-point likert-type question with responses ranging from "None at all" to "A great deal." The responses were coded from -3 to +3, respectively. While not hypothesized, I find that, in the *strong peer competition* condition, employees under the *$0 cost regime* reported to have thought about the restrictive control decision to a greater extent than those under the *$6 cost regime* (untabulated: 1.33 vs. 0.42, t = -1.791, p = .081, two-tailed). This suggests that, under strong peer competitive settings, the more employees contemplate a manager's decision to restrict them, the more employees choose to reward that manager. I am unable to claim, theoretically or empirically, whether the differences in attention to the control decision is driven by the *cost regime*.

CHAPTER 5. CONCLUSION

Using an experiment, I investigate whether and how the strength or saliency of peer competition affects employee perceptions and reaction to a manager's choice to (or not to) impose a restrictive control over employees. The study finds mixed results. As predicted, when a manager chooses not to restrict employees, employees respond more favorably towards the manager when those employees are under weak competitive settings as opposed to strong competitive settings. However, when a manager chooses to restrict employees, employee responses not only depend upon the peer competitive setting, but also depends upon the cost incurred by management to impose the restriction. When the cost of imposing the restrictive control is low (high), employees operating under strong (weak) peer competition reciprocate more positively. In addition, it appears the effect of control implementation cost is driven by both the attention given to and the perceived fairness of the restrictive control decision.

This study contributes to the literature in several ways. First, much of the literature investigating behavioral responses to controls has focused on how controls affect employee's perceptions of trust, a social preference, between themselves and their manager. My study broadens this research program by investigating how the imposition of restrictive controls may affect another social preference, a desire for fairness. Specifically, this study suggests that both the degree of peer competition and the cost of imposing controls may affect employees' perceived fairness of a manager's control decision, thus leading to differing levels of employee effort in uncontracted aspects of their employment.

In addition, prior research in this program has primarily focused on employee responses within the controlled task. My study provides evidence that employee reciprocity resulting from restrictive controls, is not limited to reciprocity responses within the controlled task, by can carry over to other tasks employees perform for their managers. Thus, my results provide support to the robustness and generalizability of the findings observed in the prior literature.

Second, this study informs the performance evaluation literature. This expansive literature has provided evidence on the benefits and downsides to using competition (e.g., relative performance evaluation) to motivate and evaluate employees (for reviews see Luft 2016, Bonner and Sprinkle 2002). This literature has identified numerous organizational and environmental features that should be considered when determined whether and to what degree to utilize relative performance in evaluating employees (e.g., systematic versus unsystematic noise in the task or environment, riskiness of employee effort strategies, the degree to which employees can directly affect each other's performance). This study adds to this stream by identifying a widely used control mechanism, restrictive controls, that should be considered when management is determining whether and to what degree employees should be evaluated relatively to peers.

This study is not without its limitations. First, and most notably, I do not observe managers choosing **not** to implement the restrictive control when the cost to implement said control is low ($0). Thus, I can only make claims as to how employees would react to a manager's decision **not** to implement a control when implementation costs are relatively high ($6). In addition, I chose to investigate a specific form of a restrictive control: a control that ex ante restricts how an individual can report their performance. It is possible my

findings are driven by the unique setting of reporting performance. Future research could investigate whether these findings would generalize to other forms of a restrictive control (e.g., restrictions over procedures or choices, restrictions over reporting costs, or ex post review-based restrictions). Also, I chose to operationalize the manager (individual who makes the control decision) as the residual claimant of the organization. Future research could examine whether the nature of the manager's incentives influences employee responses to the manager's control decisions. Lastly, I chose a real-effort task for which performance is primarily driven by effort intensity, leaving little room for strategy development and individual differences in skill to play a role in employee performance. Future research could explore whether the nature of the effortful task moderates employee reaction to a restrictive control.

APPENDIX A. MANIPULATIONS

Peer Competition Manipulation

No Peer Competition

In particular, Blue Players will earn $0.50 times the number of puzzles they REPORT solving correctly.

Blue Player earnings = (REPORTED X $0.50 per puzzle)

Note that each of the Blue Player ’s earnings are INDEPENDENT of the amount REPORTED by the other Blue Players in their group

Meaning the Blue Players within your group CANNOT affect each other's earnings (the other Blue Players in their group), regardless of each Blue Player’s REPORTED puzzles solved

Peer Competition

In particular, Blue Players will earn $19.00 or $6.00, with the Blue Player who REPORTS the greatest number of puzzles (in their group) earning $19.00 and the other Blue Players earning $6.00.

Blue Player earnings = $19.00 if their REPORTED > REPORTED by the other Blue Players, otherwise $6.00.

Note that each of the Blue Player ’s earnings are DEPENDENT on the amount REPORTED by the other Blue Players in each group

Meaning the Blue Players within your group CAN affect each other's earnings (the other Blue Players in their group), by REPORTing a greater number of puzzles than the other Blue Players

Restrictive Control Manipulation

Yes Restrictive Control

The Orange Player chose to enact the REPORTING RULE

As a result, you (and the other Blue Players in your group) must REPORT the amount you actually SOLVED (as indicated above)

As a reminder, IF the Orange Player had chosen not to enact the REPORTING RULE, you (and the other Blue Players in your group) could have REPORT an amount ranging from 0 (zero) to 2 times the amount you actually SOLVED

No Restrictive Control

The Orange Player chose not to enact the REPORTING RULE

As a result, you (and the other Blue Players in your group) are free to REPORT an amount ranging from 0 (zero) to 2 times the amount you actually SOLVED (number SOLVED is indicated above)

As a reminder, IF the Orange Player had chosen to enact the REPORTING RULE, you (and the other Blue Players in your group) would have been required to REPORT the amount you actually SOLVED

APPENDIX B. DECODING TASK

Time left to complete this page: **2:52**

In this task you are to translate a sequence of numbers into a series of letters from the English alphabet. Below you can see (1) a sequence of NUMBERS (2) a KEY indicating which LETTER represents each NUMBER (3) a text box in which the letter solution should be typed. In each task a new sequence of numbers will appear along with a new key of number to letter relationships.

Letter:	Key:
t	8
r	0
w	3
b	6
k	7
c	1
e	9
g	2
h	5
u	4

Task to solve:

66469819

Answer

APPENDIX C. RECIPROCITY TASK INSTRUCTIONS

Effect of Reciprocity on Manager

In Stage 2 you, as a Blue Player, have the choice to either (1) increase, (2) decrease or (3) not affect the Orange Player earnings.

Specifically, you will be given the choice to participate in an addition 5-minute (300-second) round of the decoding task.

If you choose to participate in the Stage 2 Round

> For every puzzle you solve correctly you affect the Orange Player's earnings by $0.50:
>
> > If you choose to increase: The Orange Player's earnings increase by $0.50 for each puzzle solved
> >
> > If you chose to decrease: The Orange Player's earnings decrease by $0.50 for each puzzle solved

If you choose not to participate in the Stage 2 Round

> The Orange Player's earnings will remain as they were at the end of Stage 1.

Cost of Reciprocity to Employee

Solved puzzles have no effect on your earnings, nor on the earnings of any other Blue Players. However, the time you spend participating in the Stage 2 Round will affect your earnings

Specifically, you have been given an additional $1.00

If you choose not to participate in the Stage 2 round of the Decoding Task

> You will retain the full $1.00 and it will be paid out to you in addition to your Stage 1 earnings and participation fee

If you choose to participate in the Stage 2 round of the Decoding Task

> For every 3 seconds you participate in the Stage 2 Round, $0.01 (one cent) will be deducted from the additional $1.00
>
> For example: if you participate in the additional decoding task round for 4 minutes and then click "End Round", forgoing the last 1 minute of the round, you will earn $0.20 (60 unused seconds divided by 3 second units)
>
> If you participate in the Stage 2 Round for the full 5 minutes (300 seconds), the additional $1.00 will be fully deducted

REFERENCES

Abbink, K., B. Irlenbusch, and E. Renner. 2000. The moonlighting game: An experimental study on reciprocity and retribution. *Journal of Economic Behavior & Organization* 42: 265 – 277.

Avrahami, J., W. Gueth, Y. Kareev, and T. Uske. 2017. On the incentive effects of sample size in monitoring agents – A theoretical and experimental analysis. *German Economic Review* 18 (1): 81 – 98.

Baiman, S., and J. S. Demski. 1980. Economically optimal performance evaluation and control systems. *Journal of Accounting Research* 18: 184 – 220.

Berg, J., J. Dickhaut, and K. McCabe. 1995. Trust, reciprocity, and social history. *Games and Economic Behavior* 10: 122 – 142.

Bonner, S. E., and G. B. Sprinkle. 2002. The effect of monetary incentives on effort and task performance: theories, evidence, and a framework for research. *Accounting, Organizations and Society* 27: 303 – 345.

Brown, J. L., J. G. Fisher, M. Sooy, and G. B. Sprinkle. 2014. The effect of rankings on honesty in budget reporting. *Accounting, Organizations and Society* 39: 237 – 246.

Chen, D. L., M. Schonger, and C. Wickens. 2016. oTree - An open-source platform for laboratory, online and field experiments. *Journal of Behavioral and Experimental Finance* 9: 88 – 97.

Choi, W., J. Clark, and A. Presslee. 2018. Testing the effect of incentives on effort intensity using real-effort tasks. Working Paper, University of Waterloo – School of Accounting and Finance.

Chow, C. W. 1983. The effect of job standard tightness and compensation scheme on performance: An explorating of linkages. *The Accounting Review* 58 (4): 667 – 685.

Christ, M. H. 2013. An experimental investigation of the interactions among intentions, reciprocity, and control. *Journal of Management Accounting Research* 25: 169 – 197.

Christ, M. H., K. L. Sedatole, K. L. Towry, and M. A. Thomas. 2008. When formal controls undermine trust and cooperation. *Strategic Finance* January: 39 – 44.

Christ, M. H., K. L. Sedatole, and K. L. Towry. 2012. Sticks and carrots: The effect of contract frame on effort in incomplete contracts. *The Accounting Review* 87 (6): 1913 – 1938.

Colquitt, J.A. 2001. On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology* 86 (3): 386 – 400.

Colquitt, J.A., B.A. Scott, and J.A. LePine. 2007. Trust, trustworthiness, and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology* 92 (4): 909 – 927.

Cox, J.C. and C.A. Deck. 2005. On the nature of reciprocal motives. *Economic Inquiry* 43 (3): 623 – 635.

Cox, J.C., R. Kerschbamer, and D. Neururer. 2016. What is trustworthiness and what drives it? *Games and Economic Behavior* 98: 197 – 218.

Falk, A., and M. Kosfeld. 2006. The hidden cost of control. *The American Economic Review* 96 (5): 1611 – 1630.

Frey, B. S. 1993. Does monitoring increase work effort? The rivalry with trust and loyalty. *Economic Inquiry* 31: 663 – 670.

Garrett, J. 2017. Controls, trustworthiness, and trust in group settings. Working Paper, Clemson University.

Greenberg, J. 1986. Determinants of perceived fairness of performance evaluations. *Journal of Applied Psychology* 71 (2): 340 – 342.

Hannan, R. L. 2005. The combined effect of wages and firm profit on employee effort. *The Accounting Review* 80 (1): 167 – 188.

Hannan, R. L., R. Krishnan, and A. H. Newman. 2008. The effect of disseminating relative performance feedback in tournament and individual performance compensation plans. *The Accounting Review* 83 (4): 893 – 913.

Hannan, R. L., G. P. McPhee, A. H. Newman, and I. D. Tafkov. 2013. The effect of relative performance information on performance and effort allocation in a multi-task environment. *The Accounting Review* 88 (2): 553 – 575.

Harbring, C., and B. Irlenbusch. 2011. Sabotage in tournaments: Evidence from a laboratory experiment. *Management Science* 57 (4): 611 – 627.

Harris, M., and A. Raviv. 1979. Optimal incentive contracts with imperfect information. *Journal of Economic Theory* 20: 231 – 259.

Ichino, A., and G. Muehlheusser. 2008. How often should you open the door? Optimal monitoring to screen heterogeneous agents. *Journal of Economic Behavior & Organization* 67: 820 – 831.

Indjejikian, R. J., and M. Matějka. 2012. Accounting decentralization and performance evaluation of business unit managers. *The Accounting Review* 87 (1): 261 – 290.

Lazear, E. P., and S. Rosen. 1981. Rank-order tournaments as optimum labor contracts. *Journal of Political Economy* 89 (5): 841 – 864.

Libby, R., K. M. Rennekamp, and N. Seybert. 2015. Regulation and the interdependent roles of managers, auditors, and directors in earnings management and accounting choice. *Accounting, Organizations, and Society* 47: 25 – 42.

Luft, J. 2016. Cooperation and competition among employees: Experimental evidence on the role of management control systems. *Management Accounting Research* 31: 75 – 85.

Merchant, K. A., and W. A. Van der Stede, 2012. Management Control Systems (3rd edition ed.). Edinburgh Gate, England: Pearson Education Limited.

Mezulis, A. H., L. Y. Abramson, J. S. Hyde, and B. L. Hankin. 2004. Is there a universal positivity bias in attributions? A meta-analytic review of individual, developmental, and cultural differences in the self-serving attributional bias. *Psychological Bulletin* 130 (5): 711 – 747.

Rabin, M. 1993. Incorporating fairness into game theory and economics. *The American Economic Review* 83 (5): 1281 – 1302.

Puri, S. 2019. Case Study: Your Star Salesperson Lied. Should He Get a Second Chance? *Harvard Business Review, September – October 2019*, 156 – 161.

Stiglitz, J. E. 1975. Incentives, risk, and information: Notes toward a theory of hierarchy. *The Bell Journal of Economics* 6 (2): 552 – 579.

Sliwka, D. 2007. Trust as a signal of a social norm and the hidden costs of incentive schemes. *The American Economic Review* 97 (3): 999 – 1012.

Tafkov, I. D. 2013. Private and public relative performance information under different compensation contracts. *The Accounting Review* 88 (1): 327 – 350.

van Dijk, F., J. Sonnemans, and F. van Winden. 2001. Incentive systems in a real effort experiment. *European Economic Review* 45 (2): 187 – 214.