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The Effect of Control Source and Control Framing on Employee Effort

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THE EFFECT OF CONTROL SOURCE AND CONTROL FRAMING ON EMPLOYEE EFFORT

DISSERTATION

A dissertation submitted in partial fulfillment of
requirements for the degree of Doctor or Philosophy in the
College of Business and Economics
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By

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ABSTRACT OF DISSERTATION

THE EFFECT OF CONTROL SOURCE AND CONTROL FRAMING ON EMPLOYEE EFFORT

Prior research suggests that controls can negatively impact the motivation of employees to exert effort and that the detrimental effects of controls depend on control source. That is, controls cause more adverse behavior when employees attribute the source of control implementation to their manager's decision than when the source of control implementation is beyond their manager's authority. This study uses experiments to investigate whether the behavioral effects of controls depend not only on control source, but also on control framing, by which managers can frame the control implementation either for monitoring or coordinating purposes. The study also suggests that the interaction of control source and control framing impacts the strength of vertical collective identity, i.e. the shared identity between managers and employees, which in turn explains the differences in employee effort. While this study documents that the interaction of control source and control framing has no effect on vertical collective identity or employee effort, it finds a surprising result: employees respond more positively to the monitoring-framed controls than to the coordinating-framed controls, particularly when the controls are imposed by the manager. This finding suggests that persuasive messages can backfire if the employees are aware of the manager's potentially self-serving motives behind the control implementation.

Keywords: control source, control framing, social identity theory, employee effort, superior-subordinate relationships, collective identity

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1. INTRODUCTION

Formal control systems are crucial to an organization's success as controls serve a vital role in both directing employees' effort to achieve organizational goals (Bowles & Polanía-Reyes, 2012; Christ, Emett, Summers, & Wood, 2012; Coletti, Sedatole, & Towry, 2005) and safeguarding organizational resources (Merchant & Van der Stede, 2007). When implementing formal control systems, organizations relay on various mechanisms, such as sanctioning, monitoring, and rewarding (Bowles & Polanía-Reyes, 2012; Puranam & Vanneste, 2009; Schweitzer, Ho, & Zhang, 2014). The implementation of formal controls may be *endogenous*, i.e. when managers make a choice to put controls in place, or *exogenous*, i.e. the source of controls is uncertain or beyond the authority of the managers (Christ, 2013; Falk & Kosfeld, 2006).[1] Endogenous controls have more unfavorable effects than exogenous controls because employees interpret their managers' active choice to implement controls as a signal of distrust. This interpretation leads to employees' negative responses to the presence of controls (Belot & Schröder, 2016; Christ, 2013; Christ, Sedatole, & Towry, 2012; Falk & Kosfeld, 2006). However, prior studies do not examine how managers *communicate the purpose* of their choice to implement controls on employees.

My study investigates how the interaction of control source and control framing employees' willingness to exert discretionary effort. Managers can frame the control implementation either for monitoring or coordinating purposes. A monitoring frame presents controls as a way to limit employees' self-interested behavior, while a coordinating frame presents controls as a means to facilitate coordination and resource

[1] Controls imposed at a firm-wide level, rather than by immediate supervisors, are exogenous.

allocation between managers and employees (Liu, Wright, & Wu, 2015; Malhotra & Lumineau, 2011; Schepker, Oh, Martynov, & Poppo, 2014). Since framing provides social contexts by setting the expectations that people have about each other's behavior in a relationship (Dreber, Ellingsen, Johannesson, & Rand, 2013; Ellingsen, Johannesson, Mollerstrom, & Munkhammar, 2012), I hypothesize that the employees' perception of the manager's choice to put controls in place depends on control framing. My study predicts that when managers implement controls framed for monitoring purposes, employees exert less effort compared to situations in which controls are exogenously imposed. I also predict that the results reverse if controls are framed for coordinating purposes.

I offer a social identity-based explanation for these expected interaction effects. A monitoring frame increases the salience of the conflict between the interests of managers and employees, preventing the development of a collective identity between them. When managers decide to implement the monitoring-framed controls, it reinforces the signal of managers protecting their self-interests. Hence, it is even harder for employees to transform their self-categorization from a personal identity to a collective identity (Brewer & Kramer, 1986; Kramer, 2006; Kramer & Brewer, 1984; Wit & Kerr, 2002). When employees' personal identity is salient, they focus on maximizing their own interests by exerting low effort (Kramer & Brewer, 1984). In contrast, a coordinating frame emphasizes a concern for the shared interest between managers and employees (Kramer, 2006; Wit & Kerr, 2002). Essentially, a coordinating frame "collectivizes" group boundaries and promotes common gains (McGinn, Milkman, & Nöth, 2012; McGinn & Nöth, 2012). Furthermore, employees interpret managers' choice for implementing coordinating-framed controls as managers' noticeable effort to advance the

sense of collective, rather than merely personal, interests. As a result, managers' choice for controls with a coordinating frame sends the contextual cues that build the collective identity between managers and employees. Accordingly, employees are more willing to engage in collective behavior by contributing more effort.

Existing studies have extensively investigated the relationship between controls and *horizontal collective identity*, the term that I use in this paper to describe the social ties among team members in an organization (see, e.g. Cardinaels & Yin, 2015; Tayler & Bloomfield, 2011; Towry, 2003). However, few have investigated the role of controls in building *vertical collective identity*, the term in my paper that characterizes the social ties between leaders and followers.

My study attains null results, which suggest that the interaction of control source and control framing has no effect on employee effort. Consistent with these null results, my study also provides no evidence of vertical collective identity taking a mediating role in this relationship. Supplementary analyses do provide the possible indication of interaction and mediating effects; even so, these suggestive hints must be interpreted with caution. However, I find surprising evidence: employees who *infer* that the manager's reason of implementing *monitoring-framed controls* is *for coordinating purposes* exert *more* effort than employees in the coordinating-framed, endogenous controls, who share the same belief that the controls are indeed implemented for coordinating purposes. This surprising finding suggests how persuasive messages concerning the control implementation can backfire. Being aware that the manager has chosen to implement controls and that the controls improve the manager's financial welfare, employees are skeptical to the persuasive messages conveyed by the coordinating frame, resulting in

effort aversion (Ert, Creary, & Bazerman, 2014). Interestingly, employees seem to agree that it is sometimes necessary for a manager to send stern messages in order to combat opportunistic behavior. This finding is consistent with Hardin (2004), who argue that showing distrust is welcomed in circumstances where opportunistic behavior is prevalent. Therefore, many employees view the monitoring frame of controls imposed by the manager as a means to facilitate coordination, thereby increasing the employees' willingness to exert effort.

The null results of my study actually support Dreber et al. (2013), who argue that social framing effects do not exist in dictator games, which share the same nature of the social dilemma presented in this study: participants face a tension between maximizing self-interests or others' benefit. The study of Dreber et al. (2013) ran an online experiment with an unusually large sample size (around 200 participants per treatment). Yet, their study still documents null results, leading them to conclude the absence of framing effects in dictator games.

However, I speculate another feasible explanation: both the study of Dreber et al. (2013) and mine recruited Amazon Mechanical Turk (AMT) workers as the participants of our experiments. AMT workers tend to exhibit social desirability bias (Antin & Shaw, 2012), making them less sensitive to negative social frames. I suspect that AMT workers with high reputation, who are perceived as attentive participants, suffer from a *higher* level of social desirability bias due to their fear of getting their work rejected by the experimenter. In general, high social desirability bias drives participants to respond to questions in a manner that will presumably be viewed favorably by others. In this study, most participants across conditions claimed that the purpose of control is for

coordinating, not monitoring, implying that participants are reluctant to acknowledge that the control, albeit benefiting both managers and employees, is framed with a negative valence. Another problematic factor associated with AMT workers is that most of them have a lot of managerial or supervisory experience, making it hard to manipulate their perceptions of control framing. It is plausible that at their workplaces, those workers are responsible for framing control mechanisms and thereby can 'detect' the real purpose control. In summary, these null findings may warn future studies about the unintended drawbacks of recruiting AMT workers.

The rest of this paper is organized as follows: Section II develops the theoretical framework, whereas Section III delineates the hypothesis development. Section IV presents the research design. Section V presents the analysis and results. Section VI concludes and discusses opportunities for future research.

2. THEORETICAL FRAMEWORK

2.1. Social Identity Theory and Vertical Collective Identity in Organizational Settings

Social identity theory posits that individuals categorize themselves as having either a personal identity or a social identity. A personal identity defines one as a unique and distinct self, whereas a social identity categorizes one as in terms of relations to others (Hogg, 2003). When one's sense of a personal identity is strong, the person's choice is likely to serve self-interests (Kramer, 2006). In contrast, when individuals situate themselves in a social identity, they are more likely to make decisions in favor of collective interests (Y. Chen & Li, 2009; Kramer, 2006). A person may have multiple, co-occurring identities; the activation of a particular identity depends on social cues (Brewer, 1991; Brewer & Kramer, 1986; Kramer, 2006). A social identity can be made salient on the basis of perceived similar traits or common fate (Kramer & Brewer, 1984; Wit & Kerr, 2002).

Prior research refines the distinctions above by describing two levels of social identities: relational and collective identities. A relational identity views oneself as an interconnected partner in interpersonal and interdependent relationships (Brewer & Gardner, 1996; Lord, Brown, & Freiberg, 1999). A relational identity also defines roles within those relationships; for example, the relationship between child-parent, student-teacher, and subordinate-leader. A collective identity, in contrast, identifies one as a member of a group. A collective identity is also a basis for differentiating in-group members from out-group members (Gaertner et al., 2012; Kramer, 2006).

Social identity theory is particularly relevant to organizational settings because organizations often face social dilemmas in which there is a conflict between individual and collective interests. In addition, social identity can also dramatically shape people's economic behavior beyond financial incentives (Akerlof & Kranton, 2000). Since leaders of organizations strive to mobilize their employees to pursue collective goals, it is crucial for leaders to instill collective mindsets in their employees. Leaders could achieve this objective by cultivating the sense of shared social identity between themselves and employees (Ellemers, De Gilder, & Haslam, 2004; Hogg, 2001; Steffens, Haslam, Reicher, et al., 2014). In this paper, I term shared social identity between leaders and employees as *vertical collective identity*.

Prior studies suggest that vertical collective identity is stronger when employees believe that leaders share similar attributes with them or when they stand up for employees' interests (Hogg, 2001; Steffens, Haslam, Reicher, et al., 2014; Steffens, Mols, Haslam, & Okimoto, 2016). The strength of vertical collective identity is also enhanced when leaders express confidence in the capabilities of their team (Fransen et al., 2015). Importantly, the key mechanism that cultivates a vertical collective identity is *communication strategies* that emphasize inclusive language or collective pronouns (Seyranian, 2014; Steffens & Haslam, 2013). The strength of vertical collective identity has a significant effect on employees' perception of leader charisma and their experience in sharing not only social, but also personal connections with their leaders (Molenberghs, Prochilo, Steffens, Zacher, & Haslam, 2015; Steffens, Haslam, & Reicher, 2014). Specifically, strong vertical collective identity increases employees' trust in and commitment to their leaders (Giessner, van Knippenberg, van Ginkel, & Sleebos, 2013;

Steffens et al., 2016). Accordingly, when employees share strong vertical collective identity with their leaders, the employees are more willing to engage in behaviors that benefit collective interests, such as contributing more to common resources (Kramer & Brewer, 1984; Wit & Kerr, 2002) or demonstrating more altruistic actions (Y. Chen & Li, 2009). Collectively, prior work suggests that, when vertical collective identity is strong, employees exert more effort that increases the welfare of their leaders as well as their in-group members.

Research in accounting has increasingly explored the relationship between management control systems and social identities, particularly *horizontal collective identity*, i.e. the term I use to describe social ties among group members. Towry (2003) finds that the effectiveness of control structures depends on the strength of horizontal collective identity. In addition, formal controls in the form of reward system designs could also affect the formation of horizontal collective identity (C. X. Chen, Williamson, & Zhou, 2012). However, few studies have addressed the relationship between controls and vertical collective identity. Since theories and findings in horizontal relations may not extend to vertical relations (Luft, 2016), it would be valuable to further investigate how controls shape and are shaped by vertical collective identity.

Prior literature suggests various factors that determine the development and reinforcement of vertical collective identity. The first factor is *prototypicality*, which means that a leader is viewed as a prototypical (or representative) of a shared identity within a group (Hogg, 2003; Steffens, Haslam, & Reicher, 2014; Steffens, Haslam, Reicher, et al., 2014; D. van Knippenberg, 2011). In other words, a leader is seen either as "being one of us" (Hogg, 2003) or as "an exemplary member in this group" (Steffens,

Haslam, Reicher, et al., 2014). A high prototypical leader is viewed as the person who embodies core attributes that other, less prototypical members are expected to conform (Fransen et al., 2015; Giessner et al., 2013; Steffens, Haslam, Reicher, et al., 2014). The prototypicality of a leader can be enhanced when the leader is elected by the group rather than externally appointed (Hogg & van Knippenberg, 2003).

The second factor that influences the strength of vertical collective identity is *the salience of social boundary* (Kramer, 2006; Steffens, Haslam, Reicher, et al., 2014). A leader should develop structures, practices, rituals, and core values as well as norms that set the boundary of group membership and create a sense of "us" (Steffens, Haslam, Reicher, et al., 2014). Another way for leaders to enhance the sense of "us" is by showing confidence in the group's success when performing group-oriented behavior (Fransen et al., 2015). In addition, *social attraction* is another important factor that promotes vertical collective identity because socially attractive leaders can make their subordinates readily comply with their requests and commands (Hogg, 2003). Social attraction might be derived from charismatic leadership (Shamir, Zakay, Breinin, & Popper, 1998); however, personal characteristics are not the sole determinant of a leader's social attraction. Instead, leaders can become "socialized charismatic" by demonstrating behavior that promotes group interests (Steffens et al., 2016). In other words, leaders are perceived to be "in-group champions" by prioritizing the group-oriented goals over personal or out-group interests (Steffens, Haslam, Reicher, et al., 2014).

Finally, when a leader wishes to *redefine* or *realign* vertical collective identity, the leader should engage in *social identity framing* (Seyranian, 2014). Seyranian (2014) argues that social identity framing rests on the power of communication strategies that

intend to immerse subordinates into three framing phases. The first phase ("social identity unfreezing") is to de-link subordinates from the current social identity. The second phase ("social identity moving") presents the vision of the new identity, whereas the third phase ("social identity freezing") reaffirms the new identity (Seyranian, 2014). All three phases can be accomplished by using *inclusive language* that emphasizes the intergroup bias (Perdue, Dovidio, Gurtman, & Tyler, 1990; Seyranian, 2014). Specifically, inclusive language draws a distinction between the in-group and the out-group membership status (Brewer & Gardner, 1996; Perdue et al., 1990), which can be done by using different collective pronouns, such as "we" versus "they" (Gustafsson Sendén, Lindholm, & Sikström, 2013; Perdue et al., 1990). During the first phase, i.e. social identity unfreezing, inclusive language promotes similarity and commonality between leaders and their subordinates. During the second phase, i.e. social identity moving, inclusive language negates the previous framing of social identity (Brewer & Gardner, 1996; Seyranian, 2014). Essentially, using the language that emphasizes the out-group membership status can evoke a negative impression toward the previous framing of social identity (Gustafsson Sendén et al., 2013; Lee, Adair, Mannix, & Kim, 2012; Perdue et al., 1990). Finally, during the third phase, i.e. social identity freezing, leaders use inclusive language that stresses the positive attributes of the newly framed social identity (Fransen et al., 2015; Seyranian, 2014). Overall, these studies highlight the power of communication strategies that leaders can harness to promote vertical collective identity.

2.2. Comparison between Leader-Member Exchange Theory and Social Identity Theory

Besides social identity theory, another significant theory that focuses on vertical relations is Leader-Member Exchange (LMX) theory. LMX theory examines the leader-subordinate relationships at interpersonal levels (Lord et al., 1999). Hence, the theory emphasizes the role of *relational self* in leader-subordinate relationships (Gaertner et al., 2012; Lord, Gatti, & Chui, 2016). LMX theory argues that leaders and subordinates can build their relationships based on mutual trust and respect (high-quality LMX relationships) or rely on formal employment contracts (low-quality LMX relationships). High-quality LMX relationships are more likely to increase subordinates' motivation (Graen, Novak, & Sommerkamp, 1982). Prior work shows that imposing control on high LMX relationships will hurt subordinates' perception of the relationship quality; thereby leading subordinates to exert less effort. While high-quality LMX relationships are usually sought after in organizational settings, prior literature also finds that subordinates who perceive higher-quality relationships with their leader are more willing to undermine control system by complying to their manager's request for submitting biased accounting estimates (Jollineau, Vance, & Webb, 2012). In short, studies that rely on LMX theory suggest that the quality of LMX relationships affects the effectiveness of control systems in organizations.

However, the main weakness of LMX theory is that because it focuses on dyadic relationships; it offers limited predictions at the group or social-network levels (Hogg et al., 2005). LMX theory argues that leaders can cultivate high-quality dyadic relationships with different subordinates in isolation from other dyadic relationships (Hogg et al.,

2005). In other words, leaders are encouraged to personalize their dyadic relationships that can cater to each subordinate' distinct and individual characteristics. Since LMX theory assumes that subordinates perceive the relationship quality in an absolute sense, LMX theory does not take into account how subordinates evaluate their relationships with their leader relative to the relationship quality of *other* subordinates with the same leader.

Social identity theory addresses the limitation of LMX theory by shifting the focus of leadership from interpersonal levels to group and collective levels (Hogg & van Knippenberg, 2003; Lord et al., 2016). By exploring leader-subordinate relationships with a broader lens, social identity theory argues that fairness and justice concerns influence leader-subordinate relationships (Hogg et al., 2005). For example, LMX theory cannot clearly predict whether showing favoritism will hurt leader-subordinate relationships. With regard to the relationship between the leader and the favored subordinate, LMX theory view it as an example of a high-quality LMX relationship. However, social identity theory argues that playing favorites undermines the development of the social identity shared between leaders and subordinates. Overall social identity theory suggests that favoritism results in low-quality relationships.

In addition, social identity theory points out that effective leadership depends on how leaders strongly identify with their subordinates as a group (Hogg, 2001). Prior literature (Hogg, 2001; Hogg et al., 2005) compares LMX theory with social identity theory and finds that personalized leader-subordinate relationships matter when group membership is weak or not salient. In contrast, high salience groups prefer a depersonalized leadership style than a personalized one (Hogg et al., 2005). Because

social identity theory argues that leader group prototypicality is essential to build strong relationships between leaders and subordinates, the theory predicts that the source of leader selection (i.e. in-group versus out-group leaders) matters in building strong relationships between leaders and subordinates (Hogg & van Knippenberg, 2003). LMX theory, in contrast, is silent concerning the importance of the source of leader selection. Collectively, leadership research provides evidence that social identity theory complements LMX theory by broadening the definition of high-quality leader-subordinate relationships.

2.3. Control Framing

Controls play multiple functions in organizational settings. First, controls can monitor and mitigate threats of opportunistic behavior from organizational members (Liu et al., 2015; Malhotra & Lumineau, 2011; Patterson & Smith, 2007). In other words, controls related to monitoring purposes are designed to safeguard assets and limit potential self-interested actions that are detrimental to the organization. Alternatively, controls can serve as a coordination mechanism; they make it easier for organizational members to understand each other's role when working together (Gulati, Lawrence, & Puranam, 2005; Malhotra & Lumineau, 2011). Hence, controls help members understand that their actions are interdependent (Dekker, 2004; Gulati et al., 2005; Nicolaou, Sedatole, & Lankton, 2011). In essence, controls for coordinating purposes could improve resource allocation and facilitate collaboration (Liu et al., 2015; Malhotra & Lumineau, 2011; Nicolaou et al., 2011).

While controls for monitoring purposes could promote compliance (Schweitzer et al., 2014), monitoring controls also signal distrust of other party's intention. Hence, monitoring controls hurt trust development among members (Malhotra & Lumineau, 2011; Malhotra & Murnighan, 2002). Accordingly, monitoring controls could erode cooperative behavior (Falk & Kosfeld, 2006; Malhotra & Murnighan, 2002). In addition, monitoring controls implemented as penalty contracts increase employees' effort (Hannan, Hoffman, & Moser, 2005); however, the effect diminishes in the situations that call for discretionary effort (Christ, Sedatole, et al., 2012; Falk & Kosfeld, 2006). Employees also respond strategically to monitoring controls. When they anticipate that they will not be monitored, they behave opportunistically (Schweitzer et al., 2014). The favorable impact of monitoring controls is that the controls promote the employees' perception of fairness (Niehoff & Moorman, 1993). Specifically, employees view monitoring controls as an unbiased tool in performance appraisal systems (Long, Bendersky, & Morrill, 2011; Niehoff & Moorman, 1993).

Since controls for coordinating purposes facilitate collaboration, coordinating controls build trust (Malhotra & Lumineau, 2011; Nicolaou et al., 2011) and cooperative behavior (Coletti et al., 2005; Malhotra & Lumineau, 2011). Coordinating controls also foster joint learning (Dekker, 2004) and the mutual adaptability for coping with fluctuations in business pressures or technology (Gulati et al., 2005). Nonetheless, a heavy-handed implementation of coordinating controls could backfire because it sends conflicting signals. The reason is that coordinating controls promote collaboration between managers and employees, while strong controls imply that managers do not trust

their employees. As a result, the conflicting signals in such controls could provoke employees to retaliate by increasing dishonest behavior (Liu et al., 2015).

Prior studies suggest that both monitoring and coordinating functions of controls are necessary to organizational success (Cao & Lumineau, 2015; Dekker, 2004; Gulati et al., 2005; Nicolaou et al., 2011). Some studies argue that the control mechanisms for monitoring purposes differ from the mechanisms for coordinating purposes in design (Lumineau & Malhotra, 2011) or timing (Naranjo‐Gil & Hartmann, 2006). However, other studies suggest that *control framing* allows for the same control policies to work as either monitoring or coordinating controls (Liu et al., 2015; Malhotra, 2012; McGinn & Nöth, 2012).

Note that prior work does *not* suggest that organizations should always prefer controls with a coordinating frame to controls with a monitoring frame. Monitoring and coordinating functions play complementary roles in ensuring the effectiveness of controls (see, e.g., Malhotra & Lumineau, 2011; Messick & McClintock, 1968; Van Lange & Kuhlman, 1994). In addition, controls with a coordinating frame can result in negative consequences; for instance, when the implementation of coordinating controls is stringent, the controls invoke an increase in employees' unethical behavior (Liu et al., 2015). Similarly, a strong bond between managers and employees may persuade employees to condone managers' misreporting (Jollineau et al., 2012).

Framing activities also demonstrate the power of communication (Entman, 1993; McGinn & Nöth, 2012); framing essentially shapes one's interpretation of a situation by "selecting certain aspects of perceived reality and making them more salient in a communication text" (Entman, 1993, p. 52). Framing can significantly affect behaviors of

parties involved in interactive economic activities (McGinn et al., 2012). Indeed, in control settings, managers could frame controls by *communicating the purpose of controls* to employees. Therefore, managers' use of framing plays a critical role in the effectiveness of control mechanisms because the framing affects employees' responses to the presence of controls (Liu et al., 2015; Malhotra, 2012; Malhotra & Lumineau, 2011).

2.4. Control Source

Prior studies argue that in manager-employee relationships, employees display control aversion because controls restrict their autonomy (Christ, Sedatole, et al., 2012; Falk & Kosfeld, 2006). In addition, employees perceive their manager's decision to implement controls as a signal of distrust (Christ, 2013; Falk & Kosfeld, 2006). Accordingly, they retaliate by either exerting low effort (Belot & Schröder, 2016; Christ, 2013; Christ, Sedatole, et al., 2012; Malhotra & Murnighan, 2002) or conducting opportunistic behavior (Schweitzer et al., 2014). In contrast, employees exhibit less dysfunctional behavior when *no* formal control mechanism is present (Belot & Schröder, 2016; Malhotra & Murnighan, 2002; Schweitzer et al., 2014) or when the controls are imposed *exogenously*, i.e. the source of control implementation does not come from the managers' authority. In other words, *endogenous* controls – i.e. controls that come from the managers' authority to implement them – would cause detrimental effects. The issues of endogenous controls have important practical implications because the implementation of exogenous controls is more costly in real-world settings (Charness & Ellman, 2016).

The negative effects of endogenous controls are heightened when managers decide to put controls in place by using penalty rather than bonus contracts (Christ,

Sedatole, et al., 2012). Investigating the settings that demand honest reporting, Cardinaels and Yin (2015) argue that when managers decide to use truth-telling incentive contracts instead of fixed-wage contracts, they could signal distrust to their employees. Furthermore, if managers decide to implement truth-telling incentive contracts *after* observing employees' reporting behavior, an employee could infer that other employees, in general, report dishonestly. Accordingly, the employee may conform to this self-interested norm (Cardinaels & Yin, 2015). Collectively, these studies suggest adverse consequences of endogenous controls.

Interestingly, prior studies also find that the moral legitimacy, or the interpreted purpose, of endogenous controls determines whether the controls result in adverse consequences or not. In social settings that involve public goods and thereby punishing "free-riders" is considered morally legitimate, endogenous controls do not backfire (Fehr & Rockenbach, 2003). Likewise, endogenous controls do not trigger negative reactions when distrust is a rational and expected behavior (Hardin, 2004). When opportunism is a norm and thereby the presence of endogenous controls is perceived necessary to foster reciprocity, endogenous controls are welcomed (Bicchieri, Xiao, & Muldoon, 2011). Collectively, these studies indicate that the behavioral impacts of control source depend on people's interpretation of the purpose of controls.

3. HYPOTHESIS DEVELOPMENT

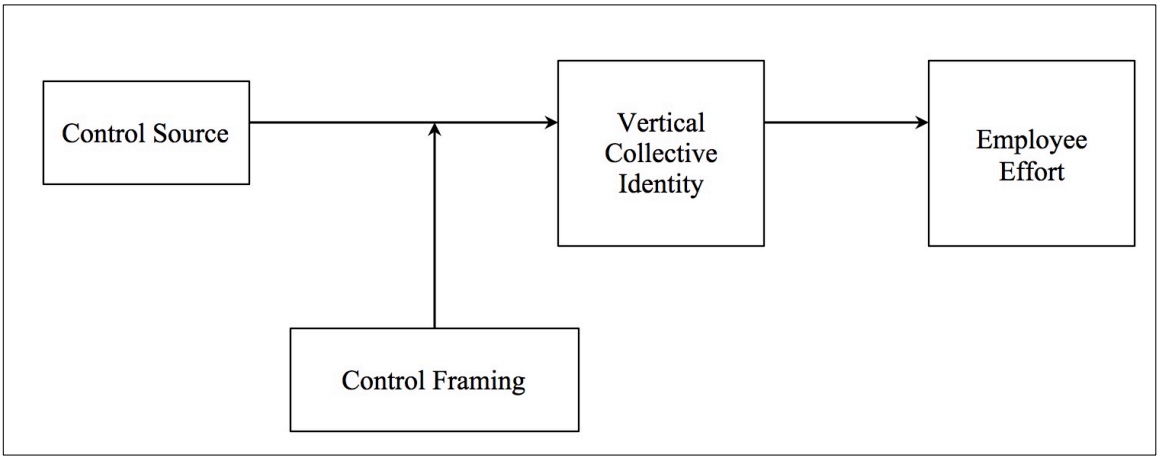
3.1. Main Predictions

3.1.1. Interactive Effects of Control Source and Control Framing on Vertical Collective Identity and Employee Effort

Managers can use control framing to communicate their intent of implementing controls either for monitoring or coordinating purposes (Liu et al., 2015). At the same time, the managers' choice to implement controls also implies their intent (Christ, 2013; Falk & Kosfeld, 2006). Since the prior literature suggests that the manager's both stated and implied intent to implement controls influence the development of vertical collective identity, I propose that the interaction of control source and control framing can serve a role for building or destroying vertical collective identity. Specifically, I argue that that control framing might work as the mechanism of *social identity framing* in manager-employee relationships.

When controls are framed for monitoring purposes, the controls communicate the threat of employees' self-interests to managers' self-interests (Liu et al., 2015; Lumineau & Malhotra, 2011). Importantly, controls with a monitoring frame imply that managers and employees share distinct self-identities, making each other's personal identity salient (Kramer, 2006; Wit & Kerr, 2002). Accordingly, controls with a monitoring frame influence employees to construe themselves in their personal identities rather than in a shared social identity with their managers, hindering the development of vertical collective identity.

Figure 1: Theoretical Framework



I predict that when the implementation of controls with a monitoring frame comes from the managers' active choice, it makes the managers' intent to protect their self-interests more salient (Christ, 2013; Falk & Kosfeld, 2006). As a result, the endogenous controls with a monitoring frame exacerbate the perceived division of interests between managers and employees. In contrast, considering that employees react to exogenous controls less negatively (Christ, 2013; Falk & Kosfeld, 2006), I predict that the salience of the conflict lessens when controls with a monitoring frame are imposed exogenously.

When a person's personal identity is salient, the person is less willing to engage in behavior that promotes collective interest (Brewer & Kramer, 1986; Kramer & Brewer, 1984). In organizational settings, this phenomenon translates to employees' willingness to exert discretionary effort. Therefore, I summarize my predictions as follows:

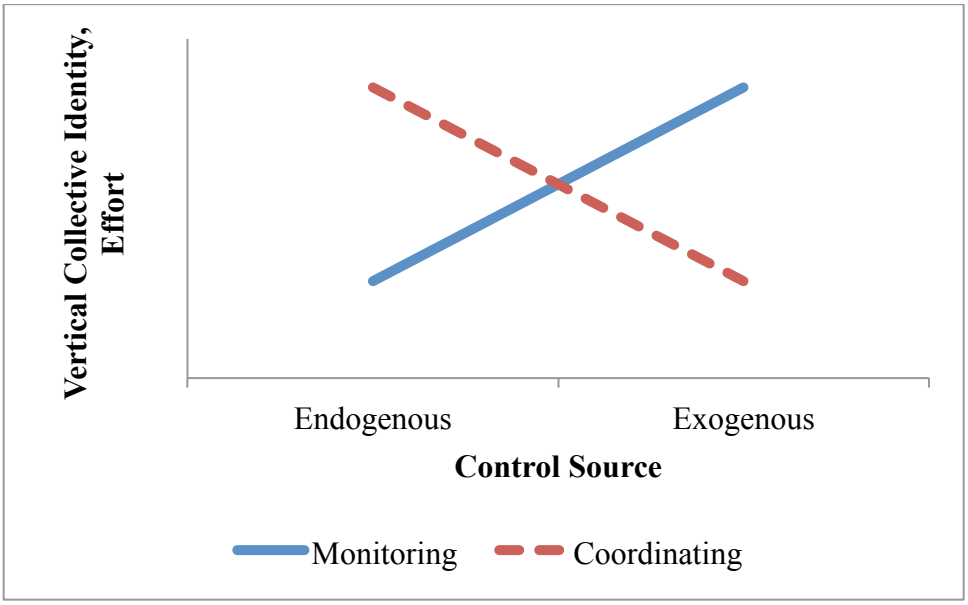
H1A: When controls are framed for monitoring purposes, employees exert lower effort in endogenous controls than in exogenous controls.

H1B: When controls are framed for monitoring purposes, endogenous controls lead to a weaker vertical collective identity than exogenous controls.

H1C: Vertical collective identity mediates the effect of controls on employees' effort. Specifically, a strong (weak) vertical collective identity leads to high (low) effort.

I predict that controls with a coordinating frame generate opposite outcomes. Essentially, a coordinating frame "collectivizes" group boundaries and promotes common gains (McGinn et al., 2012; McGinn & Nöth, 2012). When controls are framed for coordinating purposes, the controls communicate shared interests between managers and employees (Gulati et al., 2005; Malhotra & Lumineau, 2011). Prior research also finds that controls with a coordinating frame are unlikely to hurt trust (Lumineau & Malhotra, 2011; Malhotra & Lumineau, 2011). Hence, controls with a coordinating frame activate the development of vertical collective identity (Kramer, 2006; Wit & Kerr, 2002).

Figure 2: Illustration of the Predicted Interaction Effect (H1 and H2)



In addition, when controls with a coordinating frame are imposed endogenously, employees perceive it as managers' active attempt to advance common interests. Prior

research suggests that collective-oriented messages would be more persuasive to followers when the messages come from an in-group, rather than out-group, leader (Molenberghs et al., 2015). In my setting, I predict that the managers' active choice to implement controls with a coordinating frame heightens vertical collective identity. Hence, employees are more willing to exert effort. In contrast, when controls are imposed exogenously, the controls do not demonstrate managers' attempt to advance common interests, weakening vertical collective identity and employee effort. Therefore, I predict that:

H2A: When controls are framed for coordinating purposes, employees exert higher effort in endogenous controls than in exogenous controls.

H2B: When controls are framed for coordinating purposes, endogenous controls lead to a stronger vertical collective identity than exogenous controls.

H2C: Vertical collective identity mediates the effect of controls on employees' effort. Specifically, a strong (weak) vertical collective identity leads to high (low) effort.[2]

3.2. Additional Predictions

3.2.1. Similarities between Controls without Stated Purposes and Controls with a Monitoring Frame

When investigating the effects of controls on employee behavior, some prior studies use parsimonious designs that do not allow managers to communicate the reason of control implementation (see, e.g. Christ, 2013; Falk & Kosfeld, 2006).[3] The findings of those studies conclude adverse effects of controls. However, I argue that *the absence*

[2] H1C and H2C are identical. The duplication is necessary in order to maintain the logical consistency of H1 and H2.

[3] Such designs are equivalent to real-world settings in which controls are in place but neither the firm nor managers specify the purpose of control implementation.

of reasoning for control implementation, rather than a mere presence of controls, might explain those negative results.

The literature in psychology suggests that when the reason of control implementation is unstated, individuals view the presence of controls suspiciously, thinking that the person responsible for the control implementation does not trust them (Enzle & Anderson, 1993). In addition, the absence of vertical communication in general hurts the quality of manager-employee relationships because the vertical communication is crucial for managers to foster attachment and cohesiveness (Postmes, Tanis, & de Wit, 2001). Accordingly, the existence of vertical communication is a necessary condition to build vertical collective identity (Postmes et al., 2001; Seyranian, 2014; Steffens & Haslam, 2013).

Since employees suspect their managers' intention in response to the presence of controls without managers' explanation about the control purposes, I argue that employees would perceive the reason behind the presence of controls is for monitoring purposes. Building on my earlier predictions above, I further argue that the interaction between controls without reasoning for implementation and control source would lead to the similar effects as in the interaction between controls with a monitoring frame and control source. Specifically, I predict the following:

H3A: When controls are present without stating the reasoning for implementation (*controls without a frame*, hereafter), employees are more likely to infer that the controls are intended for monitoring rather than for coordinating purposes.

H3B: When controls without a frame are in place, employees exert lower effort in endogenous controls than in exogenous controls.

H3C: Vertical collective identity mediates the effect of controls on employees' effort. Specifically, when controls without a frame are in place, endogenous controls lead to a weaker vertical collective identity than exogenous controls.

4. RESEARCH METHOD AND DESIGN

4.1. Main Experiment

4.1.1. Experimental Design

In this study, I run an experiment with a 3 × 3 between-participants design, in which I manipulate control source (unknown source, endogenous, or exogenous) and control framing (no frame, monitoring frame, or coordinating frame). The presence of cells that interact with unknown source or no frame conditions allows me to detect the incremental effects of my main treatments.

Figure 3: Complete Experimental Design

Control Framing / Control Source	No Frame	Monitoring Frame	Coordinating Frame
Unknown Source	A	B	C
Endogenous	D	E	F
Exogenous	G	H	I

My experiment structure resembles the design by Falk and Kosfeld (2006), which is a one-shot principal-agent game. A one-shot game allows studying the effects of controls in a parsimonious fashion because this design mitigates potential confounds, such as reputation building or reciprocity, that might occur in a multiple-rounds design (Falk & Kosfeld, 2006; Tayler & Bloomfield, 2011).

I randomly assign participants to one of the nine treatments. Each participant assumes a role of an employee to an anonymous manager of Division X in Company

PQR; hence, each condition has one manager that supervises multiple employees.[4] In the beginning of the experiment, each participant receives an endowment of 65 points.[5] The endowment is worth 65 cents. Participants can transfer partial or all points to their managers; the transfer represents employee effort. Participants are informed that the welfare of themselves, their division, as well as their manager may improve if they exert more effort. Participants answer several comprehension checks to ensure that they have understood the compensation scheme. They cannot proceed to the next session prior to answering all questions correctly.

After completing the comprehension checks, participants are informed that every condition has a control in place that requires participants to transfer at least 5 points to the manager. Transferring mere five points can be considered a weak control, which is a powerful condition to detect the variability in the participants' effort (Falk & Kosfeld, 2006). When a control is strong, participants are forced to exert high effort, making it difficult to observe negative consequences (if any) of control implementation on effort (Belot & Schröder, 2016; Falk & Kosfeld, 2006; Tyran & Feld, 2006).

Before making a transfer, depending on the condition, participants are informed whether the control is present either because of their manager's decision or because of their company's policy, which is beyond the manager's authority. Participants are also informed that the reasoning behind control implementation is for monitoring or coordinating purposes (details are explained below). After making a transfer, participants fill out a series of post-experimental questions related to manipulation checks, their

[4] Participants are told that the manager is real, not fictitious, person.
[5] To mitigate the risk of fairness perceptions, I do not inform participants about their manager's initial endowment. The manager receives zero points as an initial endowment.

perceptions of vertical collective identity, intrinsic motivation, social value orientation, and demographic information.

4.1.2. Participants

I recruit all participants using the Amazon Mechanical Turk (AMT) online platform. For each condition, I recruit around 30 workers as employees, so the total number of participants is 271 workers; 55% of participants are male. On average, the participants have 16 years of work experience and are 37 years old. Sixty-one percent of participants have supervisory or managerial experience and the average length of supervisory experience is 6 years.

I recruit the AMT workers who are located in the United States and consider English as their native language. The minimum age of participants is 18 years old. Each participant earns a show-up fee of $1.50. Participants are also told that they can earn a possible bonus pay up to $1.45.[6] In addition, I employ a doctoral student, who is also an AMT user, as a confederate who assumes the manager role. Employing a real confederate allows me to avoid having a fictitious manager and enables me to tell the participants that their transfer decisions have real economic consequences to their manager. The confederate earns 10% of the total points transferred by participants from all nine conditions. The total number of points transferred by all participants is 10,675 points (equivalent to $106.75). Hence, the confederate earns $10.68 from this study. Again, to mitigate the risk of fairness perceptions (see footnote 6), the experimental materials do

[6] More discussion about the possible bonus pay can be found at Section 4.1.4, *Dependent and Mediating Variables*.

tell participants about the details of this arrangement. Participants are only told that transferring more points allows their manager to earn higher bonus pay.

Qualifications and Quality Control of AMT Workers

The AMT site has been increasingly popular among accounting studies because it provides behavioral researchers convenient access to a large participant pool at a low cost. However, data quality is one of the major concerns facing experimental studies that capitalize on the AMT site to recruit participants. The biggest issue is that AMT workers may not be attentive respondents given the fact that internet-based studies lose some experimental controls provided by the traditional laboratory settings. Prior studies suggest two measures to improve data quality: approval ratings and instructional manipulation checks. First, restricting participation to AMT workers with high reputation (above 95% approval rating) is effective to combat the data quality issues (Peer, Vosgerau, & Acquisti, 2014). Workers with high reputation are motivated to pay close attention to the experiment's instructions due to their fear of having their work submission rejected, thereby hurting their approval ratings. Second, instructional manipulation checks allow researchers to filter out participants who fail to follow instructions. Instruction manipulation checks, often called as "trap questions", are special attention checks that instruct participants to ignore the standard response format and submit a non-intuitive response instead (Oppenheimer, Meyvis, & Davidenko, 2009). This special command is hidden in a large block of instruction; hence, it is likely that inattentive respondents miss the command.

I include both strategies in my experimental design in order to obtain quality data. First, participants of this study have to meet the following eligibility criteria: (1) their approval rates of prior tasks should be above 98% and (2) the number of prior tasks completed in the AMT platform is above than 10,000 tasks. The AMT platform makes it possible for me to impose these qualifications before the workers begin my task. Second, I place one instructional manipulation check as the second to last question of my experimental tasks. The instructional manipulation check tells participants that failure to follow the special instruction embedded in this check will make them lose their bonus pay. Consistent with the expectation that workers with high reputation complete tasks attentively, only one out of 271 workers failed the instructional manipulation.[7]

4.1.3. Independent Variables

Control Source

To manipulate the level of control source, I develop scripts that tell participants about who is responsible for the control implementation. The script for the endogenous-source condition prescribes that the manager has the authority to implement a control that requires employees to transfer at least five points, and that the manager has decided to do so. In contrast, the script for the exogenous-source condition tells participants that the company's executive management has decided to implement the control, and this decision is beyond the manager's authority. The unknown-source condition does not provide participants the information about the responsible party.

[7] Results are unchanged if the responses of this worker is included; therefore, I retain all participants' responses in my dataset.

The scripts also use linguistic variations to emphasize different control sources. Specifically, prior findings suggest that pronouns reinforce and perpetuate perceptions about relationships (see, e.g., Fitzsimons & Kay, 2004; Gustafsson Sendén et al., 2013; Perdue et al., 1990; Sela, Wheeler, & Sarial-Abi, 2012; Tu, Shaw, & Fishbach, 2016). On the one hand, the pronoun "I" or "my" acknowledges ownership (Newman, Pennebaker, Berry, & Richards, 2003); therefore, these pronouns reinforce the message that the source of control is endogenous. On the other hand, since the pronoun "they" or "their" shifts ownership to another party, these pronouns can be used to emphasize the exogenous source of controls (Gustafsson Sendén et al., 2013; Perdue et al., 1990). Hence, I include 10 words of "I" or "my" and 10 words of "they" or "their" in the endogenous-control and the exogenous-control" conditions, respectively.

Control Framing

Similar to the study of Liu et al. (2015), I manipulate the level of control framing by informing participants about the reasoning behind control implementation. In the monitoring-frame condition, participants are told that the purpose of control implementation is "to prevent employees from producing transferring fewer resources than the division needs." Essentially, participants are informed that the control is designed to restrict the employees' opportunities to keep all resources for themselves. In contrast, the script for the coordinating-frame condition tells participants that the purpose of control implementation is "to optimize resource allocation and coordinate resources more efficiently." The script for the no-frame condition" does not inform participants about the purpose of control implementation.

In addition, I rely on pronoun variations again to enhance the perceived purposes of control implementation. Specifically, the pronoun "you" or "your" reinforces the perception of distant relationships and the assignment of blame (Olekalns, Brett, & Donohue, 2010; Seider, Hirschberger, Nelson, & Levenson, 2009). Essentially, the pronoun "you" or "your" perpetuates the need for monitoring others' behavior. Therefore, I include 10 words of the pronoun "you" or "your" in the script for the monitoring-frame condition. In contrast, because the pronoun "we", "us", or "our" perpetuates the perception of close relationships and togetherness (Fitzsimons & Kay, 2004; Perdue et al., 1990), these pronouns emphasize the message of collaboration. In the monitoring-frame condition, I include 10 words of the pronoun "we", "us", or "our." The overview of the experimental instrument is provided in Appendix.

4.1.4. Dependent and Mediating Variables

Baiman (1982) defines that the operationalization of effort has to meet the following criteria: (a) effort is costly to the agent; (b) the cost of effort increases with the level of effort; (c) an increase in agent's effort results in a gain of welfare for both the principal and the agent; and (d) the agent experiences disutility from choosing a higher effort level. To ensure that I follow the criteria above, I measure effort as my dependent variable (*Employee Effort*) based on the number of points transferred. As mentioned earlier, participants are told that they can demonstrate their effort level by contributing partial or all points of their endowment to their division (the total points of initial endowment: 65 points, which is worth $0.65). Specifically, participants can choose their effort level from 5 to 65 points, and they can increase the contribution of their effort by

increments of 5 points. The remaining points of endowment after contribution is converted to be real dollars and paid as a bonus pay. Consequently, contributing more points is costly for participants because it will reduce the amount of their bonus pay.

At the same time, participants are also informed that exerting more effort will allow them to achieve a high outcome. Adapting from the study of Hannan et al. (2005), I link the cost of effort to the probability of achieving the high outcome. Participants are told that increasing their level of effort by 5 points will raise their chance by 5% to earn an extra bonus pay of $0.80. A lottery will be drawn based on the probability corresponding to one's effort level choice. Before choosing their effort levels, participants review a table that shows the probability of winning the extra bonus of $0.80 for each of the 13 possible effort level choices. The table is the part of the experimental materials provided in Appendix.

After measuring the dependent variable, I also measure the mediating variable, *Vertical Collective Identity* in post-experimental questions. I use the Inclusion of Other in the Self (IOS) scale (Aron et al., 2004) as the main indicator of *Vertical Collective Identity*. The IOS Scale is a widely used measure for gauging the closeness of a relationship and appears to be robust in terms of reliability, as well as the predictive validity (Aron, Aron, Tudor, & Nelson, 1991; Aron et al., 2004).

I also develop the supporting indicator of *Vertical Collective Identity* based on eight questions adapted from prior literature (Steffens, Haslam, Reicher, et al., 2014; B. van Knippenberg & van Knippenberg, 2005). The questionnaire uses a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The Cronbach's alpha of the eight items is 0.96. I also run the factor analysis to evaluate the convergent and

divergent validity of this supporting measure. The factor analysis generates only one factor with eigenvalues greater than 1 (6.31), which explain around 78.87% of the overall variance. The Kaiser-Meyer-Olkin measured of sampling adequacy is high (0.96). Overall, the results indicate that the items are capable of measuring vertical collective identity as a distinct construct.

Potential Covariates

I measure two potential covariates in this study. First, as prior literature suggests that intrinsic motivation is the main driver of effort (Ryan & Deci, 2000), I measure the participants' levels of their overall intrinsic motivation (*Intrinsic Motivation*). Adapting from the study of Elliot and Harackiewicz (1994), I develop five question items as the measure of intrinsic motivation. The Cronbach's alpha of these five items is 0.83, indicating high internal consistency. The factor analysis supports the divergent and convergent validity of the construct: it generates only one factor with an eigenvalue greater than 1 (3.05) and explains 61% of the variance. The Kaiser-Meyer-Olkin measure of sampling adequacy is high (0.83).

Second, I measure the participants' social value orientation (*Social Orientation*). Individuals with a high prosocial orientation likely develop close relationships and shared identities with others (De Cremer, Van Knippenberg, Van Dijk, & Van Leeuwen, 2008); consequently, the degree of social orientation affects the strength of vertical collective identity. To measure *Social Orientation*, I utilize nine items of decomposed games developed by Van Lange, Otten, De Bruin, and Joireman (1997). These measures are well validated in psychology research (see, e.g. Messick & McClintock, 1968; Van Lange

& Kuhlman, 1994). Each item asks participants to choose one among three options; each option gives participants the different proportion of a hypothetical payoff for oneself and another person. These options represent three groups of social value orientations (in the order of prosocial degree): competitive, individualistic, and prosocial orientations. An individual is categorized as competitive, individualistic, or prosocial if this person selects at least six choices out of nine items that belong to a particular social orientation group.

Additional Measures

I evaluate the participants' perceptions of control source and control framing in the post-experimental questions. Both *Perceived Control Source* and *Perceived Control Frame* serve as attention checks of the main conditions of this study. In addition, *Perceived Control Frame* is used to test Hypothesis 3A. Participants respond to one item that measures *Perceived Control Frame*. Participants are invited to choose between Option A ("I think the policy is designed to monitor and restrict employees' behavior") and Option B ("I think the policy is designed to facilitate the coordination of employees' effort"). Similarly, participants respond to one item that measures *Perceived Control Source*. I elicit participants' interpretation regarding the source of control by asking them to indicate who is responsible for the implementation of control: (a) their manager; (b) executive management; or (c) "the text does not provide information".

4.2. Pilot Testing

I ran multiple rounds of pilot testing to refine the experimental task, manipulation checks, the manipulated and measured variables, and other post-experimental questions.

First, 50 Masters of Accounting (MAcc) students reviewed and completed the pilot test. Ninety percent of students have work experience (average: 5 years of experience; median: 4 years) and 42% of students have experience in supervising subordinates (average: 1.4 years of experience). The first pilot test covered six conditions: Endogenous Source/Monitoring Frame, Exogenous Source/Monitoring Frame, Endogenous Source/Coordinating Frame, Exogenous Source/Coordinating Frame, Endogenous Source/No Frame, and Exogenous Source/No Frame.

I conducted the second and the final pilot tests with nine and six AMT workers, respectively. Based on their responses, I adjusted the compensation amount and refined the clarity of case materials in order to increase the salience manipulation of independent variables.

5. RESULTS

5.1. Descriptive Statistics

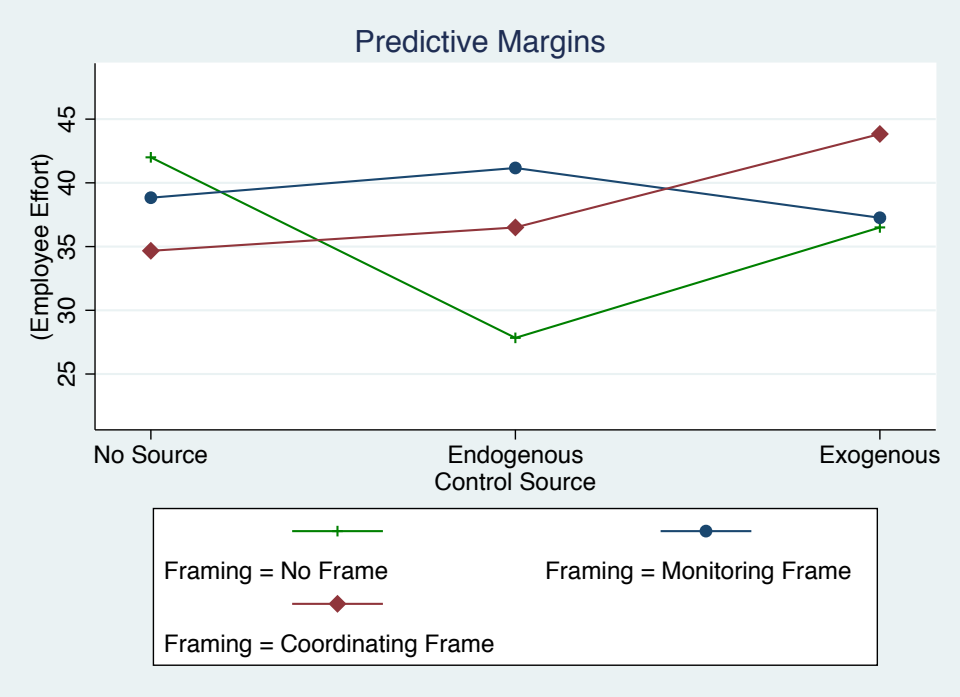
5.1.1. Descriptive Statistics of Employee Effort and Vertical Collective Identity Across Conditions

In Table 1, I present descriptive statistics of the number of points transferred (*Employee Effort*) across all conditions. Figure 4 displays the means plot for all conditions.

Table 1: Descriptive Statistics of Employee Effort (All Conditions)

		Control Framing		
		No Frame	Monitoring Frame	Coordinating Frame
Control Source	Unknown Source	42.00 (23.47) n = 30	38.83 (23.33) n = 30	34.67 (23.34) n = 30
	Endogenous	27.83 (25.62) n = 30	41.17 (24.41) n = 30	36.50 (26.53) n = 30
	Exogenous	36.50 (25.67) n = 30	37.26 (23.34) n = 31	43.83 (23.55) n = 30

Figure 4: Means Plot of Employee Effort (All Conditions)



When the control frame is absent, the pattern of results shown in Figure 4 is consistent with the findings of prior literature: the endogenous control yields lower effort compared to effort level in the conditions where the control source is not known or the control source is exogenous. However, the patterns of results of main treatments do not appear to support my predictions: participants in the Exogenous Source/Monitoring condition seem to exert *lower* effort than those in the control group or in the Endogenous Source/Monitoring condition, a direction that contradicts my first hypothesis.

Also, the average effort of the Endogenous/Coordinating condition appears to be lower than the average effort of the Exogenous/Coordinating condition or, surprisingly, that of the Endogenous Source/Monitoring Condition. Overall, the patterns of results are the opposite of my expectations.

Table 2 presents descriptive statistics of the scores of vertical collective identity on all conditions. Figure 5 plots the patterns of results.[8]

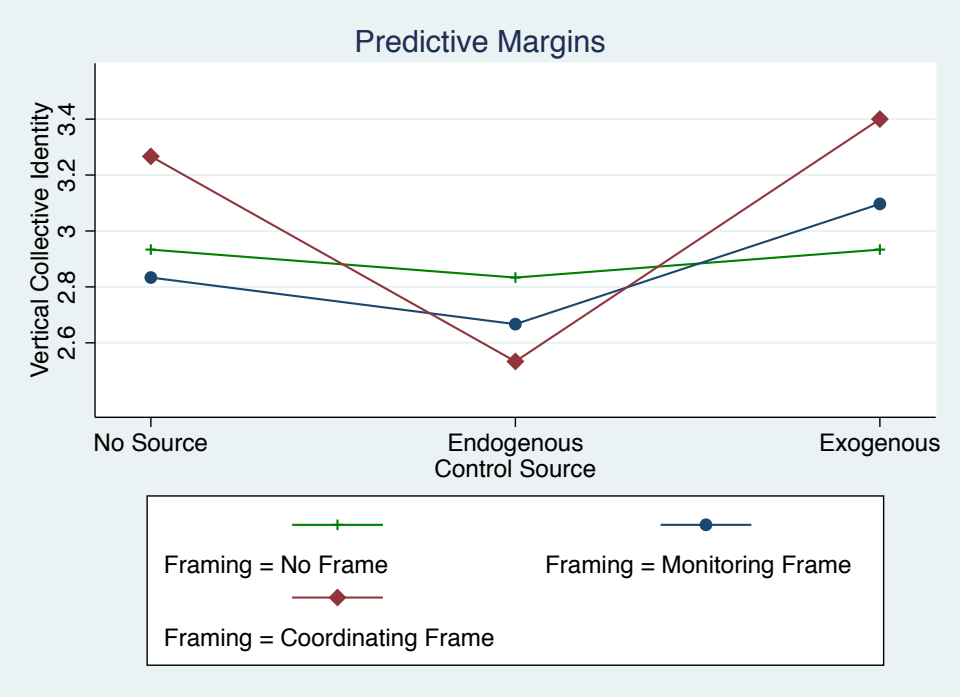
Table 2: Descriptive Statistics of Vertical Collective Identity (All Conditions)

		Control Framing		
		No Frame	Monitoring Frame	Coordinating Frame
Control Source	Unknown Source	2.93 (1.70) n = 30	2.83 (1.70) n = 30	3.27 (1.60) n = 30
	Endogenous	2.83 (1.49) n = 30	2.67 (1.42) n = 30	2.53 (1.46) n = 30
	Exogenous	2.93 (1.60) n = 30	3.10 (1.54) n = 31	3.40 (1.45) n = 30

Again, I find a surprising pattern: participants in the Endogenous Source/Coordinating condition report seemingly *lower* scores of vertical collective identity than those in the control group or *any* other treatment groups. The patterns depicted in Figure 4 and Figure 5 imply that, unexpectedly, the combination of endogenous control and a coordinating frame *hurts* the social identity shared between employees and their manager, thus lowering employee effort.

[8] I find similar patterns and results (untabulated) in all statistical tests that I perform using the alternative measure of vertical collective identity.

Figure 5: Means Plot of Vertical Collective Identity (All Conditions)



5.1.2. Descriptive Statistics of Covariates

Social Orientation

Table 3 presents the descriptive statistics of the first covariate, *Social Orientation*, across conditions. The Social Orientation scale measures participants' social value orientation based on their responses to nine hypothetical situations. A lower score on this scale indicates higher prosocial orientation (1 = prosocial; 2 = individualistic; 3 = competitive). Table 3 suggests that most participants perceive themselves as prosocial beings.

Table 3: Descriptive Statistics of Social Orientation (All Conditions)

		Control Framing		
		No Frame	Monitoring Frame	Coordinating Frame
Control Source	Unknown Source	1.50 (0.63) n = 30	1.33 (0.55) n = 30	1.27 (0.64) n = 30
	Endogenous	1.40 (0.62) n = 30	1.30 (0.53) n = 30	1.20 (1.46) n = 30
	Exogenous	1.33 (0.61) n = 30	1.26 (0.51) n = 31	1.33 (0.55) n = 30

The statistical test reported on Table 4 indicates that covariate means do not differ across nine conditions. Since *Social Orientation* does not vary systematically across conditions, I conclude that the random assignment is successful and prevents *Social Orientation* from correlating with other variables across conditions, including the treatment variables themselves.

Table 4: One-Way ANOVA Test: Social Orientation Means Across Conditions

	df	MS	F	p-value
Model	8	0.2278	0.64	0.75
Conditions	8	0.2278	0.64	0.75
Error	262	0.3573		
R-square: 1.91%				

Intrinsic Motivation

Table 5 presents the descriptive statistics of the second covariate, *Intrinsic Motivation*, across conditions. The Social Orientation scale measures participants' levels

of intrinsic motivation when completing their AMT tasks, which are rated on a 7-point Likert scale ranging from 1 (very unmotivated) to 7 (very motivated).

Table 5: Descriptive Statistics of Intrinsic Motivation (All Conditions)

		Control Framing		
		No Frame	Monitoring Frame	Coordinating Frame
Control Source	Unknown Source	4.59 (1.12) n = 30	4.78 (1.17) n = 30	4.23 (1.44) n = 30
	Endogenous	4.45 (1.53) n = 30	4.59 (1.41) n = 30	4.01 (1.08) n = 30
	Exogenous	3.86 (1.41) n = 30	4.15 (1.35) n = 31	4.49 (1.10) n = 30

The statistical test reported on Table 6 indicates that covariate means do not differ across nine conditions. Since *Intrinsic Motivation* does not vary systematically across conditions, I conclude that the random assignment is successful and prevents *Intrinsic Motivation* from correlating with other variables across conditions, including the treatment variables themselves.

Table 6: One-Way ANOVA Test: Intrinsic Motivation Means Across Conditions

	df	MS	F	p-value
Model	8	2.7704	1.64	0.11
Conditions	8	2.7704	1.64	0.11
Error	262	1.6910		
R-square: 1.91%				

5.2. Tests of Main Hypotheses: H1 and H2

5.2.1. Tests of H1A and H2A

Manipulation Checks

I conduct a set of two ANOVA tests to check whether the manipulations are successful. The first ANOVA test is conducted with two levels of control source as the independent variable and the participants' responses on the perceived control source as the dependent variable. Participants rate their perceptions of the source of control in a binary scale, ranging from 1 (endogenous source) to 2 (exogenous source). Participants are more likely to perceive the control source as an endogenous source in the endogenous control conditions (M = 1.05, SD = 0.29) than in the exogenous conditions (M = 1.90, SD = 0.30), $F(1, 119) = 254.46$, $p < 0.001$, Cohen's $d = 2.90$). Specifically, 93% of participants passed the manipulation check. Hence, I conclude that the manipulation of control source is successful.

The second ANOVA tests is conducted with two levels of control framing as the independent variable and the participants' responses on the perceived control frame as the dependent variable. Participants rate their perceptions of the purpose of control in a binary scale, ranging from 1 (monitoring purposes) to 2 (coordinating purposes). Participants are more likely to rate the control frame as a coordinating frame in the coordinating frame conditions (M = 1.93, SD = 0.25) than in the monitoring frame conditions (M = 1.54, SD = 0.50), $F(1, 119) = 29.35$, $p < 0.001$, Cohen's $d = 0.98$). Specifically, 49% of participants failed the manipulation check. Therefore, I conclude that the manipulation of control framing is *not* successful.

Results

Table 7: ANCOVA Model of Employee Effort

	df	MS	F	p-value
Model	4	1599.04	2.86	0.03
Control Source	1	79.10	0.14	0.71
Control Framing	1	76.49	0.14	0.71
Control Source x Control Framing	1	289.48	0.52	0.47
Intrinsic Motivation	1	5327.14	9.54	0.00
Error	116	558.54		
R-square: 8.99%				

Table 7 presents the ANCOVA test of employee effort on control source and control framing. Controlling for the participants' scores of intrinsic motivation, I do not find statistical significance on the interaction of control source and control framing. When I exclude the covariate (*Intrinsic Motivation*), I still fail to find statistical significance. The results are reported in Table 8.

Table 8: ANOVA Model of Employee Effort

(Excluding Intrinsic Motivation as Covariate)

	df	MS	F	p-value
Model	3	356.34	0.59	0.62
Control Source	1	88.68	0.15	0.70
Control Framing	1	27.54	0.05	0.83
Control Source x Control Framing	1	955.56	1.59	0.21
Error	117	599.30		
R-square: 1.50%				

Table 9 below shows the analyses of simple effects, which are also not statistically significant. In sum, I fail to find support for H1A and H2A.

Table 9: Simple Effect Tests – Employee Effort

Comparisons:	Contrast	Std. Err.	df	F	p-value
Endogenous Source/Monitoring Frame vs. Exogenous Source/Monitoring Frame	-1.53	6.10	1	0.06	0.80
Endogenous Source/Coordinating Frame vs. Exogenous Source/Coordinating Frame	4.76	6.19	1	0.60	0.44

Figure 6: Predictive Margins Plot – Employee Effort

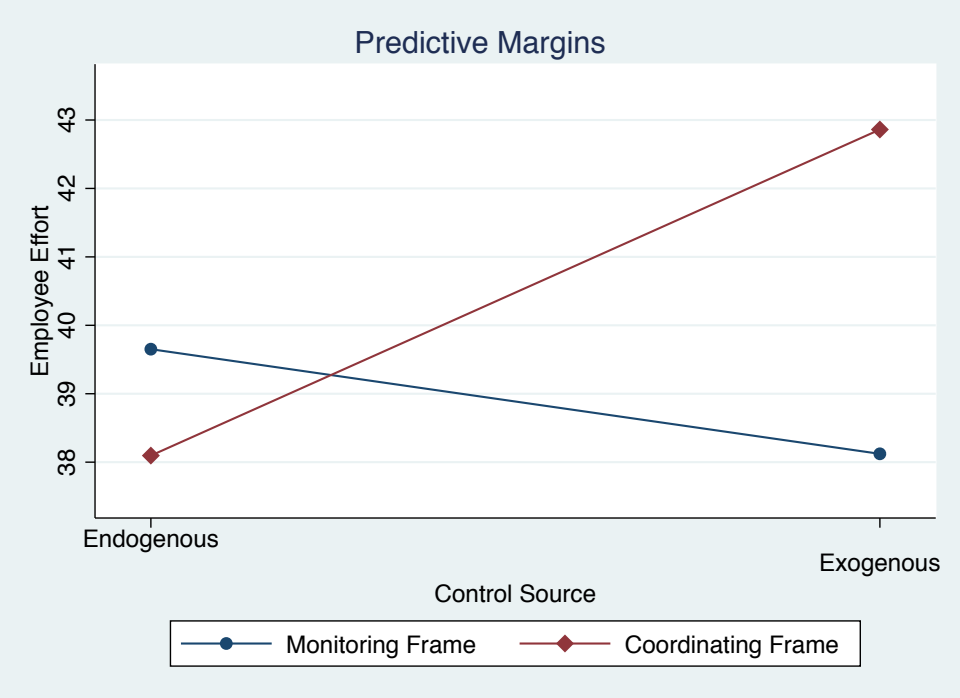


Figure 6 above displays the plot of the means transferred points (*Employee Effort*) for each combination of control source and control framing. While the results do not differ significantly, the plot suggests that an interaction effect might be present. However,

the direction of results is unexpected. In the coordinating frame, participants seem to exert lower effort when the control is endogenous than when it is exogenous, which counters with H2A. In the monitoring frame, the effort means of the exogenous control seems to be lower, or close to, the means of the endogenous control. Again, this directional pattern contradicts H1A. The plot also suggests that the endogenous control with a coordinating frame does not promote effort as I have predicted; in fact, participants in this condition appear to exert lower effort than, or the same level of effort as, the endogenous control with a monitoring frame.

5.2.2. Tests of H1B and H2B

Table 10 below presents the ANCOVA test of vertical collective identity on control source and control framing. Controlling for the participants' scores of social orientation, I also do not find statistical significance on the interaction of control source and control framing. Likewise, the interaction effect is not statistically significant when I exclude *Social Orientation* as a covariate (results are tabulated in Table 11).

Table 10: ANCOVA Model of Vertical Collective Identity

	df	MS	F	p-value
Model	4	5.39	2.55	0.04
Control Source	1	13.47	6.38	0.01
Control Framing	1	0.19	0.09	0.76
Control Source x Control Framing	1	1.97	0.93	0.34
Social Orientation	1	7.26	3.44	0.07
Error	116	244.79		
R-square: 8.09%				

Table 11: ANOVA Model of Vertical Collective Identity

(Excluding Social Orientation as Covariate)

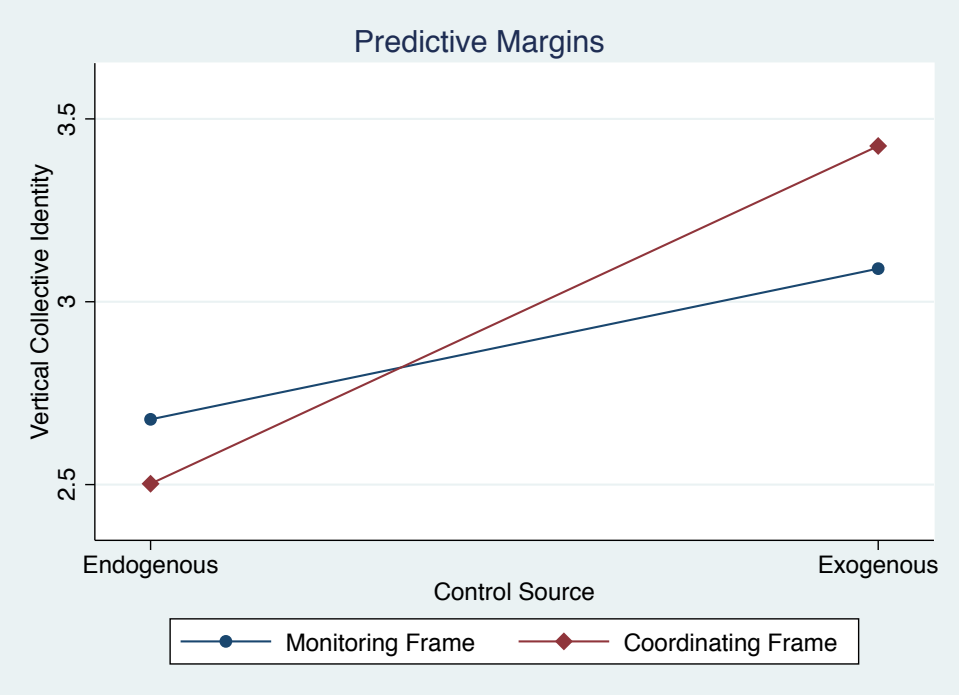
	df	MS	F	p-value
Model	3	4.76	2.21	0.09
Control Source	1	12.71	5.90	0.02
Control Framing	1	0.22	0.10	0.75
Control Source x Control Framing	1	1.44	0.67	0.42
Error	117	2.15		
R-square: 5.36%				

Table 12 below shows the analyses of simple effects. The difference between two cells in the monitoring frame, on the one hand, is not significant, implying that I fail to find support for H2A.

Table 12: Simple Effect Tests – Vertical Collective Identity

Comparisons:	Contrast	Std. Err.	df	F	p-value
Endogenous Source/Monitoring Frame vs. Exogenous Source/Monitoring Frame	0.41	0.37	1	1.23	0.27
Endogenous Source/Coordinating Frame vs. Exogenous Source/Coordinating Frame	0.92	0.38	1	6.02	**0.02**

Figure 7: Predictive Margins Plot – Vertical Collective Identity



On the other hand, I find a statistical difference between the Endogenous Source/Coordinating and the Exogenous Source/Coordinating conditions (p-value = 0.02). However, the significant result that I find from the simple effect test above does not necessarily support H2B. In fact, Figure 7 displays that the significant effect yields a direction that is contrary to H2B: the means score of vertical collective identity in the Exogenous Source/Coordinating Frame appears to be higher than in the Endogenous Source/Coordinating Frame. In the monitoring frame, the plot displays that the exogenous control appears to yield higher scores of vertical collective identity than the endogenous control, a direction that is consistent with H2A. As mentioned previously, the difference is not statistically significant (p = 0.27). Collectively, I conclude that I fail to find support for H2A and H2B.

5.2.3. Mediation Analysis: Tests of H1C and H2C

I perform the seemingly unrelated regressions (SUR) to build my mediation models. SUR models take into account the fact that there are multiple equations and that the residuals for those equations may be correlated with each other (Zellner & Huang, 1962).[9] The SUR framework is suitable for mediation analysis with categorical independent variables (UCLA: Statistical Consulting Group).

Table 13: Mediation Analysis

Model	RMSE	R-square	Chi-square	p-value
Vertical Collective Identity (MV)	1.42	8%	10.65	0.03
Points (DV)	22.94	11%	14.21	0.03

	Vertical Collective Identity (Mediating Variable)					
	Coeff.	Std. Err.	z	p-value	95% CI	
Control Source	0.41	0.36	1.13	0.26	-0.30	1.13
Control Framing	-0.18	0.37	-0.48	0.63	-0.90	0.55
Control Source x Control Framing	0.51	0.52	0.99	0.32	-0.51	1.53
Social Orientation	-0.43	0.23	-1.89	0.06	-0.87	0.01
Constant	3.22	0.39	8.22	0.00	2.45	3.99
	Effort (Dependent Variable)					
	Coeff.	Std. Err.	z	p-value	95% CI	
Vertical Collective Identity	1.78	1.53	1.16	0.25	-1.22	4.78
Control Source	-2.76	5.99	-0.46	0.65	-14.50	8.99
Control Framing	-2.04	6.03	-0.34	0.74	-13.85	9.77
Control Source x Control Framing	6.70	8.54	0.79	0.43	-10.03	23.44
Intrinsic Motivation	4.61	1.80	2.56	0.01	1.08	8.14
Social Orientation	-2.53	3.71	-0.68	0.50	-9.80	4.75
Constant	18.55	10.91	1.70	0.09	-2.84	39.93

[9] Seemingly unrelated regression is considered a "pure" structural model, a subset of the structural-equation modeling framework, that does not include latent variables.

The results in Table 13 show that the root mean squared error (RMSE) values of both models are high. As lower values of RMSE indicate better fit, the mediation analysis reveals that both models are poorly specified. In addition, I fail to find support for the hypothesized mediation model (i.e., H1C and H2C). I also test the significance of indirect effect, i.e. whether the vertical collective identity mediates the relationship between employee effort and the interaction of control source and control framing. Table 14 below shows that the indirect effect is not significant.

Table 14: Test of Indirect Effect

	Coeff.	Std. Err.	z	p-value	95% CI	
Indirect effect (using delta method)	0.91	1.21	0.75	0.45	-1.46	3.29

The distribution of indirect effects is often skewed and violates the assumption that it is normal distributed, making it harder to detect the effects. Therefore, it is recommended that bootstrap standard errors and confidence intervals be used. I present the results of bootstrapping in Table 9 below. The indirect effect is still not significant after bootstrapping. Overall, I still cannot find empirical evidence to support H1C and H2C.

Table 15: Test of Indirect Effect (Bootstrapping)

Bootstrap results: (replications = 10,000)	Coeff.	Bias	Bootstrap Std. Err.	95% CI	
Indirect effect (percentile CI)	0.91	-0.21	1.49	-1.49	4.55
Indirect effect (biased-corrected CI)				-0.73	6.09

As a robustness test, I run a path analysis as an alternative mediation test. The results of the path analysis are similar to the earlier results, suggesting that I still fail to support H1C and H2C. Results are tabulated in Table 16 below.

Table 16: Path Analysis

	Vertical Collective Identity (Mediating Variable)			
Path (R-square = 7.35%)	Coeff.	Std. Err.	t	p-value
Control Source -> VCI	0.62	0.36	1.13	0.26
Control Framing -> VCI	0.00			
Control Source x Control Framing -> VCI	0.04	0.13	0.31	0.76
Social Orientation -> VCI	-0.41	0.23	-1.79	0.08
Constant	2.20	0.94	2.34	0.02

	Effort (Dependent Variable)			
Path (R-square = 10.05%)	Coeff.	Std. Err.	t	p-value
Vertical Collective Identity -> Effort	1.82	1.58	1.15	0.25
Control Source -> Effort	-0.16	4.88	-0.03	0.97
Control Framing -> Effort	0.00			
Control Source x Control Framing -> Effort	0.68	2.15	0.32	0.75
Intrinsic Motivation -> Effort	4.86	1.82	2.67	0.01
Social Orientation -> Effort	-2.22	3.80	-0.58	0.56
Constant	11.34	17.59	0.64	0.52

5.3. Tests of Additional Hypothesis: H3

H3 predicts that participants in the absence of control frame conditions will be more likely to believe that the reason behind control implementation is for monitoring purposes.

Table 17: Descriptive Statistics of Employee Effort
Based on Perceived Control Purpose in the Absence of Control Framing

		Perceived Control Frame	
		Monitoring	Coordinating
No Source	No Frame	33.75 (28.39) n = 4	43.26 (23.01) n = 26
Endogenous Source	No Frame	5.00 (0.00) n = 1	28.62 (25.70) n = 29
Exogenous Source	No Frame	5.00 (0.00) n = 2	38.75 (25.08) n = 28

Contrary to my expectations, the results above show that 92% of participants in the no-frame conditions perceive that the reason behind control implementation is for *coordinating* purposes. Consequently, I fail to find support for H3A. I also do not find a statistically significant result that supports H3B, although the pattern trend is consistent with the prediction, i.e. the average of employee effort appear to be lower in the Endogenous Source/No Frame condition (M = 27.83, SD = 27.83, n = 30) than in the Exogenous Source/No Frame condition (M = 36.50, SD = 25.67, n = 30). At the same time, I acknowledge that even the directional trend is consistent with H3B, the means difference is *not* likely triggered by the participants' belief that the purpose of controls in the absence of control frame is for monitoring purposes.

Table 18: Descriptive Statistics of Vertical Collective Identity Based on Perceived Control Purpose in the Absence of Control Framing

		Perceived Control Frame	
		Monitoring	Coordinating
No Source	No Frame	2.00 (0.82) n = 4	3.07 (1.76) n = 26
Endogenous Source	No Frame	2.00 (0.00) n = 1	2.86 (1.51) n = 29
Exogenous Source	No Frame	2.50 (2.12) n = 2	2.93 (1.70) n = 28

Table 18 above shows the VCI means by conditions. I find no statistical difference in the strength of vertical collective identity across perceived control cells (untabulated omnibus ANOVA results: $F(3, 70) = 0.83$, p-value = 0.48). Accordingly, I cannot find support for H3C. However, I find that partitioning the results based on participants' *perceived* control frame gives me a pattern consistent with my intuition: the strength of vertical collective identity is lower when participants are more likely to perceive that the reason behind control implementation is for monitoring purposes than for coordinating purposes.

5.4. Supplementary Analyses

5.4.1. Statistical Tests Based on Participants' Perceived Control Source and Perceived Control Framing

Given the findings I obtained when testing H3, I speculate that the overwhelming number of people perceiving the reason behind control implementation as coordinating purposes may influence the participants' responses. Additionally, the manipulation of

control framing appears to be unsuccessful: a further investigation (untabulated) reveals that 55% of participants in the monitoring conditions perceive that the reason behind control implementation is for coordinating purposes.

Therefore, I decide to partition the data based on the *perceived* control frame and the *perceived* control source. I acknowledge that analyzing data using the participants' perceptions, rather than the treatment manipulations, takes away my ability to make causal inferences.

Table 19: Descriptive Statistics of Employee Effort on *Perceived* Conditions

Employee Effort		Perceived Control Frame	
		Monitoring	Coordinating
Perceived Control Source	No Source	33.75 (24.89) n = 8	43.91 (22.53) n = 32
	Endogenous	31.15 (25.93) n = 26	37.52 (24.41) n = 103
	Exogenous	35.75 (24.51) n = 20	38.17 (24.73) n = 82

Table 19 shows the descriptive statistics of *Employee Effort* based on the participants' perceived control source and perceived control frame. In addition, Figure 8 displays means plots of *Employee Effort* for all perceived conditions.

Figure 8: Predictive Margins Plot – Employee Effort

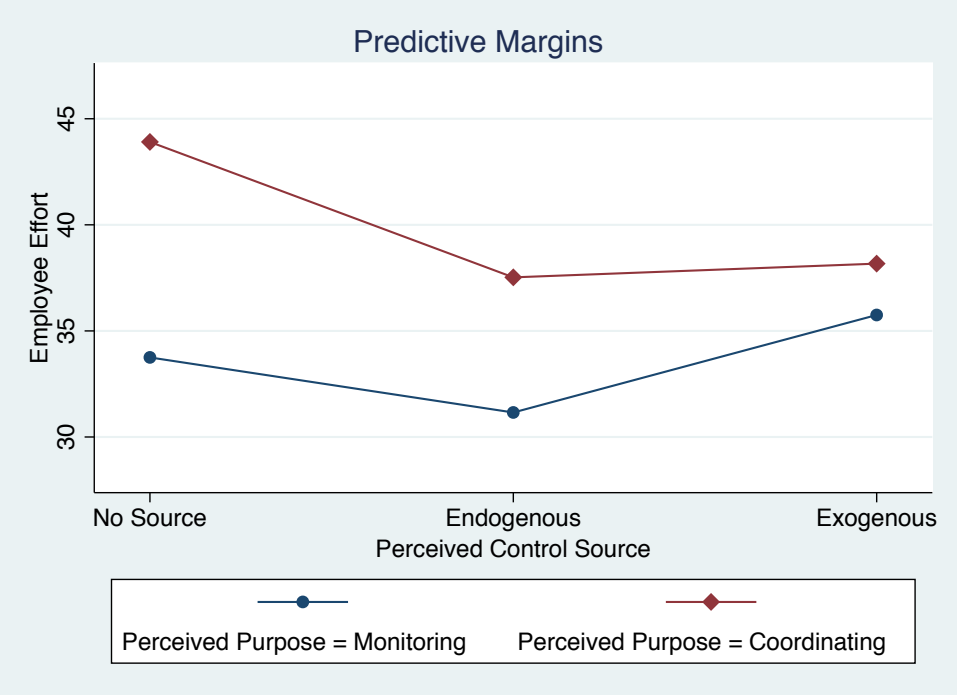


Table 20: ANCOVA Model of Employee Effort

Based on *Perceived* Conditions

	df	MS	F	p-value
Model	4	820.17	1.36	0.25
Perceived Control Source	1	321.08	0.53	0.47
Perceived Control Frame	1	597.59	0.99	0.32
Perceived Source x Perceived Frame	1	65.26	0.11	0.74
Intrinsic Motivation	1	2223.27	3.69	0.06
Error	226	603.21		
R-square: 2.35%				

Based on the ANCOVA shown in Table 20 above, I still fail to find support for H1 and H2 in spite of using participants' belief on control source and control framing.

However, when I plot the effort means using participants' perceived control source and perceived control framing, some interesting patterns emerge.

Figure 9: Predictive Margins Plot – Employee Effort (*Perceived* Main Treatments)

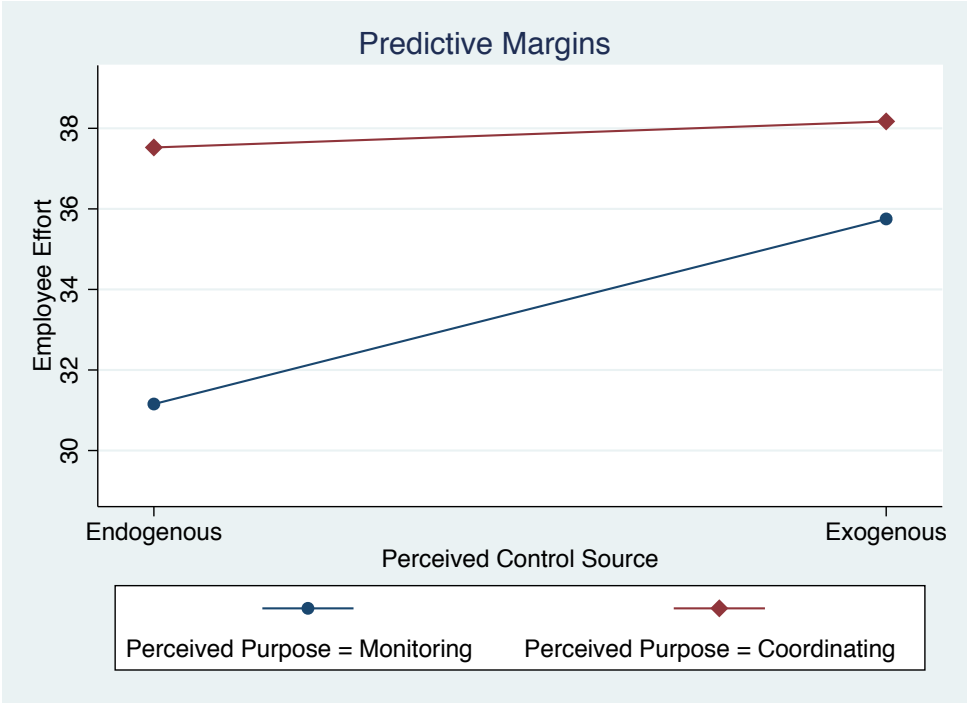


Figure 9 suggests that, when participants believe that the controls are for monitoring purposes and imposed endogenously, they appear to exert lower effort than those who perceive the same control frame but believe that the control is exogenous. This direction is consistent with H1A. At the same time, when participants believe that the controls are for coordinating purposes, the effort of participants do not seem to vary with their perceptions of control source.

Table 21 shows the descriptive statistics of *Vertical Collective Identity* based on the participants' perceived control source and perceived control frame. In addition,

Figure 10 displays means plots of *Vertical Collective Identity* for all perceived conditions.

Table 21: Descriptive Statistics of Vertical Collective Identity on *Perceived* Conditions

Vertical Collective Identity		Perceived Control Frame	
		Monitoring	Coordinating
Perceived Control Source	No Source	2.13 (0.99) n = 8	3.19 (1.80) n = 32
	Endogenous	2.69 (1.76) n = 26	3.09 (1.53) n = 103
	Exogenous	2.90 (1.29) n = 20	2.84 (1.50) n = 82

Figure 10: Predictive Margins Plot – Vertical Collective Identity

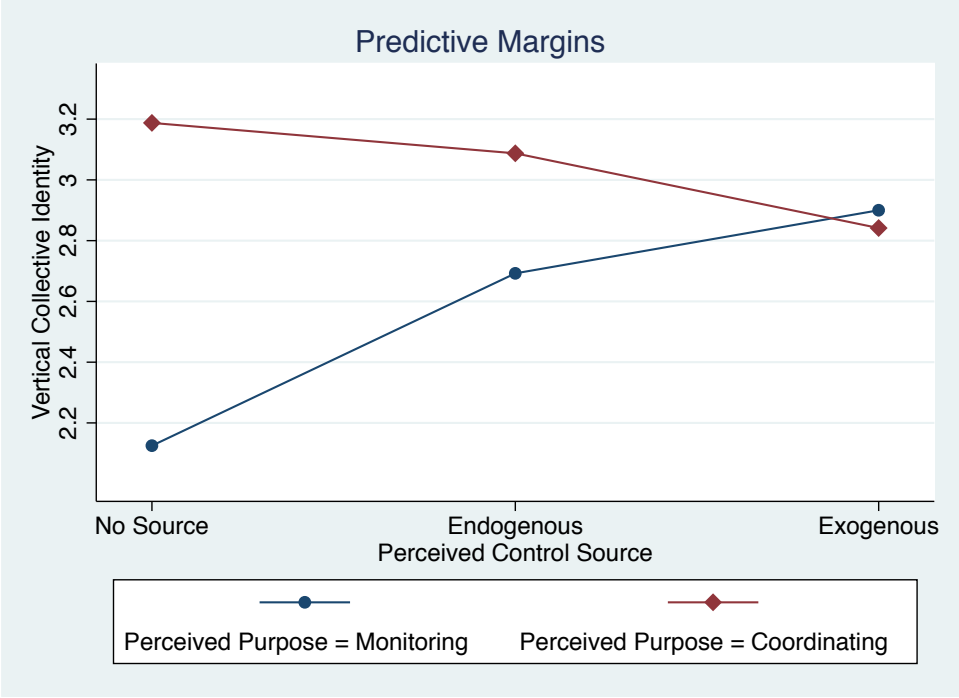


Table 22: ANCOVA Model of Vertical Collective Identity

Based on *Perceived* Conditions

	df	MS	F	p-value
Model	4	3.09	1.34	0.26
Perceived Control Source	1	0.00	0.00	0.96
Perceived Control Frame	1	1.47	0.63	0.43
Perceived Source x Perceived Frame	1	2.35	1.02	0.31
Social Orientation	1	7.71	3.33	0.07
Error	226	2.31		
R-square: 2.31%				

The ANCOVA model above does not detect a statistical significant finding using participants' belief on control source and control framing. On the other hand, Figure 11 plots the means of vertical collective identity for the participants' perceived control source and perceived control framing.

Figure 11: Predictive Margins Plot – Vertical Collective Identity (*Perceived* Main Treatments)

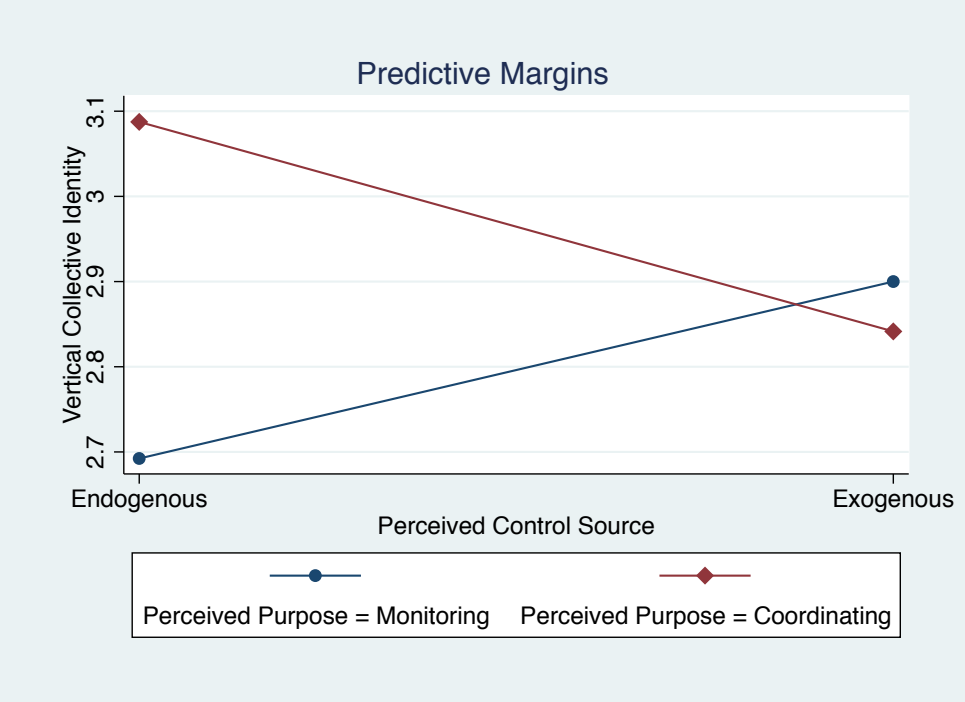


Figure 11 displays an interaction plot, which is consistent with H2A and H2B. When participants believe that the controls are for monitoring purposes, participants rate weaker vertical collective identity in the endogenous control than in the exogenous control. The line trend goes in an opposite direction when participants perceive that the controls are for coordinating purposes: the scores of participants' vertical collective identity are higher in the endogenous control than in the exogenous control. In sum, the directional trend is consistent with my predictions. At the same time, I acknowledge the pattern trend on its own is not the conclusive evidence to support my hypotheses.

Table 23: Mediation Analysis Based on *Perceived* Conditions

Model	RMSE	R-square	Chi-square	p-value
Vertical Collective Identity (MV)	1.50	2.31%	5.47	0.24
Points (DV)	23.49	8.66%	21.92	0.00

	Vertical Collective Identity (Mediating Variable)					
	Coeff.	Std. Err.	z	p-value	95% CI	
Perceived Control Source	0.27	0.45	0.59	0.55	-0.61	1.15
Perceived Control Frame	0.46	0.33	1.38	0.17	-0.19	1.11
Perceived Source x Perceived Frame	-0.51	0.50	-1.02	0.31	-1.49	0.47
Social Orientation	-0.30	0.16	-1.85	0.07	-0.62	0.02
Constant	3.04	0.35	8.68	0.00	2.35	3.73
	Effort (Dependent Variable)					
	Coeff.	Std. Err.	z	p-value	95% CI	
Vertical Collective Identity	3.24	1.06	3.06	0.00	1.17	5.32
Perceived Control Source	4.86	7.01	0.69	0.49	-8.88	18.60
Perceived Control Frame	5.67	5.22	1.09	0.28	-4.56	15.90
Perceived Source x Perceived Frame	-2.79	7.86	-0.36	0.72	-18.19	12.61
Intrinsic Motivation	1.40	1.20	1.17	0.24	-0.96	3.76
Social Orientation	-5.61	2.57	-2.18	0.03	-10.65	-0.57
Constant	23.03	7.64	3.01	0.00	8.05	38.01

Table 24: Test of Indirect Effect Based on *Perceived* Conditions

	Coeff.	Std. Err.	z	p-value	95% CI	
Indirect effect (using delta method)	-1.66	1.71	-0.97	0.33	-5.01	1.70

Table 25: Test of Indirect Effect Based on *Perceived* Conditions (Bootstrapping)

Bootstrap results: (replications = 10,000)	Coeff.	Bias	Bootstrap Std. Err.	95% CI	
Indirect effect (percentile CI)	-1.40	0.02	1.54	-4.78	1.46
Indirect effect (biased-corrected CI)				-5.23	1.12

Finally, the mediation analysis above based on the perceived conditions. I do not find statistically significant findings that can support the expected mediation relationship.

5.4.2. Statistical Tests after Excluding Participants Who Failed Manipulation Checks

Given the fact that a high number of participants failed the manipulation of control framing, I run similar statistical tests after excluding those who failed in both manipulations. Based on responses of participants who passed both manipulations, Table 26 and Table 27 report the descriptive statistics of Effort and Vertical Collective Identity, respectively.

Table 26: Descriptive Statistics of Employee Effort Based on Responses that Passed Manipulation Checks

Effort		Control Frame	
		Monitoring	Coordinating
Control Source	Endogenous	27.69 (24.80) n = 13	38.46 (26.26) n = 26
	Exogenous	37.67 (22.51) n = 15	47.80 (21.89) n = 25

Table 27: Descriptive Statistics of Vertical Collective Identity Based on Responses that Passed Manipulation Checks

Effort		Control Frame	
		Monitoring	Coordinating
Control Source	Endogenous	2.92 (1.85) n = 13	2.57 (1.47) n = 26
	Exogenous	3.07 (1.57) n = 15	3.24 (1.54) n = 25

Similar to previous results, I failed to find support for H1A, H1B, H2A, and H2B. Results are tabulated below.

Table 28: ANCOVA Model of Employee Effort Based on Responses that Passed Manipulation Checks

	df	MS	F	p-value
Model	4	1383.79	2.48	0.05
Control Source	1	1404.24	2.52	0.12
Control Framing	1	1739.59	3.12	0.08
Control Source x Control Framing	1	28.75	0.05	0.82
Intrinsic Motivation	1	1921.93	3.44	0.07
Error	74	558.04		
R-square: 11.82%				

Table 29: ANCOVA Model of Vertical Collective Identity
Based on Responses that Passed Manipulation Checks

	df	MS	F	p-value
Model	4	2.11	0.89	0.48
Control Source	1	3.15	1.32	0.25
Control Framing	1	0.13	0.06	0.81
Control Source x Control Framing	1	1.45	0.61	0.44
Social Orientation	1	2.52	1.06	0.31
Error	74	2.38		
R-square: 4.57%				

Finally, my mediation analysis does not result in statistical significance despite using responses that passed manipulation checks. Therefore, I cannot find evidence to support H3. Results are tabulated in Table 30.

Table 30: Mediation Analysis Based on Responses that Passed Manipulation Checks

Model	RMSE	R-square	Chi-square	p-value
Vertical Collective Identity (MV)	1.49	4.57%	3.78	0.44
Points (DV)	22.49	14.66%	13.57	0.03

	Vertical Collective Identity (Mediating Variable)					
	Coeff.	Std. Err.	z	p-value	95% CI	
Control Source	0.1338	0.5661	0.24	0.81	-0.98	1.24
Control Framing	-0.3705	0.5079	-0.73	0.47	-1.37	0.62
Control Source x Control Framing	0.5692	0.7054	0.81	0.42	-0.81	1.95
Social Orientation	-0.3166	0.2979	-1.06	0.29	-0.90	0.27
Constant	3.3127	0.5532	5.99	0.00	2.23	4.40
	Effort (Dependent Variable)					
	Coeff.	Std. Err.	z	p-value	95% CI	
Vertical Collective Identity	2.9160	1.7981	1.62	0.11	-0.61	6.44
Control Source	9.6742	8.5292	1.13	0.26	-7.04	26.39
Control Framing	12.0532	7.6737	1.57	0.12	-2.99	27.09
Control Source x Control Framing	-3.5508	10.7018	-0.33	0.74	-24.53	17.42
Intrinsic Motivation	2.8474	2.2606	1.26	0.21	-1.59	7.27
Social Orientation	0.4586	4.5963	0.10	0.92	-8.56	9.46
Constant	7.0487	13.1537	0.54	0.59	-18.73	32.83

6. CONCLUSION AND FUTURE DIRECTIONS

6.1. Potential Explanations for Non-Significant Findings

Considering the findings together, I do not obtain statistically significant support for the interaction effects of control source and control framing on employee effort. Additionally, I fail to reject the null hypothesis of the claim that vertical collective identity mediates the interaction effect. While I have pointed out that some of the results display expected directions, but these directions should be interpreted with caution.

I offer potential explanations concerning the non-significant results. First, this study may suffer from a strong *social desirability bias*. Recent studies have started to urge researchers in online environments to take into account of potential social desirability bias, which can amplify potential demand effects (Antin & Shaw, 2012). Prior work also shows that Amazon Mechanical Turk workers tend to score higher in social desirability (Behrend, Sharek, Meade, & Wiebe, 2011). I suspect that workers with high reputation may suffer *higher* social desirability bias due to their fear for getting their work rejected. A strong social desirability bias might explain why 55% of participants in the monitoring conditions believe that the controls are framed for coordinating purposes. I also find that the manipulation of control framing results in a much weaker effect size (Cohen's d = 0.98) than the manipulation of control source (Cohen's d = 2.90), which is probably the consequence of social desirability bias. In short, social desirability bias might lead the treatments of this study to be ineffective.

However, social desirability bias does not explain why the participants in the Endogenous Source /Monitoring Frame condition, who believe that the controls are for coordinating purposes, exert *higher* effort (M = 51.47, SD = 4.59, n = 17) than the

participants in the Endogenous Source/Coordinating Frame condition (M = 37.78, SD = 5.00, n = 27) who *also* believe that the controls are for coordinating purposes. The difference is statistically significant (p-value = 0.034). While I do not make a formal hypothesis concerning to this difference, it is surprising that the outcome of the Endogenous Source/Coordinating Frame condition is not as favorable as I have thought.

I speculate that another theory is at work. The prior literature points out that *persuasive messages can backfire* if the messages unintentionally make the recipient aware of the sender's potentially self-serving motives (Ert et al., 2014). In this study, if participants buy into the invitation to collaborate, participants are expected to contribute more points, which will benefit their manager financially. Contrary to the expectation, I find that many participants responded to this message cynically, stating it as the manager's attempt to profit from the participants' hard work. Interestingly, in the monitoring conditions, many participants believe that "tough" messages are often necessary to prevent others from shirking effort; hence, these participants perceive that the controls are in place for coordinating purposes. Consequently, they are also more willing to contribute more. A potential theoretical explanation for this finding is that negatively framed messages can be more persuasive and credible (Maheswaran & Meyers-Levy, 1990) especially when the circumstances call for a "healthy" suspicion (Hardin, 2004; Lumineau, 2014).

Overall, while this study does not find significant results, the study indicates that our understanding of control framing and control source is still wanting. Prior work emphasizes the needs for conveying messages that promote collaboration; yet, those studies do not discuss the potential backfire effects that can come from such messages. I

agree with Liu et al. (2015), who argue that future research is needed to explore the effects of different control frames. Finally, this study also suggests the detrimental effects of the failure to consider the strength of social desirable bias in online responses. Considering that online labor market has become an attractive alternative to student or scarce professional respondents, we need to further our understanding of how social desirability bias influences existing results and how we can address this challenge in future research.

6.2. Opportunities for Future Research

Limitations of my study provide opportunities for future research. First, given the speculation that the monitoring frame appears to be more effective than the coordinating frame in some circumstances, future research may explore attributes of control framing that can enhance or undermine the effectiveness of controls. For instance, when do people view monitoring-framed controls as controls that are made for monitoring purposes rather than those that are made for coordinating purposes? Likewise, when do persuasive messages not backfire? Specifically, when do people not cynically respond to endogenous controls that claim to enhance collaboration? When investigating these questions, future research may examine the role of linguistic cues in shaping the credibility and the persuasiveness of messages (Petty & Cacioppo, 1986) that are intended to frame the purposes of controls.

Second, due to the design choice, my study does not investigate *the managers*' perceived strength of vertical collective identity. This study assumes that the managers also see themselves as sharing the same degree of social identity with their employees.

Contrary to this assumption, *identity misfit* is possible to occur in the leader-subordinate relationships (D. van Knippenberg, 2011), but prior work has not investigated the presence of this phenomenon in accounting settings. In addition, future research may also investigate whether and how controls can be a tool to re-align identity misfit, if any.

Third, this study only examines the effect of formal controls on developing the social identity shared between managers and employees. It is possible that informal controls may be as important as, or more important than, formal controls to enhance vertical collective identity. Furthermore, it is also interesting to examine the interaction effects of formal and informal controls on vertical collective identity, especially in the situation when these forms of controls send divergent social cues.

Fourth, future research may examine the effects of nested social identities. Employees might categorize themselves either at a subgroup level (e.g. at a business-unit level) or at a collective level (e.g. at a firm level). The subgroup interests sometimes conflict with the collective interests (Ashforth, Harrison, & Corley, 2008; Lee et al., 2012; Wit & Kerr, 2002). Future studies can explore how the conflicting interests in nested social identities determine the effectiveness of controls, or how controls can be designed to remedy the problem.

Finally, future research may investigate the impact of social identity relative to the impact of social norms on employee effort. Recent studies suggest that management control design can activate social norms (Cardinaels & Yin, 2015; Douthit, Schwartz, Stevens, & Young, 2017; Maas & Van Rinsum, 2013), thereby affecting employee effort. It is not clear though, whether the effects of social norms would disappear once the presence of social identity was taken into account. While prior work agrees that

communication at the group level enhances group-oriented behavior, scholars have been debating *why* communication improves cooperation. There are two opposing theoretical camps within this debate: the proponents of the social identity explanation versus the proponents of the norm-based explanation. Prior literature suggests disparate results: some studies document the behavioral effects of social identity irrespective of social norms (see, e.g. Orbell, van de Kragt, & Dawes, 1988), other studies observe the working of norms (see, e.g. Bicchieri, 2002). Since both social identity and social norms are context-specific, it will be insightful to learn the attributes of controls that can induce social norms, social identity, or both.

6.3. Epilogue

My first takeaway from this study is that the participant selection is crucial to a successful experiment. I assumed that AMT workers with high reputation would represent quality participants, but my assumption was wrong. It appears that workers with high reputation likely respond to questions in a manner that will presumably be viewed favorably by experimenters. The reason is that the workers are afraid that unfavorable answers will lead the experimenter to reject their work, hurting their reputation. Second, since AMT workers have a lot supervisory and managerial experience, they are likely to be responsible for framing a control at their workplaces. Therefore, it is difficult to manipulate their perception of control framing because they can 'see through' the real purpose of control. Hence, these findings suggest that college or masters students might be more representative proxy for common, non-managerial employees.

Second, while the prior literature indicates that a typical way to frame control is by communicating the purposes of control to employees, it seems that this approach is not powerful enough to manipulate control framing in an experimental setting. Experimental economics studies suggest alternative ways to induce framing effects that can impact different levels of participants' social identity and cooperative effort (Parks, Joireman, & Van Lange, 2013). A succinct yet powerful way is by structuring the experimental games as give-some versus take-same dilemmas (De Dreu & McCusker, 1997). Alternatively, experimenters can also design the games such that the nature of participants' initial endowments is framed as private as opposed to community property (Muehlbacher & Kirchler, 2009). In short, structuring the experimental games, rather than merely labeling the games, might work more effectively to increase the framing effect.

APPENDIX: EXPERIMENTAL MATERIALS

(Demographics of Participants)

Q1. You are: __ Female __Male

Q2. How old are you? ____

Q3. Do you have work experience? __Yes __No

Q4. *(If Yes to Q3)* How long is your work experience? __ years

Q5. *(If Yes to Q3*) Do you have supervisory or managerial experience? __Yes __No

Q6. *(If Yes to Q5)* How long is your supervisory/managerial experience? __ years

Q7. ***(Intrinsic Motivation Scale)*** Rate your experience as AMT workers in the scale from 1 ("Disagree") to 7 ("Agree):

In general, I enjoy working in AMT.	1	2	3	4	5	6	7
I find that most AMT tasks are boring.	1	2	3	4	5	6	7
I only work in AMT for money.	1	2	3	4	5	6	7
I have fun in completing AMT tasks.	1	2	3	4	5	6	7
Regardless the pay amount, I am always motivated to complete my AMT tasks.	1	2	3	4	5	6	7

(Main Instrument)

In this study, assume that you are an employee of PQR, Inc. You are working in Division X under the supervision of Manager A.

Like you, Manager A is a real, anonymous Amazon Mechanical Turk worker who has agreed to participate in this survey. Currently, Manager A is supervising around 30 employees (i.e. fellow Turk workers).

It is now early January 2017, and you receive a memo sent by Manager A to all employees of Division X:

Internal Memo

From: Manager A

To: Employees of Division X

I would like to take this opportunity to thank you for all your hard work in 2016. With your help, we achieved our sales targets successfully last year. In 2017, we will be facing new opportunities and challenges, and our job is to continue providing our customers with the best products and services on the market.

I look forward to working together with you all in 2017.

Thank you,

Manager A

Please proceed to the next page.

At PQR Inc., the performance of a division increases as employees put in more effort (i.e., work harder). In this setting, employees can demonstrate the level of their effort by contributing "points" to their division.

Each employee, including you, has an initial endowment of 65 points. Hence, the maximum effort you can contribute to your division is 65 points.

If a division receives more points from its employees, the performance of this division will thrive. When the performance of a division increases, its employees will be more likely to earn bonus compensation.

As you can see from the table below, the more points you contribute, the higher the likelihood to earn your bonus pay of $0.80. At the same time, if Division X performs well, Manager A will likely earn some bonus pay too. The bonus pay will be paid to Manager A's Amazon Mechanical Turk account.

Note that your initial endowment is worth $0.01/point, so the total value of your initial endowment is $0.65. The remaining points of your endowment after your contribution will be converted to be real dollars and paid to your Amazon Mechanical Turk account after you have submitted this HIT. Your contributions increase by increments of 5 points.

Example:

If you decide to contribute 50 points, your contribution cost is $0.50. Hence, the remaining initial endowment to be paid at the end of HIT is $0.15. In addition, based on the table below, a 50-point contribution will allow you to a 75% chance to earn $0.80 bonus pay. A lottery will be drawn based on this probability. If you win, the $1 bonus pay will also be paid at the end of HIT.

Contribution Level (Points)	Your Contribution Cost	Probability of Earning $0.80 Bonus Pay
5	$0.05	30%
10	$0.10	35%
15	$0.15	40%
20	$0.20	45%
25	$0.25	50%
30	$0.30	55%
35	$0.35	60%
40	$0.40	65%
45	$0.45	70%
50	$0.50	75%
55	$0.55	80%
60	$0.60	85%
65	$0.65	90%

Please proceed to the next page.

(Comprehension Checks)

Q1. Based on the table above, if you decide to contribute 15 points to your division, how much is your contribution cost?

A) $0.30
B) $0.45
C) $0.15

Q2. If you decide to contribute 15 points to your division, how much is the remaining amount of your initial endowment?

A) $0.50
B) $0.85
C) $0.15

Q3. If you contribute more points to your division, what will happen to Manager A's compensation?

A) Decrease.
B) Increase.
C) Unchanged.

Please proceed to the next page.

(Endogenous/Monitoring Condition) Manager A was given a choice and has decided to implement a new policy that requires each employee to contribute at least 5 points.

Manager A explains the purpose of this policy in the following memo:

Internal Memo

From: Manager A

To: Employees of Division X

I will implement a policy that will require you to contribute at least 5 points to ensure that your contribution can cover core expenses of Division X throughout the year. **I want you to know that I made this decision, and it is within my authority.**

I will use my policy to restrict your ability to keep all of your points for yourself. I believe that if you transfer fewer than what I have required, you will hurt the business of Division X.

Essentially, **I decided to implement my policy to prevent you from spending too little of your effort at the division's expense.**

Regards,

Manager A

Please proceed to the next page.

(Exogenous/Monitoring Condition) The executive management of PQR, Inc. has decided to implement a new policy that requires each employee to contribute at least 5 points. This decision is beyond Manager A's authority.

Manager A explains the purpose of this policy in the following memo:

Internal Memo

From: Manager A

To: Employees of Division X

Executive management will implement a policy that will require you to contribute at least 5 points because they want to ensure that your contribution can cover core expenses of Division X throughout the year. **Executive management wants you to know that the decision came from them, and it is beyond my authority.**

Executive management will use their policy to restrict your opportunities to keep all of your points for yourself. They believe that if you transfer fewer than what they have required, you will hurt the business of Division X.

Essentially, **executive management decided to implement their policy to prevent you from spending too little of your effort at the division's expense.**

Regards,

Manager A

Please proceed to the next page.

(Endogenous/Coordinating Condition) Manager A was given a choice and has decided to implement a new policy that requires each employee to contribute at least 5 points.

Manager A explains the purpose of this policy in the following memo:

Internal Memo

From: Manager A

To: Employees of Division X

I will implement a policy that will require our employees to contribute at least 5 points to ensure that our contribution can cover core expenses of Division X throughout the year. **I want all of us to know that I made this decision, and it is within my authority.**

I will use my policy to facilitate the coordination of our effort in our division. If our employees transfer fewer than what I have required, we will hurt the business of our division.

Essentially, **I decided to implement my policy because it will promote our cooperation, which I believe is in our best interests.**

Regards,

Manager A

Please proceed to the next page.

(Exogenous/Coordinating Condition) The executive management of PQR, Inc. has decided to implement a new policy that requires each employee to contribute at least 5 points. This decision is beyond Manager A's authority.

Manager A explains the purpose of this policy in the following memo:

Internal Memo

From: Manager A

To: Employees of Division X

Executive management will implement a policy that will require our employees to contribute at least 5 points because they want to ensure that our contribution can cover core expenses of Division X throughout the year. **Executive management wants all of us to know that the decision came from them, and it is beyond my authority.**

Executive management will use their policy to facilitate our effort coordination in our division. If our employees transfer fewer than what they have required, we would hurt the business of our division.

Essentially, **executive management decided to implement their policy because it will promote our cooperation, which they believe is in our best interests.**

Regards,

Manager A

Please proceed to the next page.

(Endogenous Only Condition) Manager A was given a choice and has decided to implement a new policy that requires each employee to contribute at least 5 points.

Manager A announces this policy in the following memo:

Internal Memo

From: Manager A

To: Employees of Division X

My policy will require employees to contribute at least 5 points. My policy will ensure that the total contributions can cover core expenses of Division X throughout the year.

Since I have the authority to implement a policy, I have decided that I will implement such a policy in Division X.

Regards,

Manager A

Please proceed to the next page.

(Exogenous Only Condition) The executive management of PQR, Inc. has decided to implement a new policy that requires each employee to contribute at least 5 points. This decision is beyond Manager A's authority.

Manager A announces this policy in the following memo:

Internal Memo

From: Manager A

To: Employees of Division X

Executive management has decided that they will implement a policy in Division X. Their policy will require employees to contribute at least 5 points. Their policy will ensure that the total contributions can cover core expenses of Division X throughout the year.

Executive management states that the decision came from them, and it is beyond my authority.

Regards,

Manager A

Please proceed to the next page.

(Monitoring Only Condition) You learned about a new policy that requires each employee to contribute at least 5 points. You can find the announcement of this policy in the following memo:

Internal Memo

To: Employees of Division X

This policy is designed to **restrict your ability to keep the points for yourself.** If you transfer fewer than what has been required, you will hurt the business of Division X.

Essentially, **this policy will prevent you from spending too little of effort at the division's expense.**

Please proceed to the next page.

(Coordinating Only Condition) You learned about a new policy that requires each employee to contribute at least 5 points. You can find the announcement of this policy in the following memo:

Internal Memo

To: Employees of Division X

This policy is designed **to facilitate the coordination of our effort in Division X.** If employees transfer fewer than what has been required, we will hurt the business of our division.

Essentially, **this policy will promote our cooperation, which is in our best interests.**

Please proceed to the next page.

(Control Only Condition) You learned about a new policy that requires each employee to contribute at least 5 points.

Please proceed to the next page.

IMPORTANT

First, recall that the more points you contribute, the higher the likelihood to earn your bonus pay of $0.80. However, your contribution will cost you $0.01/point. Your initial endowment is 65 points, which are worth $0.65. If Division X receives more points from its employees, the performance of this division will thrive. At the same time, if Division X performs well, Manager A will likely earn some bonus pay too.

Second, below is the message you have read previously: ***(based on the treatment condition)***

Q1a. ***(Employee Effort Scale)*** Indicate the number of points you would transfer to Division X.

The number of points you'd like to transfer: _____ points.

5	10	15	20	25	30	35	40	45	50	55	60	65

Q1b. Explain the reasoning behind your decision:

Q2a. ***(Perceived Control Source)*** Who decided to implement the policy?

A) Manager X.
B) Executive management.
C) The text did not tell me who decided to implement the policy.

Q2b. ***(Perceived Control Frame)*** What do you think is most likely purpose of implementing the policy:

A) The policy is designed to monitor and restrict employees' behavior.
B) The policy is designed to facilitate the coordination of employees' effort.

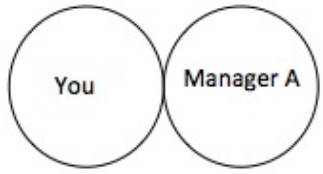
Please proceed to the next page.

Q3. (Please rate the extent to which you agree with each of the following statements, using the scale from 1 ("Strongly Disagree") to 7 ("Strongly Agree"):

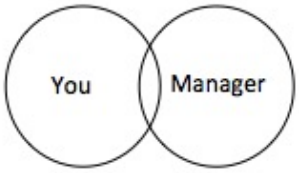
Manager A shared a common interest with me.	1	2	3	4	5	6	7
Manager A made the decision in my best interest.	1	2	3	4	5	6	7
Manager A made me feel a sense of belonging in Division X.	1	2	3	4	5	6	7
Manager A made me believe that I matter to Division X.	1	2	3	4	5	6	7
Manager A stimulated my motivation to exert effort for Division X.	1	2	3	4	5	6	7
Manager A increased my optimism about the future of Division X.	1	2	3	4	5	6	7
Manager A motivated me to focus more on Division X's best interests.	1	2	3	4	5	6	7
I am willing to support Manager A.	1	2	3	4	5	6	7
I feel that Manager A trusted me.	1	2	3	4	5	6	7
I feel that Manager A believed in my integrity at work.	1	2	3	4	5	6	7
I feel that Manager A believed in my competence to put in effort for Division X.	1	2	3	4	5	6	7
I feel that Manager A gave me the autonomy to make decisions.	1	2	3	4	5	6	7
Manager A is trustworthy.	1	2	3	4	5	6	7
I would be comfortable giving Manager A a task or problem that was critical to me, even if I could not monitor Manager A's action.	1	2	3	4	5	6	7
If someone questioned Manager A's motives, I would give Manager A the benefit of the doubt.	1	2	3	4	5	6	7
I would be willing to let Manager A have complete control over my future in this company.	1	2	3	4	5	6	7
I really wish I had a way to keep an eye on Manager A.	1	2	3	4	5	6	7
If I had my way, I wouldn't let Manager A have any influence over issues that are important to me.	1	2	3	4	5	6	7

Q4. ***(Vertical Collective Identity Scale)*** Select the letter below (ranging from A to G) that best illustrates your perception about how the relationship between you and your manager encourages the shared sense of 'us':

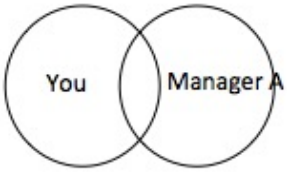
A



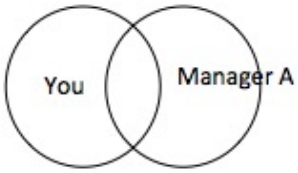
B



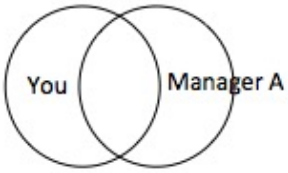
C



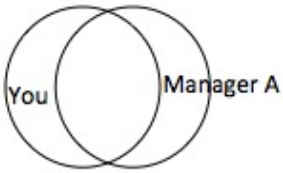
D



E



F



G

Please proceed to the next page.

(Instructional Manipulation Check)

When a big news story breaks, people often go online to get up-to-the-minute details on what is going on. We want to know from which websites people trust to get this information. We also want to know if people are paying attention to this question. To show that you have read this far, please ignore the question and select The Drudge Report and National Public Radio (NPR) as your two answers.

When there is a big news story, which is the one news website you would visit first? (Please only choose one):

New York Times website	The Drudge Report	The Associated Press (AP) website
Huffington Post	Google News	Reuters website
Washington Post website	ABC News website	National Public Radio (NPR) website
CNN.com	CBS News website	USA Today website
FoxNews.com	NBC News website	New York Post website
MSNBC.com	Yahoo! News	None of these websites

Please proceed to the next page.

Rate the extent to which you believe that Manager A is a real, anonymous Amazon Mechanical Turk worker using the scale from 1 (“Strongly Unbelievable”) to 7 (“Strongly Believable”):

1 2 3 4 5 6 7

Please proceed to the next page.

(Social Orientation Scale) Note that this task is independent from the previous tasks you have completed.

In this task, we ask you to imagine that you have been randomly paired with another person, who we will refer simply as the "Other." This other person is someone you do not know and who you will not know in the future. Both you and the "Other" will be making choices by circling either the letter A, B, or C. Your own choices will produce dollars for both yourself and the "Other". Likewise, the other's choice will produce dollars for him/her and for you. The more dollars you receive, the better for you, and the more dollars the "Other" receives, the better for him/her.

Here's an example of how this task works:

	A	B	C
You get	$500	$500	$550
"Other" gets	$100	$500	$300

In this example, if you chose A, you would receive $500 and "Other" would receive $100; if you chose B, you would receive $500 and "Other" $500; and if you chose C, you would receive $550 and "Other" $300. So, you see that your choice influences both the number of points you receive and the number of points the "Other" receives.

Before you begin making choices, please keep in mind that there are no right or wrong answers – choose the option that you, for whatever reason, prefer most. Also, remember that the more dollars you accumulate, the better for you. Likewise, from the "Other's" point of view, the more dollars s/he accumulates, the better for him/her.

For each of the nine choice situations, choose A, B, or C depending on which column you prefer most:

(1)	A	B	C
You get	$480	$540	$480
"Other" gets	$80	$280	$480

(2)	A	B	C
You get	$560	$500	$500
"Other" gets	$300	$500	$100

(3)	A	B	C
You get	$520	$520	$580
"Other" gets	$520	$120	$320

(4)	A	B	C
You get	$500	$560	$490
“Other” gets	$100	$300	$490

(5)	A	B	C
You get	$560	$500	$490
“Other” gets	$300	$500	$90

(6)	A	B	C
You get	$500	$500	$570
“Other” gets	$500	$100	$300

(7)	A	B	C
You get	$510	$560	$510
“Other” gets	$510	$300	$110

(8)	A	B	C
You get	$550	$500	$500
“Other” gets	$300	$100	$500

(9)	A	B	C
You get	$480	$490	$540
“Other” gets	$100	$490	$300

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