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Investigating Organizational Self-control: A Willpower Perspective

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ABSTRACT

Behavioral control theory attempts to explain how controllers can ensure controlees work towards controller goals. Prior studies underinvestigate organizational self-control, and produces mixed results. This paper theorizes and elaborates on the construct of organizational self-control, and how controllers can encourage controlees' organizational self-control. Organizational self-control differs from "personal" self-control in that organizational self-control focuses on getting another individual (e.g., employee) to exert self-control to perform a controller's task. Consonant with the personal self-control literature, we argue organizational self-control comprises (self) goals, (self) monitoring, and willpower. We further argue organizational self-control is a mediator between external controls (formal and clan control) and controlee performance. While the literature considers external controls' influence on one's goal and self-monitoring, it does not consider external controls' impact on willpower. We demonstrate through a case study in product development that how control is enacted can impact willpower positively, leading to positive control outcomes.

Keywords

Organizational self-control, willpower, project, behavioral control theory.

INTRODUCTION

Behavioral control theory, principally developed in the non-routine/temporary IT project context, provides a framework for studying project controls (Kirsch 1996; Kirsch 1997). However, despite there being much research progress in behavioral control theory, little research is done on self-control in organizations. The context differs from that of typical self-control research as self-control in organizations is about accomplishing others' goals (i.e., controllers'). In organizational self-control, the controller "activates" controlee self-control to achieve controller goals. In traditional self-control, the goals (e.g., quitting smoking) are personal (Tangney et al. 2004). However, research on organizational self-control generates mixed results (Kirsch and Cummings 1996; Maruping et al. 2009).

This paper aims to deepen our understanding of organizational self-control. We borrow from the psychology and marketing literature on self-control and propose a preliminary definition of organizational self-control and a model of the relationship between other controls and organizational self-control. We then perform a case study to illustrate how formal control is applied and enacted as organizational self-control.

This paper's principal contribution is a revised organizational control model. In the model, organizational self-control comprises three dimensions: (self) goals, (self) monitoring, and willpower. It mediates effects of formal and clan controls, and non-control factors on controlee performance. We theorize how and why formal/clan controls can be applied to enhance organizational self-control via two routes: (1) relaxing redundant controls, and (2) removing willpower drains. The model argues external controls impact self-goals, ability to monitor, and willpower. Organizational self-control occurs when goals and monitoring align with controller desires, and when external controls remove drains on controlees' willpower, thereby enabling self-control.

BACKGROUND LITERATURE

Control refers to controllers' attempts to ensure controlees act according to predefined strategies to achieve organizational objectives (Kirsch 1997). Two principal control modes exist: formal and informal control. Formal control relies on controllers' hierarchical authority to monitor/evaluate/reward controlees. There are two "sub" modes of formal control: behavior and outcome control (Eisenhardt 1985; Kirsch 1997). Behavior control prescribes rules and procedures. Controlees are rewarded/punished, depending on how faithfully procedures are

followed. Outcome control prescribes desired outcomes/goals and controlees are rewarded/punished for meeting/failing goals.

Informal control is noted by the absence of hierarchical authority to monitor/evaluate/reward. There are two "sub" modes of informal control, clan and organizational self-control (Kirsch 1996). Clan control refers to proscriptions of behavior based on rituals, ceremonies, and shared experience, with emphasis on emotional relations of unity and solidarity with the organization or colleagues (Alvesson and Kärreman 2007; Ouchi 1980). Organizational self-control refers to the self's proscriptions of behaviors. It is self-chosen and carries connotations of individualism and self-actualization (Ryan and Deci 2000; Wiener et al. 2015).

Little research on organizational self-control exists. Organizational self-control is recognized as a critical control mode (Kirsch and Cummings 1996). Yet, most research elects not to analyze it (Soh et al. 2010). Our understanding of it is lacking.

Organizational Self-control

The organizational self-control literature is scant, and empirical phenomena are not well explained by theory. For example, drawing from agency theorists (Eisenhardt 1985), Kirsch (1996) theorizes organizational self-control as most appropriate when formal control is difficult to apply or when tasks rely on individual judgment. However, her empirical results demonstrate organizational self-control is best applied under the same situations as behavior control (Kirsch and Cummings 1996). Maruping et al. (2009) argue organizational self-control facilitates project coordination but find it detrimental to project coordination.

A similar concept of self-control exists in the psychology/marketing literature. To differentiate this literature from organizational self-control, we call this the personal self-control literature. The personal self-control literature focuses on one attempting to better oneself (e.g., quitting smoking), not about controlees performing actions beneficial to controllers. Nevertheless, mechanisms required are similar. Thus, we propose organizational self-control comprises three factors: (self) goals, (self) monitoring, and willpower (Baumeister 2002).

(Self) goals are desired outcomes/ideals individuals establish (Baumeister 2002). Goals can direct attention, mobilize efforts, increase persistence, and motivate coping strategies (Latham and Locke 1991). For example, in dieting, one determines the ideal body weight, but with influence from colleagues. Similarly, performance standards, quotas (amounts of work/production), time limits or budgets for completing tasks influence one's goals. Publicly stated (self) goals are more effective in inducing self-control than privately self-articulated ones (Latham and Locke 1991).

(Self) monitoring involves systematic information gathering about one's behaviors and comparing actual states to ideal standards. For example, people attempting to achieve a particular bodyweight must weigh themselves (Linde et al. 2005). Self-monitoring is critical because it allows one to obtain information to regulate behavior (Baumeister 2002). For example, when school children failed to monitor their performance on math materials, time spent on-task and the average number of mathematical problems completed decreased (Sagotsky et al. 1978). In the workplace, (self) monitoring can be achieved by providing controlees with instruments (e.g., clocks to monitor how fast they work) and inducements to perform monitoring.

Willpower is the most important element of self-control (Baumeister and Heatherton 1996). It refers to one's capacity to regulate thought/affect/behavior/attention despite resistance created by inclinations, desires, or external distractions (Job et al. 2010). Individuals demonstrate willpower by persevering, showing passion for and displaying positive attitudes to long-term goals while sacrificing immediate gratification (Hagger et al. 2010).

Willpower is likened to a muscle (Muraven and Baumeister 2000). After protracted use, willpower muscles become fatigued- a state called 'ego depletion,' whereupon the self loses control. If one suffers from numerous stressors during the day, one is less likely to perform work effectively- the stressors drain self-control. However, ego depletion does not occur suddenly and the body responds before fatigue becomes insurmountable (Baumeister et al. 2007). As with muscles, the body knows when fatigue is approaching and sends signals. The body then adjusts to cope with increasing fatigue. For example, people about to lose self-control deliberately give into 'safe' impulses before self-control is exhausted. They may deliberately violate their diet, and indulge in sweets, saving their little remaining self-control to avoid confrontation with their boss (Lisjak and Lee 2014). Similarly, with sufficient

incentive, self-control fatigued individuals can muster a burst of self-control by tapping into additional self-control reserves in the same way fatigued individuals employ adrenaline to provide a last burst of energy (Beedie and Lane 2012). Hence, it is not just availability, but whether individuals are willing to or can allocate willpower when needed that matters for self-control (Hagger et al. 2010).

Relating Organizational Self-control to Other Control Modes

The above suggests a revision of our thinking of the relationship between organizational self-control and other control modes. Recent research demonstrates control modes are not isolated. Instead, they influence each other. For example, formal control can be applied to create and direct clan control (Chua et al. 2012). Similarly, we argue formal and clan control can be applied to shape organizational self-control.

Within interpretive sociology, humans have agency- the ability to obey, or reject almost all structures enacted on them (Giddens, 1984). In cases where individuals cannot enact agency (e.g., Nazi prison camps)(Giddens, 1984), individuals shortly thereafter die. Indeed, conscious deliberation, acting against impulses, following the "spirit" of rules, or resisting external pressure demonstrates people have agency; even though these behaviors account for a small portion of daily behaviors, they significantly impact people (Baumeister et al. 2008).

Figure 1 presents our model. We argue formal and clan controls (hereafter called external controls) can encourage individuals to act in particular ways. External controls can influence individuals by shaping (self) goals, facilitating (self) monitoring, and tapping willpower. That external controls shape individual goals (arrow ①) and facilitate self-monitoring (arrow ②) is widely recognized (Jensen and Meckling 1994). For example, controllers shape controlees' motivations and goals by using rhetoric, or providing role models for controlees to emulate (Kark and Van Dijk 2007); controllers improve controlee self-monitoring by providing feedback to allow controlees' inputs adjustment, and improve understanding of how inputs relate to outcomes (Merchant 1982).

However, what is not well recognized is that controls can tap into controlees' willpower (arrow ③), draining it, and causing control loss. This explains why controls malfunction. Personal self-control research consistently documents the ego-depleting ability of even common, everyday controls. For example, peer groups will lower individual willpower except in cases where the entire clan has high self-control (Dzhogleva and Lamberton 2014). Having others in project teams who can do allocated tasks (Fitzsimons and Finkel 2011), or setting up tasks to be interdependent (Hamedani et al. 2013) similarly reduces willpower and hence self-control. Formal or clan control that induces stress (Chan and Wan 2012), makes controlees busy (Joosten et al. 2014), or deprive controlees of sleep (Christian and Ellis 2011) reduce willpower and hence self-control. Furthermore, willpower can be drained by non-control factors, such as inefficient or unnecessary processes (arrow ④) (Finkel et al. 2006).

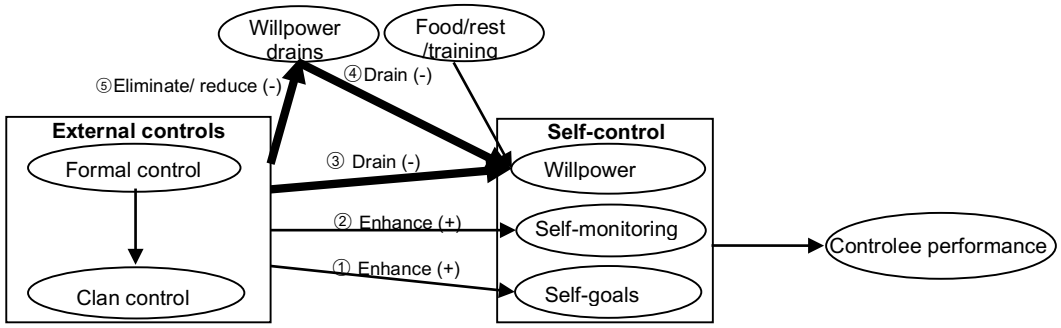

Figure 1. Organizational Controls Model

Willpower is unusual as in the short term, only food and rest can have positive effects. Food restores blood sugar levels, an effective biological proxy for self-control (Baumeister et al. 1998). In the long-term, training improves willpower, as training enhances muscle strength (Baumeister et al. 2006). Given our focus on external controls' influence on self-control, we collapse those short- and long-term measures for enhancing willpower in Figure 1 as Food/rest/training. Other direct influences, including external controls, are willpower drains, because they cause one to exercise willpower muscles.

Overall, external controls influence all aspects of self-control, which then affect controlee performance. While external controls facilitate (self) goals and (self) monitoring, they simultaneously drain willpower by exercising self-control muscles. However, external controls can also remove drains on willpower (arrow ⑤). For example, one can apply formal controls to decrease perceived uncertainty and ambiguity in offshore IT projects (Wiener et al. 2015). In Figure 1, three arrows are drawn larger (③, ④, ⑤), representing this research's focus and paths underexplored.

METHODOLOGY

We followed a case research approach (Yin 2003). Data on organizational self-control was serendipitously collected as part of a larger project examining the adoption of a control mechanism in a manufacturer ("MassCo"). The methodology followed is an incremental, theory-building approach whereby two researchers generated and augmented insights about organizational self-control by iterating between theory and data (Eisenhardt 1989).

Research Site

MassCo designs and manufactures wireless communication products for worldwide markets, with headquarters in Taiwan and factories in Asia. It employs about 1500 employees worldwide. Given its distributed factories in Asia, a center was established to coordinate production. The Center comprises 45 engineers working in an open-plan office responsible for production planning and pilot production of new products. The Center enacts a high proportion of organizational self-control. Consider how professional autonomy was exercised by an engineer:

We don't have a fixed schedule…I may receive a phone call from the shop floor at any time…You need to judge it yourself and see whether it's critical or not. (Mechanical engineer)

Unsatisfactory yield rates (i.e., ratios of good units produced) led MassCo to seek better control of production processes. One new control enacted was the Manufacturability Readiness Review (MRR). This was a checklist of pilot production processes encapsulated in Microsoft Excel spreadsheets and was the research's focus. The checklist was introduced as part of a program to streamline pilot production processes. In the process, pilot production preparation was compared against MRR items. One then checked off items after processes were executed. Once all processes were executed, the spreadsheets were passed on to MassCo's production sites for volume production. If projects resulted in volume production problems and engineers failed to execute and check off corresponding MRR items, the engineers would be ranked no higher than the 60th percentile.

Data Collection

The first author was invited by MassCo to study the MRR adoption. Because the MRR mainly covered surface mount technology (SMT), and mechanical and product engineering, the first author focused on getting information from these sections. Data collection employed a cross-case sampling approach- only one case is presented here due to space constraints. Project Alpha was nominated by a senior technical manager who facilitated the adoption during this project. Data were collected within one month after project completion. Our focus on organizational self-control emerged as we noticed engineers voluntarily monitoring their own performance and set challenging goals for themselves.

We collected data through interviews (the principal method), internal documents, and site visits over a seven-month period. The first author conducted semi-structured interviews with interviewees from different levels (management/non-management) and engineering sections. Questions were asked about interviewees' positions and roles, project control/coordination, and the MRR enacted (e.g., facilitation, performance standards, monitoring, reward/punishment). Interviews, lasting between 1 and 2 hours, were recorded and transcribed verbatim. Totally, 11 interviews with 8 interviewees were conducted (Table 1).

	Title	Industry tenure (in years)	Company tenure (in years)	# Interviews
Management	Center Director	23	13	2
	Senior technical manager	12	4	3
	Sectional head of Mechanical engineering	7	7	1
Case Alpha	Project manager	11	10	1

	SMT engineer	12	3	1
	Mechanical engineer	7	6	1
	Product engineer	11	4.5	1
	R&D engineer	3	2	1
Total				**11**

Table 1. Background Information of Interviewee

Control documents collected included MRR checklists, meeting minutes, orientation/training materials, engineering change requests, and email communication. We also reviewed engineering design drawings, presentation slides and other project documents. The documents helped illuminate and clarify earlier insights drawn from interviews. Time-stamped documents also helped establish when events actually occurred.

During site visits, the first author observed site layouts, and participant interaction/action. Site visits to MassCo's headquarters and assembly lines/cells in Taiwan were arranged before interviews started. Field notes were taken, including notes on informal conversations, site drawings, researcher reflections, and questions to be pursued.

Data Analysis

With regard to self-control, we coded data segments as (self) goals when engineers perceived they had substantial influence in determining goals or when they expected more from themselves than goals set by others. For example, engineers strived to complete tasks far earlier before assigned deadlines. Absence of (self) goals was demonstrated by engineers' lack of project-related goals/direction, or mere compliance because of the concern of punishment or personal loss.

(Self) monitoring requires engineers be aware of their performance levels and be critical of themselves when performance is not up to standards. Evidence was coded as (self) monitoring when engineers gathered cues about their behaviors/performance, tracked deviations and strived to come up with solutions. For example, engineers observed a recurrent problem and suggested its inclusion into a checklist. A lack of (self) monitoring was demonstrated when engineers avoided feedback or would not link individual performance to project goals.

We assessed engineers' willpower by assessing their personal resources levels (e.g., energy, memory capacity, time, positive emotions) and willingness to deploy resources to complete tasks. We considered data evidence of willpower when engineers had resources and applied them to finish whatever they started, or worked hard to conquer challenges. For example, engineers had rights to question schedules, and negotiate for more time for their tasks. Absence of willpower was demonstrated by engineers' perceived fatigue, negative affect, and perceived difficulty with completing tasks.

Controllers enact a portfolio of controls, rather than a single control mode (Choudhury and Sabherwal 2003). Cognizant of this, we coded data for evidence of formal and clan control. Formal controls were documented and instituted by management (Jaworski 1988). They were identified if mechanisms specified desired outcomes/behaviors as policies/rules for engineers to engage in. For example, a target specifying yield rates of no lower than 92% or a plan that identified sequences to be followed would be classified as a formal control. Clan controls were identified if mechanisms were instituted by a group of individuals and relied on shared norms/values/beliefs to regulate behaviors. For example, that multiple team members articulated a belief in punctuality would be identified as a clan control.

Consonant with our theorizing, we established a category of willpower drains (non-control factors). For example, designers' disrespect increased engineers' perceived difficulties with doing their job. Such disrespect is not a control, because it is not enacted to encourage controlees to complete tasks (Kirsch 1997).

FINDINGS

At MassCo, designers dominated engineers. Interactions between these two groups usually involved engineers seeking information from designers. Few designers sought engineers' opinions, even on matters clearly in the engineering domain such as engineering tests or production.

…I felt like having no power to make any decision… The R&D meddled in things... For important issues they would step in and made decisions for us (Mechanical engineer).

Manufacturing engineering requires knowledge of design and manufacturing (Lamancusa et al. 1997). Particularly, engineers' proactive involvement in the design process is important (Ward et al. 1994). According to the MRR, an expanded role was expected for engineers—they were supposed to audit product designs. The expanded role required engineers to challenge product design based on their professional judgment.

We revealed many design problems using the MRR…we hoped the checklist would generate pressure on the R&D designers through a thorough evaluation of their design… (Senior Technical Manager)

This challenged the status quo where designers had hierarchical power over engineers. The expanded role necessitated engineers had access to more information. An engineer commented,

…The R&D designer wouldn't give the engineering drawing to you without being asked…as far as I recalled, only one in ten projects would the R&D designer inform me before I asked. (Mechanical engineer)

The expanded role also required designers to surrender some of their prerogatives and develop a healthy respect for engineers. The following quote is indicative of designers' lack of trust in engineers.

…we would test a product with the product engineer, write up a SOP for them to follow…in the beginning, we would do the testing to show them how… oversee how they do it until they get familiar with the process… (Designer)

Project Alpha

Project Alpha was commissioned by a Fortune 500 company, a new client to MassCo. The project schedule was extremely tight.

Even the client's international purchase officer in Taiwan considered on-time completion to be impossible. (Project manager)

The senior technical manager, Clark, volunteered to help implement the MRR in Project Alpha. Clark was known for his emphasis on punctuality and nicknamed "Clock" by engineers. He was among the MRR architects and had the authority to settle MRR-related disputes.

The MRR was developed by a team [including Clark]. They have good knowledge of its spirit…Clark is fully responsible for the implementation…he has the power to ask for engineers' compliance... (Center Director)

Formal control. Project Alpha was one of the first projects to pilot the MRR. Confusion surrounded engineers' new role and MRR implementation. Clark clarified the confusion and told engineers to exercise independent judgment. An SMT engineer recalled:

The MRR was originally designed for [a product line]…Clark told us if there's anything irrelevant, we could raise it…we discussed and proposed suggestions… (SMT engineer)

When disputes/problems with the MRR arose, Clark allowed engineers to individually reinterpret and adapt MRR items to situations.

I wouldn't be more knowledgeable than mechanical or product engineers when it came to their specialized domains. They told me what to add to the checklist and then I did it accordingly… (Senior Technical Manager)

While the schedule was tight, because the MRR was new, Clark relaxed many controls. For example, when engineers did not fill in the MRR properly, Clark did not go through formal processes. Instead, he reminded them through friendly emails or corridor talks.

…Clark only occasionally intervened. Like when I missed some details or forgot to check off some items, Clark would send a reminder or chatted with me about it. (Product engineer)

Clark also solicited support for MRR implementation. He invited the project manager to MRR meetings. The project manager attended most meetings and perceived the MRR would benefit the project because it "*provided a platform for discussion*" between engineers and designers. After the meetings, he demanded designers to respond to issues raised by engineers. Feedback from designers allowed engineers to monitor and evaluate their actions.

The project manager demanded the R&D to respond to us. They had to provide feedback to issues we raised. If the design really couldn't be changed, we had to negotiate a solution with R&D. Action had to be taken. (SMT engineer)

Clan control. The MRR checklist was placed on a shared server accessible to project members. On its cover page was expected and actual times for finishing particular tasks. Although expected times were mainly determined from the overall project schedule, engineers could raise concerns and negotiate new schedules. The following quote demonstrated engineers' right to question the schedule.

...the expected time was not firm…like the mechanical engineer needed extra time for getting a fixture…we negotiated... (Product engineer)

Further, engineering problems were expected to be solved and reported within one week. Publicity associated with the checklist put the engineers under each other's scrutiny and made them aware lateness could cause chain effects impacting the overall project. Punctuality became a buzzword.

We could check each other's schedule, knowing who had been careless filling the doc or lagged behind… (Senior Technical Manager)

(Self) goals. The expanded role and punctuality norm influenced engineers' self-standards positively. Engineers accepted the role, and considered it important to their work. When difficult problems occurred, they persisted in addressing them. The product engineer recalled one event where he kept working on a design defect:

… [One bug] persisted…we judged it as a design issue. They [R&D designers] first were not persuaded and argued it couldn't be the cause. We kept testing it with many different methods. (Product engineer)

While most tasks were allocated a week to complete, engineers decided to impose a more challenging goal. One engineer recalled:

We did [the pilot run] multiple times. Whenever it got done, I produced a report, usually within 3 days. (SMT engineer)

(Self) monitoring. Because the project manager requested designers to respond to engineers, information flow between the two groups improved. Engineers used information from designers to better execute tasks. This demonstrated (self) monitoring, because engineers were monitoring their own actions to determine how they could be improved. For example, mechanical engineers used designers' engineering drawings to analyze component tolerance and requested design changes to prevent component interference. In another example, engineers raised issues about a shielding cover design which increased production risks. This showed engineers being aware and critical of their own actions.

In some cases, the MRR failed to consider the project's critical elements. An engineer reflected on his experiences in other projects to suggest items to be included in the MRR:

I suggested the addition of two or three items to the [MRR] checklist…I'd encountered several problems with packaging and labeling...With them being included, we could prevent them. (Mechanical engineer)

Willpower. Although engineers had new responsibilities as a result of the expanded role, they were intrinsically motivated to apply the MRR and considered it the right way to get their job done.

We started the manufacturability check at [an early stage]. If we could, we would have done it much earlier… I didn't think it increased our workload. (Product engineer)

Engineers perceived the checklist reduced memory burden and complemented their experiences. It increased engineers' motivation by reducing mistakes and reworking.

The checklist reminded us of important things which we stayed alert and paid attention to... it's difficult to remember details...mistakes creep in if we rely only on memory… (Mechanical engineer)

The MRR checklists were also made sharable and accessible to project members. This allowed members to use them for their own purposes.

…in the past our report wasn't well integrated…there's information loss during integration…now the project manager, layout people, R&D could simply use the checklists on their own. (SMT engineer)

Furthermore, although the project was time-deprived, engineers felt they were supported and eligible to negotiate for more resources to perform their tasks.

…didn't feel much time pressure. Management set aside other big projects…schedules of several smaller projects were renegotiated…(Product engineer)

Outcomes. Project Alpha outcomes were positive. First, Project Alpha was completed two weeks earlier. The client was impressed by the team's detailed interim reports and product quality.

The project manager and designers attributed project success partially to engineers' timely identification of design defects. Designers had a healthy respect for engineers.

…checked what their suggestions were and modified the product. Or at least I explained to them when the design couldn't be changed. (R&D designer)

Second, engineers felt empowered to make decisions about product design.

...If an issue might cause the yield rate to drop under a certain level, we had the power to block this product. (SMT engineer)

DISCUSSION AND CONCLUSION

The control literature generally fixates on control modes and mechanisms. Thus, what is examined as a control is a meeting, a performance review, or a ritual (Kirsch 1996; Nidumolu and Subramani 2003). Our research highlights how controls are enacted is as important as what the controls are. In Project Alpha, the MRR was used to control engineers. However, engineers themselves updated information in the MRR, worked out details of their new role from a framework the facilitator provided, and developed their own understanding and aspirations of it in relation to others. For example, engineers were aware lateness in their tasks would cause problems for others and tried to stay ahead of schedule. When problems turned up, engineers addressed them directly and swiftly. For example, an engineer creatively checked a product defect to reveal its root cause and persuaded designers to change design. Finally, engineers delivered the project earlier with satisfactory product quality (Table 2).

Concepts	Data from Project Alpha
Formal control	• Facilitator clarified the new role to reduce task conflicts • Facilitator allowed engineers to adapt the MRR to fit the situation • When engineers underperformed, facilitator avoided resorting to formal power • Facilitator invited project manager to meetings to solicit his support • Project manager (PM) demanded designers' feedback for engineers
Clan control	• Engineers held punctuality as a shared norm • Engineers respected schedule and made it available to each other
(Self) goals	• Engineers accepted the new role and persisted in handling defects • Engineers set higher goals (complete tasks before allotted deadlines)
(Self) monitoring	• Engineers used designers' feedback to adjust their behaviors • Engineers suggested adaptation of the MRR checklists
Willpower	• Engineers considered following the MRR as the right way to get their job done

	• Engineers thought the MRR reduced memory burden and highlighted critical issues • Engineers felt supported and had the access to more resources
Project deliverables	• Project ended two weeks earlier • PM & designers attributed success partly to engineers' identification of design defects
Satisfaction	• Engineers satisfied with power in making decisions on product design

Table 2. Case Summary

Theoretical Implications

The case illustrates how control enactment encourages organizational self-control which, in turn, facilitates project performance. In the project, engineers were controlled by the MRR. However, the impact of that control, interacting with other controls, led to organizational self-control. Figure 2 illustrates how organizational self-control arose in Project Alpha.

(Self) goals. The MRR was employed to align engineers with organizational goals. In Project Alpha, the MRR was employed to bring engineers into the decision-making process. For example, the MRR was used to encourage individual interpretation of pilot production processes. When engineers deviated from MRR recommendations, they were not necessarily blamed. Deviations highlighted problems needing discussion and correction. Because auditing processes and task allocation were jointly decided, engineers accepted auditing as their responsibility (arrow ①).

Organizational self-control is also about overcoming selfish impulses/goals and doing what benefits the collective. In Project Alpha, the senior manager fostered norms conducive for collaboration (e.g., punctuality, respect for agreed schedules), and helped engineers internalize them (arrow ②). For example, he set up a public server for engineers to check each other's schedule; he himself acted as a role model, demonstrating the importance of punctuality; when someone failed to complete tasks on time, he showed individualized concern (e.g., corridor talks). The collaborative norms buttressed engineers' pursuit of self-goals within the context of collective goals. Engineers, therefore, strived to accomplish tasks within a more challenging timeframe (three days) than the norm of one week.

(Self) monitoring. The MRR was applied to craft communication channels (arrow ③). An important condition of communication is one sees the other as competent/reliable/credible (Burgoon et al. 1999), and one way to enhance one's credibility is to obtain influential endorsement (Erdogan 1999). In Project Alpha, the senior technical manager invited the project manager to MRR meetings and sought his endorsement of the MRR and engineers who used it to collect information. When deviations arose, designers and the project manager were informed. Designers then responded to engineers' queries. The MRR became useful for collecting information for conceiving creative solutions, and engaging designers in communication and joint problem-solving.

Willpower drains. The MRR was applied as an overarching control to reduce control conflicts, thereby saving engineers' energy/mental capacity (arrow ④). The MRR was applied to change the current roles. Existing controls thus were relaxed to accommodate changes. Tolerances for mistakes increased, and redundant controls were relaxed. For example, failure filling in the MRR did not lead to formal sanction; engineers got a chance to amend it.

Finally, external controls helped remove willpower drains (e.g., memory burdens and inequalities) (arrow ⑤). The MRR was used as a memory aid to ensure pilot production elements were ready. Because the MRR relieved engineers of cognitive burdens, they had excess capacity to use to better the project. For example, engineers reflected on past experiences and suggested improvements to packaging/labeling, previously not included in the MRR. How the MRR was applied removed oppression and gave engineers power to conduct their role. The dotted arrow (Figure 2) shows willpower drains' effects are removed as external controls eliminate the drains.

It is usually assumed control is achieved once appropriately designed mechanisms are applied. We demonstrate it depends on whether controlees embrace controls. Figure 2 depicts how external controls take on psychological significance in controlees. In Project Alpha, organizational self-control arises due to control enactment that allows controlees to respond to contingencies and to codify/document local best practices. These controls thus are intelligible/useful without unnecessary information overloading controlees, thereby conserving willpower. The conserved willpower allows controlees to better align their own goals with controllers', and monitor their own progress. Organizational self-control thus mediates external control's influence on controlee performance.

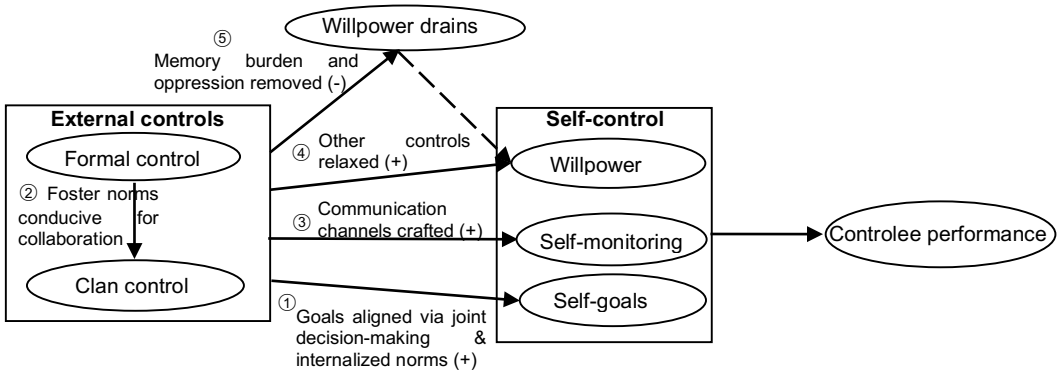

Figure 2. How Organizational Self-control is Enacted in Project Alpha

Practical Implications

Our research highlights three issues surrounding control enactment. First, control enactments are also performed by controlees. Controlees, considering control useful, are more likely to allow the control to positively influence their behavior. Therefore, controls are more effective when they are bilaterally created.

Second, our research reveals how managers helps enact controlees' organizational self-control. Chua et al. (2012) argue clan control is fostered in projects via formal control. This research extends that thinking by arguing organizational self-control is fostered via formal and clan control. Formal control shapes organizational self-control either directly, or indirectly via clans.

Particularly, formal control shapes organizational self-control indirectly by reshaping norms, which are then internalized by clan members. In this research, two factors affected norm internalization. First, norms' alignment with individual goals is crucial. Second, when norms are performed to support individual autonomy, they tend to become a part of oneself (Ryan and Deci 2000). In Project Alpha, the besting dates norm was internalized, because individuals could negotiate schedules and reinterpret MRR items.

Third, formal control conserves controlee willpower by relieving cognitive burdens and conflicts. In Project Alpha, the checklist was used as a memory aid to routinize checks engineers previously kept in their heads and freed their minds to perform tasks beneficial for the project (e.g., identify/correct design faults). It was also used to coordinate between project members because the checklist promoted information flow, helping articulate expectations/requirements. The managerial moral thus is parsimony and carefulness in deciding what controls to enact. Judicious consideration of how controls appear to controlees helps improve performance.

This study has limitations. First, we collected data retrospectively. Yet, we conducted multiple interviewees within one month after project completion. Also, we collected documents for triangulation. Second, we focus on organizational self-control initiated by management through a formal checklist. This may limit our generalizability to organizational self-control initiated by mechanisms in other contexts. While our research may not be generalizable to a population, it is likely generalizable to theory (Lee and Baskerville 2003). Future research should consider multiple case studies to identify additional contextual factors.

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