

Social comparison in deterrence policy

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Abstract

Management meted out punishment to enforce rules and encourage adherence. However, the effectiveness depended on how the employees perceive and interpret the policy. This study tested the effect of reducing individual lateness in a plastic factory. Field experiment was conducted to test the behavioral reaction of employees to fines in two different conditions. In the first condition, employees paid fines to employer and in the second condition employees paid fines to co-worker. While the two conditions relied on cost and benefit to reduce misconduct, employees in condition two could also compare the difference of fines received/paid by him and his co-worker. The results showed that the attendance only improved in the second condition and not in the first condition. The result suggested the importance of social norm (e.g. distributive fairness) in the enforcement policy.

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1 Introduction

Management ubiquitously metes out punishment to correct the misconduct of a subordinate in an organization. This punishment involves imposing an unwanted or undesirable event or circumstance as a penalty for an undesirable behavior in order to reduce the frequency of the misbehavior ([2], [5], [10]).

The main assumption of the punishment is that humans are rational and any aversive event, if costlier than the benefit of an act, will prevent someone from performing that act ([7], [8], [18]). Thus, the underlying cognitive process is that people maximize rewards and minimize costs. In this approach, organizations should enforce rules through incentives to encourage adherence and sanctions to discourage misbehavior. However, its efficacy has been questioned and it has consistently been found to have only minor influence on adherence, [20]-[21]. Research has shown intrinsic motivation or the employees' intrinsic desire to follow organizational rules. Such desire is linked to the employees' judgment on employer, interactions with their peers at the work place and perceived organization's policy with own value [17].

While past studies have offered different views on the reaction to organizational enforcement policy, direct observation of the behavioral responses in an on going relation between employer and employees in an organizational set-up is lacking. Lack of information about the employees' background and their possible reaction to a monetary punishment make it uncertain on how to best achieve adherence among the employees. Taking into account that humans react to inequity aversion can provide an additional tool to the management when designing enforcement policy.

This study intends to investigate the responses of workers in the event that employer imposes monetary punishment for reporting to work late. The study is conducted in a plastic factory. The effect of punishment is captured and measured in two conditions: 1) lateness punishment is paid to the employer and 2) lateness punishment is paid to a co-worker. Since the information about the punishment each worker pays is known, workers should reduce their tardiness if they react to deterrence theory, but if inequity aversion is more important, then workers in condition 2 should report to work earlier than workers in condition 1 after the punishment.

The results show that workers react differently to condition 1 and condition 2; the attendance in condition 2 is significantly improved, but this does not happen among the workers in condition 1. Punctuality improves significantly, when the workers pay lateness punishment to their co-workers in condition 2. The results also show that information about the difference in lateness between the worker and his co-worker does not help; instead, this information has a positive effect on coming to work late.

2 Literature

The existing literature on adherence can be broadly divided into two strands; that on command and control approach and self-regulatory approach.

In command and control approach, organizations enforce rules through incentives to encourage adherence and sanctions to discourage misbehavior ([1], [14], [18]). Therefore an offence can be deterred if the expected cost, if reprimanded, is higher than the benefit of an act ([3], [7], [8], [22]). Studies looking at employees' misconduct have found association between deterrence and adherence ([1], [4]). The undesirable consequences can also promote the learning speed of desirable behaviors [5] of other co-workers, who observe the imposition

and negative experience of the punished workers.

The self-regulatory approach represents an alternative approach that focuses on employee's intrinsic motivations. It is based on the employees' intrinsic desire to follow organizational rules. Such desire is linked to the employees' judgment on employer, interactions with their peers at the work place and perceived organization's policy with own value [17]. These studies have offered views that organizational justice, social comparison, social norms and legitimacy enter the cognitive process. Simply having a policy in place does not solve all the misconducts, but the relationship established between the enforcement policy and the perceived social norms held by employees [1], the perceived importance of organization's deterrence policy [18] and the acceptability of a behavior [4] in an organization is more important.

While not denying the importance of these two approaches, past studies have offered little direct evidence of behavioral responses in an on going relation between employer and employees. The present study attempts to fill this gap by comparing two field experimental treatments. The first approach is incorporated in the first treatment to investigate how employees respond to monetary punishment, and the second treatment incorporates inequity aversion to look into the responses to relative outcome.

Inequity aversion maintains that humans dislike outcomes they perceive to be inequitable. In the behavioral research literature, job satisfaction is strongly related to relative fairness (see for example [9], [13], [16]). Many empirical studies on employees' reaction to organizational policy also highlight the relation that unfair distributive fairness reduces organizational support among the employees and could affect the productivity negatively (see for examples, [11], [12]).

Empirical proof of the existence of inequity aversion is elusive because it is difficult to know to whom the employees compare themselves and also because employees are exposed to unobserved environmental factors. The experimental design adopted in this paper has an advantage of defining a priori the reference

point. In addition, the method relies on real decision rather than laboratory experimental data, which can mitigate criticism that laboratory data is to an extent unrealistic.

3 Method

3.1 Participants

Of the total of 300 staff members, 50 participated in the experiment. They were from various departments in the company: 7 participants from the quality and assurance department (QAD), 4 from the production department (PROD), 11 from the tooling department (TOOL), 3 from the plant and facility section (PFS), 3 from the material and logistic section (MLS), 6 from the engineering department (EGD), 2 from purchasing (PUR), 7 from production engineering (PES), 6 from the administrative and finance department (AFD), and 1 from the marketing department (MKT). The participants were categorized into three income groups: RM1500–RM2000 (14 participants), RM2001–RM2500 (16 participants), and RM2501–RM3000 (20 participants). The members of one group were not necessarily from the same department. The selection of the participants was based on individual lateness in the previous months: workers who arrived more than 5 minutes late in a week. The time to report to work is 8.30 a.m. until 5.30.p.m. from Monday to Saturday.

3.2 Settings

Lateness had become a threat to the productivity of the company, about 80% of the staff had been recorded to have reported to work at least 10 minutes late. The highest lateness the company had recorded was 3 hours.

The study conducted the experiment from July 26, 2010 to November 27, 2010 and designated the first five weeks, from July 26, 2010 to August 28, 2010, as the baseline treatment. In this treatment, the employer implemented no punishment. During the four weeks that followed, from August 30, 2010 to September, 25, 2010, they did implement punishment. During those four weeks, workers who arrived late to work had to pay a fine to their employer. The fines were proportionate to the monthly salary of the worker (the next section will present the calculation of fines). This is the BossD treatment. In the next four weeks, covering September 27, 2010 to October 22, 2010, the study paired each worker with one co-worker. The worker who reported early to work received the difference in the fines. This treatment is called the WorkersD treatment. In the final five weeks, from October 25, 2010 to November 27, 2010, the workers did not pay fines. This is the D treatment. In the BossD, WorkersD and D treatments, the difference in lateness between the worker and his co-worker was observable to each worker; workers knew the information about the fines paid and the difference in the fines each worker paid only in the BossD and WorkersD treatments. The baseline treatment was the practice of the management when this research took place; this treatment involved no information about punishment and difference in lateness.

The pairing mechanism was based on similar salary scales to ensure that the study only matched workers with the same salary category. The study matched each individual with a different partner every week and only the manager in the Human Resource (HR) Department knew the identity of the partner to avoid collusion during the experiment. A report on the company notice board only revealed the identity of the partners on Saturday evening every week when announcing the weekly payoff, and after that, the study reshuffled the same group of people from the same salary category to form pairs for the coming week. Since the participants did not know the number of players taking part in the experiment, they could not guess who were the players and their potential partners.

3.3 Experimental design and procedures

The experiment began when the HR department announced the purpose of the exercise and the matching mechanism through email and the notice board for each treatment. The study calculated the fines based on the formula for one minute of lateness:

$$\pi_{ij} = \frac{I}{\text{days in a month}} \times \frac{1}{8 \text{ hours}} \times \frac{1}{60 \text{ minutes}} \times \text{lateness}(\text{minute}) \quad (1)$$

where I = monthly basic salary. The calculation of fines follows equation (1) with π_{ij} = payment/fine from player i to player j when player i is late to work and worker j reports to work on time. In the BossD treatment, if both workers were late, the company collected $\pi_{ij} + \pi_{ji}$ from both players i and j , respectively. In the WorkersD treatment, if the reported time was different, $\pi_{ij} - \pi_{ji} = x$, player j received x amount and the company received the amount $\pi_{ij} + \pi_{ji} - x$. The net payoff of player j in this case is $x - \pi_{ji}$, the payoff to player i is $-\pi_{ij}$ and the amount the company collected is $\pi_{ij} + \pi_{ji} - x$. If player i was late and player j reported to work on time, player i 's payoff was $-\pi_{ij}$ and player j 's payoff was $x = \pi_{ij}$. Symmetrically, player i 's payoff was $x = \pi_{ji}$ if player j was late to work. If both reported to work on time, neither player would be punished and both earned zero payoff. The payoff rules ensured that lateness was not rewarded and the company did not make a loss from the exercise.

In all the treatments, the study monitored the workers' behaviors on a daily basis. A report emailed to the participants and displayed on the company's notice board announced the outcome of the game every Saturday evening. The announcement informed the participants of the identity of their partners, how large a payoff they and their partners had earned and each subject's number of minutes late. The payoff would be accumulated and paid out at the end of the month. The announcement played an important role in the experiment by conveying the

message about the total lateness committed by the individual workers, the discrepancy in the total salary payout at the end of the month between two players and how much the company had deducted from the basic salary.

Independent variables

The independent variables are the four specified conditions, namely the baseline, BossD, WorkersD and D treatments.

Dependent variable

The dependent variable is the individual lateness.

3.4 Predictions

In the BossD treatment, the punishment that workers who come late paid should reduce individual lateness. Since the fines were cumulative and deducted from workers' monthly income, workers faced difficulties in adjusting their monthly fixed consumption. To avoid this, according to the deterrence approach, workers should eliminate the habit of arriving at work late. The first hypothesis is: *Hypothesis 1*: The individual lateness in the BossD treatment should be lower than in the baseline treatment.

The rationality and deterrence approaches predict that workers compare the cost of the punishment and the benefit of coming to work late. If this is true, no differences should be visible in the behavioral responses to punishment in the BossD and WorkersD treatments, because paying fines to the employer and to co-workers does not make a difference to the decision to report on time.

Hypothesis 2: No discernible differences in lateness should be observed when workers pay a penalty to their employer or to a co-worker.

However, if inequity aversion plays a role, it should affect the behavioral outcomes in condition 2. Fines paid to co-workers should encourage improvement in punctuality in condition 2.

Hypothesis 3: The number of employees report to work late or individual lateness should be reduced in condition 2 compared to condition 1.

The D treatment tests the effect of the payout and lateness difference. This robustness test investigates whether workers react to payout or lateness difference information. If lateness difference is more important, the attendance should improve in the three treatments. However, if the payout difference plays a more important role, the attendance should improve only in the BossD and WorkersD treatments.

Hypothesis 4: The effect of information about the difference in individual lateness in BossD, WorkersD and D should not be significantly different if workers react to the lateness difference rather than the payout difference.

4 Main Results

Figure 1 shows the average lateness for each income group from week 1 to week 5 (baseline treatment), week 6 to week 9 (BossD treatment), week 10 to week 13 (WorkersD treatment) and the D treatment covers week 14 to week 18. The average individual lateness in the baseline group is 0.49 hours (G1520), 1.29 hours (G2025) and 1.66 hours (G2530). When the punishment is introduced in BossD, the attendance becomes worse by 0.58 hours (G1520), 1.53 hours (G2530) and 1.58 hours (G2530). The attendance in the WorkersD treatment is 0.72 hours (G1520), 1.25 hours (G2025) and 1.10 hours (G2530). The average lateness in the D treatment is 0.45 hours (G1520), 1.32 hours (G2025) and 0.85 hours (G2530).

Figure 2 shows the responses of the workers to each treatment according to income group. A common trend is that the misconduct is reduced in the WorkersD treatment compared with the other treatments for all the income groups. The effect of paying the punishment to the employer does not help to improve the attendance. The attendance becomes worse in this treatment compared with the baseline. This

result deviates from the first prediction. Comparing the effect of the BossD and WorkersD treatments shows different reactions; the workers in WorkersD report to work earlier than those in BossD. This result supports hypothesis 3 but not hypothesis 2. The effect of the D treatment on attendance is less clear.

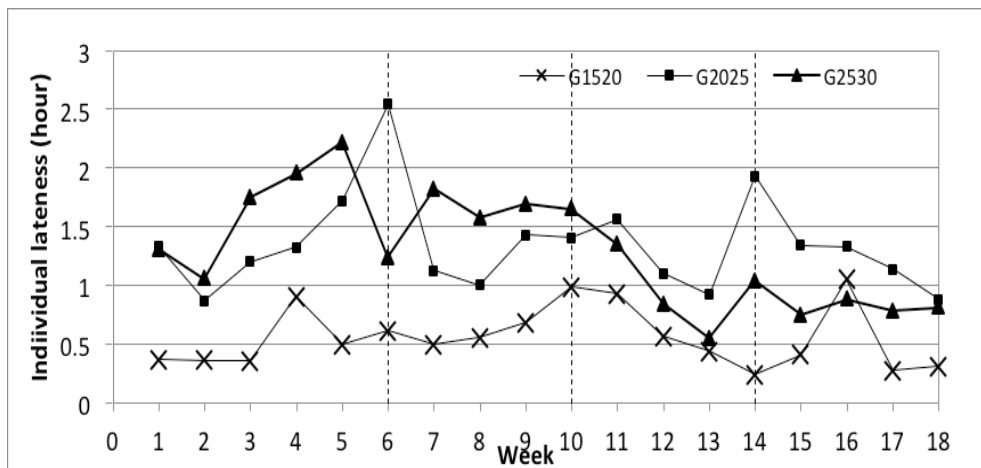


Figure 1: Average individual lateness by week for each income group

Table 1 shows the results of Tobit regression to investigate the effect of each treatment on individual lateness. Comparing the BossD and WorkersD treatments, the effect of paying punishment to co-workers overwhelms the effect of paying punishment to the employer in influencing decision to report to work ontime. Every 1 dollar paid to a co-worker reduces lateness by 0.3167 hours in the WorkersD treatment compared with only 0.0268 hours in the BossD treatment. The information about lateness difference does not help to reduce individual lateness; instead the information has a positive impact on individual lateness. Similarly, the attendance in the D treatment does not improve.

Table 1: Tobit regression to show the effect of treatment on individual lateness

Treatment	Baseline	BossD	WorkersD	D
Constant	1.0508*** (6.78)	-0.1437** (-2.27)	0.1253 (1.68)	-0.5073*** (-2.56)
Difference		0.3167*** (12.16)	0.3313*** (12.11)	0.2347*** (10.02)
Payoff Diff		-0.0268*** (-13.4)	-0.3167*** (-13.98)	
D1	-0.1660 (-1.22)	-0.0795 (-1.9)	-0.0427 (-0.55)	0.0075 (0.09)
D2	0.0917 (0.61)	-0.0609 (-1.41)	-0.0019 (-0.02)	-0.0217 (-0.26)
D3	0.2847* (1.79)	-0.0188 (-0.43)	-0.1913*** (-2.61)	-0.0947* (-1.13)
D4	0.3724** (2.28)			-0.0886 (-1.05)
Log Likelihood	-377.1084	-76.9747	-178.2572	-267.7167
Left Censored	1	118	63	125
Uncensored	249	82	137	125

Note: D1 = second week, D2 = third week, D3 = fourth week, and D4 = fifth week, otherwise zero. The dependent variable is individual lateness.

Difference = lateness difference and Payout Diff = payout difference.

*** is 1% s.l., ** 5% s.l. and * 1% s.l.

The uncensored data comprises individual lateness of more than 0 hours.

The numbers in the parentheses are z- values

6 Discussion

Several implications can be drawn from the behavioral outcomes observed above. Although monetary punishment increases the cost of committing the misconduct, limited information about the employees' perception on the cost and benefit of the misconduct and varying responses among the employees to the monetary punishment causes it to have limited success.

Management can utilize the social norm to achieve adherence as long as the procedure in meting out the punishment is fair. Research in organizational justice and citizenship has shown that the effect of the punishment depends on the judgment and perception on the policy, which influence the behavioral outcomes of the employees [6]. Negative reactions to the policy are mainly due to unjust punishment, but not the punishment per se. Therefore, the application of fair implementation and social norm improves effectiveness and does not affect the citizenship.

There are some limitations of the research that should be recognized especially on the forces that may affect the behavioral outcomes observed above. The two treatments may create different perception that employees in the BossD treatment is more tightly monitored and controlled by the management than the WerkerD treatment, which is managed by their peers. When WorkerD treatment is preceded by BossD treatment, the perception that employer is rewarding early comers and employees are now more fairly treated is created. However, if the WorkerD treatment is preceded by when employees are not monitored, the perception could be different. This is due to the difficulty faced by the employees to adapt to the new and more team-based structure as what emphasized by the Structural Adaptation Theory [15].

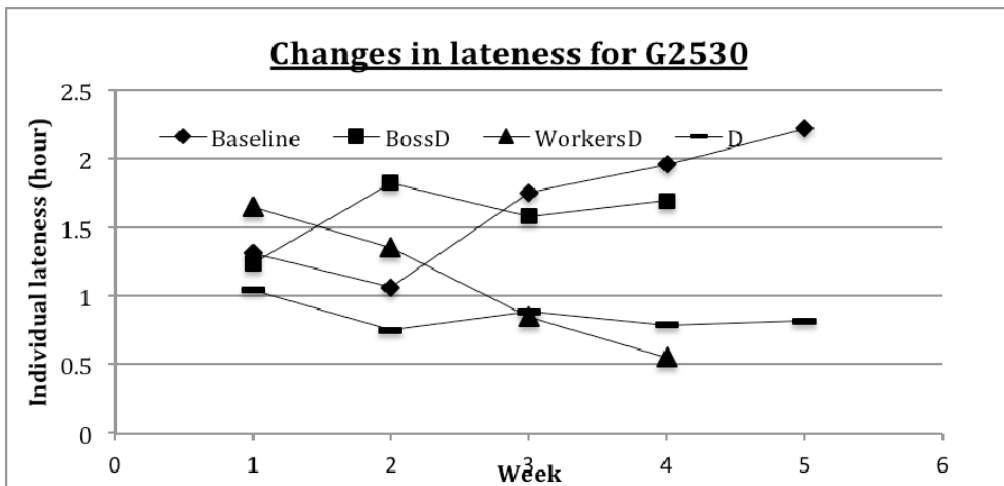
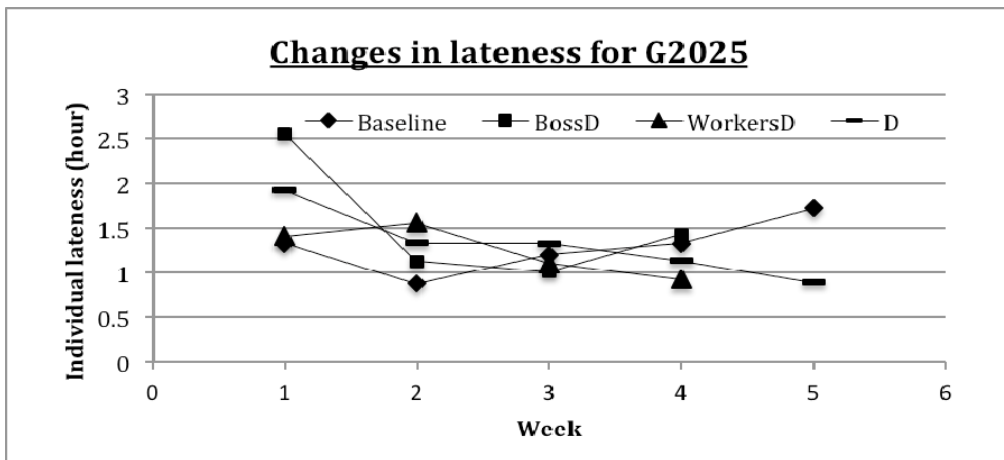
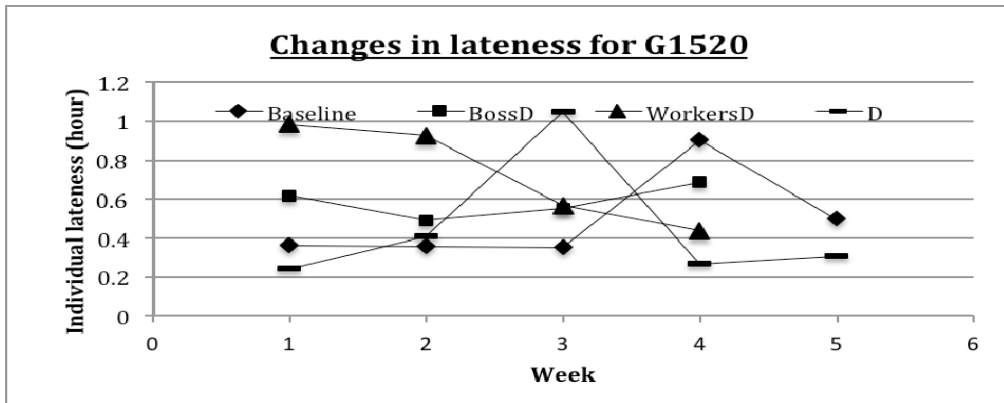


Figure 2: Changes in lateness according to income group in each treatment

The behavioral pattern observed in the experimental results may be due to the competition effect produced by the WorkerD treatment. To avoid loss to the employer, the experimental design does not reward employees who come to work on time in the BossD treatment, but employees who come to work on time are rewarded from the fines paid by their co-workers in the WorkerD treatment. Employees who come on time consistently will be rewarded highly and those who report late will have to pay heavy fine. As in Tournament Theory [19], this creates incentive to compete.

The present study investigates the behavioral patterns in the experimental set up, other psychological factors may be overlooked. The different reaction in the WorkersD and BossD treatments could be attributed to organizational support and citizenship. Employees in WorkersD treatment may have the perception that paying fines to co-worker is fairer than paying fines to the employer in BossD treatment. Further study on the perception of the employees could reveal the mechanism and improve understanding of the relation between punishment, perception and behavioral outcomes.

Since the experiment was conducted in a very short period of time, it does not have the opportunity to observe the impact of the implementation on the organizational citizenship in a longer term. Although the mechanism helps management to achieve adherence, the lack of privacy can have negative impact in the long term. Therefore, the management may consider publishing only the fines paid but not the lateness to conceal the information about the staff salary.

7 Conclusion

The study investigates the effectiveness of monetary punishment in deterring misconduct in a plastic molding factory. The punishment is implemented in two ways; in one treatment the workers pay the punishment imposed on them to their

employer and in another treatment they pay the punishment to their co-worker. The results show that the attendance does not improve in the first treatment; individual lateness is higher compared with before the punishment. However, when workers pay the punishment to their co-workers, the attendance improves significantly. This may be due to the discrepancy in the income earned by each worker. What the comparison between these two treatments can show is that workers find that paying punishment to their employer is more bearable than paying punishment to their co-workers, who are from the same department and have the same job function.

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