

Effects of Intelligent Disciplinary Tracking on the Counterproductive Behavior and Job Performance of Knowledge Workers in Telecommuting

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Abstract. Telecommuting for a large number of employees has become a challenge that managers have to address. Previous studies have not considered the impact of such intelligent disciplinary monitoring software and devices on employees' counterproductive behavior and performance. Especially now, with the global spread of the epidemic and the prevalence of teleworking, it is necessary to evaluate the dynamic, iterative relationship between employees and the company. The results of the current study showed that Intelligent disciplinary tracking does influence the counterproductive behavior but not to the job performance of employees for different types of work (knowledge work and manual work). In addition, the level of company discipline tracking significantly affects the organizational trust climate, which in turn affects individuals' psychological security. To respond to changes in the level of counterproductive behavior by employees, companies adjust the level of disciplinary supervision, and such system changes can further exacerbate counterproductive behavior by employees. However, the counterproductive behavior of manual employees does not necessarily lead to a decrease in job performance.

Keywords: intelligent disciplinary tracking, counterproductive behavior, knowledge workers, remote job

1 Introduction

Counterproductive behaviors are a variety of negative behaviors in the workplace, including interpersonal conflict, slacking, and stealing, and they may cause harm to the organization or its members, thereby affecting individual and organizational performance. This paper proposes that corporations' abusive monitoring behaviors in remote work are a new factor that may influence stressful situations, which in turn affect counterproductive behaviors and individual performance [1]. However, previous studies have not considered the impact of such intelligent disciplinary monitoring software and devices on employees' counterproductive behavior and performance. Especially now, with the global spread of the epidemic and the prevalence of teleworking, it is necessary to evaluate the dynamic, iterative relationship between employees and the company [2].

2 Literature review

2.1 Effective work time: the difference between knowledge workers and manual workers

Previous performance improvement suggestions have been based on studies that recruited manual workers as participants. Given the differences in production styles between knowledge employees and manual workers, the present research argues that it is suspicious that these disciplinary tracking methods can be directly transferred to the surveillance methods for knowledge employees. Manual workers tend to be organized in a way that fits into the assembly line system and the Taylor system. Indeed, a high level of discipline tracking can force knowledge workers to sit in front of a computer for long periods of time (i.e., the appearance of order), but because of the fact that their supervisors do not have specific work details and skills to properly appreciate what knowledge workers do [3], knowledge workers can often be in a state where they appear to be busy but are not really working. This leads to a conflation of ineffective work time and effective work time. As for manual employees, they cannot slow down their work speed (i.e., a less drastic form of resistance) to protest against unfair company regulations, because every step of their work process can be measured and analyzed. Unless they take drastic deviance behaviors (e.g., hold strikes, sabotage machines, etc), their counterproductive behaviors will not affect their work performance as long as they remain on the assembly line [4].

2.2 The effects of organizational trust climate and psychological security on knowledge employees

Organizational trust climate is the employees' evaluation of the company's cooperative environment. According to the three-dimensional structural model of organizational trust, this includes organizational members' trust in their direct superiors, trust in their colleagues, and trust in the top management of the company. This perception of trust is closely related to the company institution, which can affect the level of all three types of trust. If a company system encourages the reporting of tainted behavior among colleagues and between superiors and subordinates or adopts an unfair promotion system (e.g., using individual performance rather than team performance as an indicator for promotion), then the level of organizational trust climate in that company will decline. Psychological security is the subjective feeling that employees can express their true selves without fear that such behavior will negatively affect their self-image or career. This suggests a positive correlation between the level of organizational trust and psychological security. However, entity-less monitoring software and dehumanized automated decision-making systems often make assessments without the employees' awareness, making them believe that their every word and action affects their performance assessment. There are differences in the motivation styles of physical employees and knowledge employees.

2.3 The interaction of monitoring system and employee behavior

There is a dynamic, iterative relationship between the company and its employees. However, previous research has not considered the game process between the firm and the employee (i.e., how the firm responds to this counterproductive behavior). Path dependence theory suggests that if top managers benefit from a previously implemented monitoring system, then

they will tend to continue to reinforce this behavior. If this monitoring behavior does not lead to improved company performance, then corporate executives may seek to change the system. They may adopt aggressive communication strategies or adopt humane systems to motivate employees to work efficiently.

Based on the above literature, the current study proposes the following hypothesis: For both manual and knowledge workers, the discipline tracking level in the company is positively correlated with counterproductive behavior. For manual workers, the counterproductive behavior level will not significantly predict job performance. For knowledge workers, the counterproductive behavior level will significantly predict job performance. The discipline tracking level and organizational trust climate level are negatively correlated. Organizational trust climate level and psychological safety level are positively correlated. Psychological safety level and counterproductive behavior level are positively correlated. After a period of time, the company may reinforce the level of disciplinary tracking due to employee counterproductive behavior, which in turn leads to higher levels of employee counterproductive behavior.

3 MATERIALS AND METHODS

3.1 Participants

The required sample size was estimated by using a power analysis based on the correlation between disciplinary tracking level and counterproductive behaviors ($r = 0.4$, analysis: multiple linear regression with 4 predictors) and a desired power of 0.9 ($\alpha = 0.05$). These parameters resulted in a goal of 195 participants. Participants were required to provide written informed consent and fill in their demographic information. A total of 200 subjects were called for this experiment. Their supervisors were also invited to perform the evaluation.

3.2 Measures

Perception of the disciplinary tracking: The present study adapted the hostility attribution scale developed by Li et al [5] ($\alpha=0.85$).

Perception of organizational trust climate: The current study chose McAllister's trust model [6] to measure individuals' trust in colleagues and direct leaders (i.e., interpersonal trust). The Gould-Williams model [7] was chosen to measure trust in top leadership ($\alpha=0.79$).

Perception of psychological safety: The psychological safety questionnaire used in this study was mainly derived from the questionnaire developed by May [8], which consists of 5 items scored on a 1-7 point scale ($\alpha=0.83$).

Counterproductive behavior: This paper used withdrawal and deviant behavior as indicators of counterproductive behaviors, and adapted the counterproductive behavior scale developed by Spector et al [9] ($\alpha=0.77$).

Job Performance: The present study adapted the counterproductive behavior scale developed by Salgado [10], which consists of 6 items scored on a 1-7 point scale ($\alpha=0.78$). This questionnaire is to be completed by the supervisor.

3.3 Data analysis

A correlation analysis was performed among the perceptions of disciplinary tracking level, organizational trust climate, psychological safety, and the level of counterproductive behaviors in the company. Then, the SPSS plugin Process 3.3 (Model 6) was used to perform the chain mediation model to evaluate the relationship between perception of disciplinary tracking level (independent variables) and counterproductive behaviors (slacking and destructive behavior, dependent variables). This study uses a cross-lagged regression analysis based on a mediation model to explore the interaction between a firm's disciplinary tracking system and counterproductive behavior.

4 Results

Table 1. Means, variances and correlations for each variable (KW, N=100)

Variables	M	SD	1	2	3	4	5	6	7
1 DT (T0)	5.32	21.32							
2 CT	3.43	7.21	-0.33**						
3 DLT	5.17	4.61	-0.69***	0.12					
4 TLT	4.10	9.26	-0.41*	0.41	0.14*				
5 PS	3.59	8.31	-0.26*	0.31*	0.28**	0.16*			
6 WB (T0)	4.51	14.6	-0.40***	-0.28*	-0.39*	-0.29*			
7 DB (T0)	5.16	17.1	0.06	0.10	0.02	0.31	0.05	0.20	
8 JP	4.91	10.33	-0.43**	0.30*	0.16**	0.18*	0.17*	0.41**	0.12*

Note: * represents the degree of significance. *p < 0.1, ** p < 0.01, ***p < 0.001.

Abbreviations: Knowledge workers, KW; Disciplinary tracking, DT; Colleagues trust, CT; Direct leadership trust, DLT; Top leadership trust, TLT; Psychological safety, PS; Counterproductive behavior, CB; Withdrawal behavior, WB; Deviant behavior, DB; Job Performance, JP.

Table 2. Means, variances and correlations for each variable (MW, N=100)

Variables	M	SD	1	2	3	4	5	6	7
1 DT (T0)	3.32	35.31							
2 CT	2.50	21.47	-0.31*						
3 DLT	4.29	4.74	-0.37*	0.21					
4 TLT	4.51	3.51	-0.14*	0.31	0.31**				
5 PS	3.51	15.05	-0.41**	0.46**	0.19***	0.29***			
6 WB (T0)	4.33	3.75	0.15	0.21	-0.20**	-0.33	-0.16		
7 DB (T0)	3.59	14.5	0.25*	0.14	-0.39**	-0.24*	-0.12*	0.12**	
8 JP	5.63	15.68	0.16*	0.04	0.09*	0.03**	0.21	-0.33	-0.11*

Note: * represents the degree of significance. *p < 0.1, ** p < 0.01, ***p < 0.001. T0 denotes the time of the first questionnaire and T1 denotes the second questionnaire time (After 6 months).

The results of the correlation analysis are presented in Table 1 and Table 2. T0 denotes the

time of the first questionnaire and T1 denotes the second questionnaire time (After 6 months). In Table 1, DT (T0) had a moderately negative correlation with the WB(T0) ($r=-0.40$, $p<0.001$), but not with DB(T0) ($r=0.06$, $p>0.05$). However, it is worth noting that there was a significant correlation between DT (T0) and DB (T0) ($r=0.25$, $p<0.05$). Thus, both hypothesis 1 and hypothesis 2 were supported. The results show that different employee types have an impact on the strategies of CB. The results in Tables 1 and 2 also showed that a high level of disciplinary tracking reduces the level of OCT for both knowledge workers and manual workers, implying that the establishment of chain intermediaries is possible. The correlation results also indicated that Low levels of OCT can increase the tendency of employees to engage in CB.

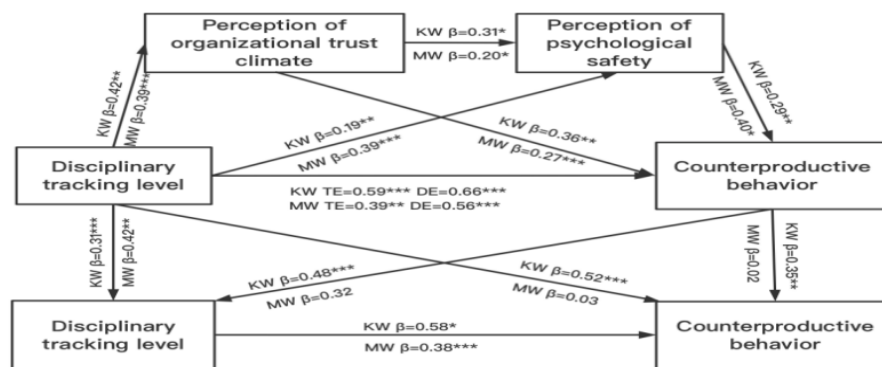


Figure 1. The chain mediation model and Cross-lagged model about Discipline tracking, counterproductive behavior and job performance

Note: * represents the degree of significance. * $p < 0.1$, ** $p < 0.01$, *** $p < 0.001$. T0 denotes the time of the first questionnaire and T1 denotes the second questionnaire time.

In addition, DT (KW, T0) had a moderately positive correlation with DT (KW, T1) and CB (KW, T1) (DT, $r=0.18^{**}$, $p<0.01$; CB, $r=0.23$, $p<0.01$). DT (NW, T0) had a moderately positive correlation with DT (NW, T1) (DT, $r=0.33^*$, $r<0.05$). In the chain mediation model, as shown in Figure 1, high level DT negatively predicted CB (KW, $\beta = -0.49$, 95% CI = [-10.49, -3.53]; NW, $\beta = -0.61$, 95% CI = [-39.02, -12.95]). In addition, OTC and PS could independently mediate the relationship between DT and CB (KW, $\beta = -0.33$, 95% CI = [-43.02, -32.10]; NW, $\beta = -0.31$, 95% CI = [-56.09, -39.20]). In cross-lagged regression analysis, DT (T0, KW) was positively correlated with DT (T1, KW, $r = 0.21$, $p < 0.01$; $\beta=0.31$, $p < 0.001$) and CB(T1, KW, $r = 0.40$, $p < 0.001$; $\beta=0.52$, $p < 0.001$). However, although DT (T0, NW) was positively correlated with DT (T1, NW, $r = 0.19$, $p < 0.001$; $\beta=0.42$, $p < 0.01$), it was negatively correlated with CB (T1, NW, $r = 0.04$, $p > 0.05$; $\beta=0.03$, $p > 0.05$).

Table 3. Partially Standardized Effect and 95% CIs for Direct and Indirect Effects

Path	Effect	SE	95% CI
Total effect			
(KW) DT→CB	0.59***	0.27 ^a	[1.53, 2.97]
(NW) DT→CB	0.39***	0.41 ^a	[3.24, 7.10]

Specific indirect effect (KW) DT→OTC→PS	-0.43**	0.34 ^a	[-5.41, -3.28]
(NW) DT→OTC→PS	-0.30***	0.50 ^a	[-0.11, -0.03]
(KW)DT→OTC→PS→CB	0.51**	0.12 ^a	[3.54, 5.66]
(NW)DT→OTC→PS→CB	0.26**	0.67 ^a	[1.04, 4.35]

Note: *p < 0.1, ** p < 0.01, ***p < 0.001.. a. Empirical 95% confidence interval does not include zero.

Abbreviations: Manual workers, MW; Disciplinary tracking, DT; Organizational trust climate, OCT; PS; Counterproductive behavior, CB.

5 Conclusion

Intelligent disciplinary tracking does influence the counterproductive behavior but not to the job performance of employees for different types of work (knowledge work and manual work). In addition, the level of company discipline tracking significantly affects the organizational trust climate, which in turn affects individuals' psychological security. To respond to changes in the level of counterproductive behavior by employees, companies adjust the level of disciplinary supervision, and such system changes can further exacerbate counterproductive behavior by employees.

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