A Study on the Effects of Some Reinforcers to Improve Performance of Employees in a Retail Industry

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Two field experiments were conducted in the Business Information Technology Department of a major retail industry to analyze the impact of positive task performance reinforcers. The employees were divided into two broad groups—those performing complex tasks and those performing relatively simpler tasks. The first group was further divided into two subgroups, one being reinforced with money and paid leave and the other with feedback. Both the subgroups showed a significant improvement in performance behavior. However, feedback had a stronger effect on task performance even after the reinforcement was withdrawn. The second group of employees was allowed to choose reinforcers of their liking. Two simple techniques, a casual dress code and flexible working hours chosen by them, had a positive effect on their performance, which continued even after 6 months into the intervention. Besides, the procedure for the second group required no monetary or work-time loss to the employer.

Keywords: *reinforcers; performance improvement; task complexity*

Behavioral techniques in work settings have received a great deal of attention by researchers since the early 1970s (Adam, 1974; Bobb & Kopp, 1978; Luthans & Kreitner, 1975; Luthans & White, 1971). A careful study, however, reveals that most of these studies used low complexity tasks, such as experiments on construction workers (Austin, Kessler, Riccobonno, & Bailey, 1996) and reports of

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increased productivity among textile workers (Welsh, Luthans, & Sommer, 1993); increase in speed of service, degree of help, customer appreciation, eye contact, and overall quality of service in the teller services in a bank (Luthans, Fox, & Davis, 1991); reduction in both days lost and time cost from injuries among mining workers (Fox, Hopkins, & Anger, 1987); increased aggregate retailing behavior, such as selling, stock work, and so forth; and reduced absence from work station and idle time among retail clerks in a metropolitan departmental store (Luthans, Paul, & Baker, 1981).

Bandura (1986) notes that although low complexity tasks have their place in every economy, high complexity tasks put greater demands on the employee's required knowledge, cognitive ability, memory capacity, behavioral facility, information processing, persistence, and effort.

As a specific avenue for future research, Strajkovic and Luthans (2003) suggested that in behavioral management, the effects of feedback on task performance may increase for more complex tasks because the motivating power of feedback generated from the information it provides about the employee's performance tends to diminish on less complex tasks.

The primary objective of this study is to make a systematic analysis of the impact of money and feedback as positive task performance reinforcers on employee performance on complex tasks. The other objective of this study is to find motivating factors for young employees performing other tasks, which are relatively simple in nature.

METHOD

STUDY SITE

The Business Information Technology Department of a large retail industry located in a southern metropolitan city in India was chosen for the study. The department works 6 days a week, Saturday being a half day.

TABLE 1
Experimental Groups of Employees

Group	*Subgroup*	*Number of Employees*	*Task Performed*	*Reinforcer Used*
G1 (n = 36)				
G1	G11	18	Complex	Money and paid leave
G1	G12	18	Complex	Outcome and process feedback
G2(n = 40)				
G2	G21	23	Simple	Informal dress code
G2	G22	17	Simple	Flexible working hours

NOTE: G = group.

PARTICIPANTS

The participant population was divided into two broad groups. The first group (G1) comprised 36 employees. From this group of employees, 18 were randomly chosen for each of the two subgroups (G11 and G12), G11 being reinforced with money and paid leave and G12 with feedback. Their mean age was 27 years, and the mean experience level in the organization was about 3 years. Each employee had been in this department for at least 2 years.

The participant population in the second group (G2) comprised 40 employees. Of these, 23, who comprised the third subgroup (G21), chose informal dress code, and the other 17, comprising the fourth subgroup (G22), chose flexible working hours as reinforcers. The mean age of this group was 25 years. The company had employed all of them for a period of at least 1 year.

The number of employees, the tasks performed by them, and the reinforcers employed in each of the groups and their subgroups are shown in Table 1.

All the above employees had the same training and were told in a detailed manner what was expected of them, to ensure that changes in behavior could not in any way be attributed to orientation and training.

REINFORCERS FOR G1

The tasks performed by these employees (36 in number) were complex in nature (developing new software, training employees on the software employed, accounting, and auditing).

For each of the two subgroups, G11 and G12, 18 employees were randomly chosen. After consultation with the G11, consisting of 18 employees, it was decided to give them 15% more discount than that offered to customers on all the products offered by the company (such as garments, home appliances, furniture, stationery, leather accessories, portfolios, cosmetics, sunglasses, watches, jewelry, perfume, and utensils). Also, they were offered paid leave for an additional half day every month. Under this scheme, Saturday could also be taken off by the employees. The company already had a policy of giving 2 days paid leave every month to its employees. Money was considered a strong reinforcer for this subgroup as the employees in this subgroup bought items averaging about 25% of their monthly take-home pay from the retail outlets (going by the data of the earlier 6 months). None of the 18 employees in this subgroup spent less than 10% of their monthly take-home pay purchasing products from these outlets. After the considerable discounts contingent on the performance of the group were offered during the intervention period, the spending of the employees almost doubled at the prereinforcement discounted rates. On an average they spent about 40% of their take-home pay at those rates, with none of them spending less than 15% of their monthly take-home pay during this period.

For the second subgroup (G12) of 18 employees, outcome and process feedback were employed. Outcome feedback communicated to the employee what their performance level was against the set standard. Process feedback conveyed to each employee how the performance was executed, and, more importantly, as to what should be done in future to improve their performance. Specific guidelines as given by Early, Northcraft, Lee, and Lituchy (1990), Balcazar, Hopkins, and Suarez (1986), and Kopelman (1986) were followed. In addition, performance feedback was operated as an external intervention, immediate, specific, and conveyed in a positive manner, as recommended by Stajkovic and Luthans (2001).

REINFORCERS FOR G2

For these employees (40 in number) performing other tasks (database maintenance, system maintenance, bar coding, and data entry),

the study was initiated with an open mind. The idea was not to thrust the tried and tested reinforcers (money, feedback, and social recognition) on the employees to increase their task performance but to allow them to come up with their own suggestions as to what would motivate them to perform better and then to implement them and measure their performance to see if it did indeed make them perform better. This method was adopted because the company already had one of the best pay packages in the industry, besides good, clean working conditions.

Discussions were held with the employees about the various task performance reinforcers (money, feedback, and social recognition) that were employed in developed countries to motivate the employees. A survey that was carried out found that the employees were satisfied with their pay, perks, and allowances. They also had role clarity, and all employees agreed on the fact that their work was well recognized by their superiors and credit was given wherever it was due. All of the 40 employees were asked to list what would motivate them and make them feel comfortable in their work spot, which in turn would lead to an increase in their performance.

To the surprise of the researchers and the management, 23 of them (G21) favored an informal dress code, wherein they would be allowed to wear T-shirts, jeans, sports shoes, and other casual outfits. The company had until then advocated a formal dress code, wherein everyone had to wear a full-sleeved shirt neatly tucked in, a neck tie, a belt, and formal shoes. The young employees based their argument on two points. First, they were of the view that because they did not come in direct face-to-face contact with the customers, their dress code did not really matter. Second, although they were working in a centrally air conditioned building, the formal dress code was not very comfortable under Indian conditions.

The fourth subgroup (G22) of 17 employees was of the view that the existing working hours should be flexible. They considered this of greater importance than the dress code. The company was following a strict policy wherein the employees had to report for work by 10 a.m. sharp and leave by 6 p.m. The department worked for the retail outlet, and hence, it had its own peak and lean seasons. Workload was heavy during festive seasons and during the start of the school and college academic year, but at other times it was not. They suggested that the

management allow them to leave early in lean seasons as soon as the task assigned to them for that day was completed. They were more than willing, as usual, to stay up late during peak seasons.

The management assured the subgroups that their suggestions would be taken up and that they would inform them within a month about their decision on whether to go ahead with the proposals.

The duration of each of the three periods of the experiment (baseline and intervention [Phases 1 and 2] and postintervention) was 18 working days. The entire study, therefore, lasted for a period of 54 working days. Reinforcement was administered to each subgroup as a whole.

MEASURE

For G1 performing complex tasks, a within-subjects experimental design was used to test the performance of the employees. The reversal, or withdrawal design, which has been widely recognized as meeting criteria for scientific methodology and minimizing threats to validity (Crowell & Anderson, 1982; Hersen & Barlow, 1976), was used. The approach that was used in measurement consisted of directly observing the behavior of the participants, classifying their behavior according to predetermined categories, and systematically recording the observations.

For G2 performing other tasks, the baseline and intervention periods were the same as for G1, but the postintervention period was not employed. Instead, the durability of the reinforcers was tested after a period of 6 months (intervention Phase 2).

Four categories of behavior that were critical to the job of G1 were identified. They were as follows:

1. Developing new software: This process included identifying the programming language (C, C++, VB, Java), choosing the feasible database management system for the software (SQL, Oracle, Access, FoxPro), creating and designing a user-friendly software, and executing, debugging, and compiling the software.
2. Training employees on the software developed: This included preparing documentation of the software, identifying and demonstrating the capabilities and limitations of the software, and using shortcuts to reduce overall time.

3. Accounting: This behavior included maintenance of inventory of goods (opening stock, goods received, goods transferred, goods sold, goods returned to the suppliers, goods returned by customers, closing stock) at the warehouse.
4. Auditing: This behavior included daily auditing of sales, monthly auditing of goods, and auditing of manpower within the department.

The main components of the job against which the employees in G2 performing other tasks were evaluated are as follows:

1. Database maintenance: This included fine-tuning the database (removing unwanted data, adding new data, and making necessary adjustments to the structure of the database), creating database back-ups (creating physical back-up of database through back-up tapes, CD ROMs, and hard disk drives), increasing performance of the database (increasing the size of the database, the memory of the server, and the space on the hard disk as per the requirements).
2. System maintenance: This included upgrading systems, having data back-ups (back-up of all package and system files, including operating system), and upgrading antivirus updates on the computer terminals.
3. Bar coding: This included bar coding of all goods received from the suppliers before dispatching them to the outlets for selling.
4. Data entry: This behavior included entry of all the goods received, sold, returned to the suppliers, and returned by customers.

The management chose two neutral observers who had a good understanding of the job. Because the tasks performed by the employees were technical in nature, it was decided that the observers should be from within the organization. The two observers were chosen from the top level of the Business IT Department. Both of them had adequate knowledge and exposure to the job and had performed a few years earlier the tasks under observation.

All behaviors were noted and scores given accordingly (the higher the expected behavior, the higher the scores). Saturday being a half day, the scores were doubled to have uniform scoring. Employees normally did not take leave other than the casual leave to which they were entitled. In all the groups, no more than two employees were absent on any day during the three periods of the study. To maintain uniformity, the observers gave scores accordingly, so that the number of absentees did not affect the ratings. The list of absentees was made available before

the start of work on any given day. The workload for each employee for the day was then assigned so that the work went on smoothly without any task getting delayed or postponed to the next day. The maximum score set for G11 and G12 was 1,000 for each day, whereas it was 400 for G21 and G22.

For the purpose of observation, the behavior category *software developed* was divided into three categories, namely, (a) number of software pending, (b) number of software completed, and (c) number of software in progress. Also, the problems encountered when the software was used and the number of times they were sent back for improvement were taken into account.

For the behavior category *training on the software developed*, the employees who received the training were asked to provide feedback on the training and rate the training. These were compared with performance of the employees under observation when they imparted training on previous occasions. Observers used the values given by the employees trained for evaluating the performance of the employees under observation.

The observers tried to be as unobtrusive as possible in gathering the data, their behavior toward the employees being the same before and after the experiment started. Care was taken to ensure that change in employee performance could not be attributed to the change in behavior of the supervisor.

Observations were noted in a systematic way on recording forms. Data were recorded at random intervals of time throughout the working hours, and as many times as was found feasible.

After much deliberation, it was agreed upon to gather observations 6 times a day, bringing the total number of observations in the experiment to 324 for G1 performing complex tasks. The observers, who made independent observations, checked their observations at the end of each day. On an average, there was agreement on 300 out of the 324 observations that were made (92.6%). For G2 performing other tasks, on average, one reading was taken every hour. In all, 432 readings were taken during these 9 weeks (54 working days), out of which agreement was on 411 observations. Percentage of agreement between the observers averaged 95.2% during these periods.

PROCEDURE

PROCEDURE FOR THE EMPLOYEES PERFORMING COMPLEX TASKS (G11 AND G12)

Baseline. The first 3 weeks (18 working days) consisted of obtaining readings to establish the baseline rate for the four categories of behavior (developing new software, training employees on the software developed, auditing, and accounting). Both subgroups reported almost the same behavior and performance standards.

Intervention. After the initial 3-week period, the employees were informed of the reinforcers that they would get. The procedure followed was strictly as before. In the case of both the subgroups, reinforcement was from Day 1 of the intervention period.

Postintervention. Immediately after the withdrawal of the reinforcers, the postintervention period of the experiment was started, following the same procedures as in the previous periods.

Percentage of time devoted to each behavioral category was in proportion to its importance to the job. Developing new software was identified to be the most important task, followed by training the employees on the software developed, accounting, and auditing.

PROCEDURE FOR EMPLOYEES PERFORMING OTHER TASKS (G21 AND G22)

Baseline. Task performance of the employees within the subgroups G21 and G22 was noted.

Intervention (Phase 1). Reinforcers desired by the employees were introduced. In accordance with the desire of G21, they were allowed to wear whatever they felt comfortable in. For G22, it was decided to continue with the reporting time of 10 a.m. They were, however, allowed to leave the office by 4 p.m. at the earliest if all the work assigned to them for the day was completed satisfactorily. Employees were repeatedly told that there should be no compromise on the quality of the work. This phase lasted 18 working days.

Results of the Intervention Phase 1 showed a definite link between the reinforcers and increase in performance. It was thought unwise to withdraw the reinforcers for these employees, which might result in a loss of motivation of the employees, so the company decided to continue with the reinforcers.

Intervention (Phase 2). To test durability of the reinforcers, it was decided to observe the level of performance of the employees after 6 months of the onset of the intervention period. In this phase, observations were recorded in the same way as before. This phase of data collection also lasted for 18 days. The same observers were employed.

RESULTS

All behavioral categories were combined into a single category termed as aggregate behavior, for easy understanding and interpretation of data. Figure 1 shows the aggregate behavior for G1, and Figure 2, the aggregate behavior for G2. These are based on the scores given by the observers for all the subgroups. From these scores, the sample means and their standard deviations were calculated. To test whether the sample means differed significantly, two-tailed t tests were conducted.

RESULTS OF G1

For G1 performing complex tasks, mean and standard deviation of scores achieved are shown in Table 2. As seen from Table 3, there was no significant difference between G11 and G12, $t(34) = 0.52$, during the baseline period.

However, both G11 and G12 showed a steep increase in their aggregate behavior during the intervention period. The mean aggregate behavior of G11, where money was used as a reinforcer, showed an increase from 648.33 to 809.96, whereas the mean aggregate behavior for G12, where feedback was provided as reinforcer, rose from 647.5 to 832.72. There was also a significant difference between the two subgroups during the intervention period, $t(34) = 4.46$.

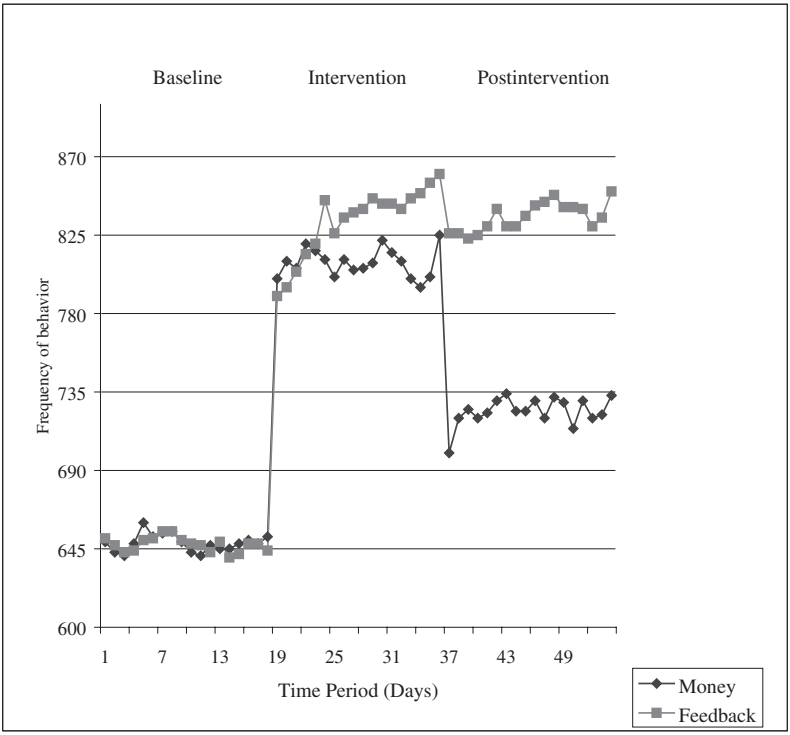

Figure 1. Aggregate behavior for the group (G1) performing complex tasks.
NOTE: G = group. Aggregate behavior is defined as the mean score obtained by the employees in G11 and G12 each day. Baseline is defined as the period during which the existing performance level of the employees was noted. Intervention is defined as the period during which the reinforcement was administered. Postintervention is defined as the performance of employees after the withdrawal of the reinforcements.

After withdrawal of reinforcers, there was a decline in aggregate behavior of G11, whereas the aggregate behavior showed a slight rise in G12. The difference between G11 and G12 was very significant, $t(34) = 39.68$, during the postintervention period.

To find if there was any significant difference between periods or between G11 and G12, Analysis of Variance (ANOVA) was conducted as seen in Tables 4 and 5. Results show that there was no significant difference between the subgroups, but that there was a significant difference between the various periods of the study.

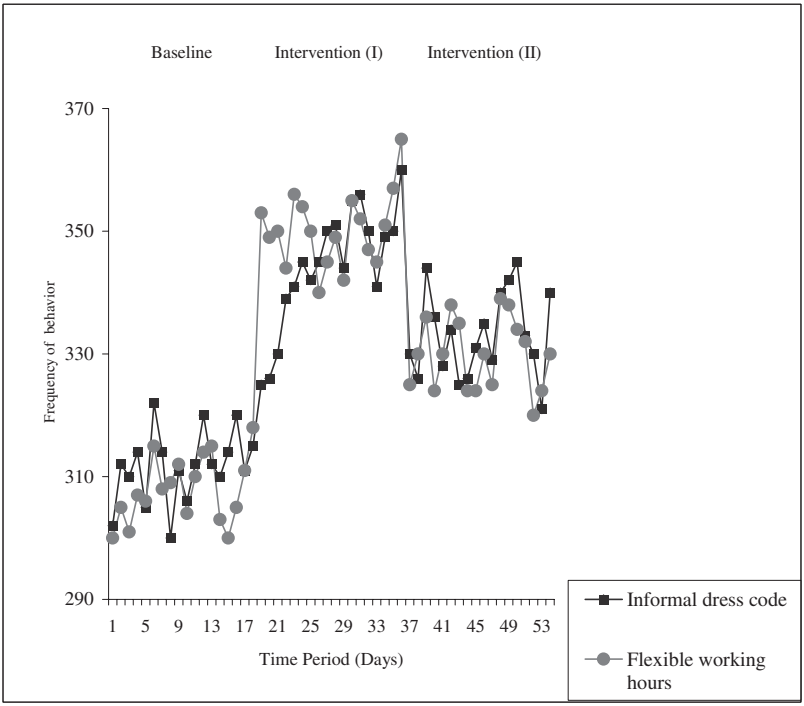

Figure 2. Aggregate behavior for the group (G2) performing other tasks.
NOTE: G = group. Baseline included establishing the performance level of employees before the application of the reinforcers. Intervention (Phase 1) included the performance of employees during the first 18 days of reinforcement. Intervention (Phase 2) included the performance of employees 6 months after the reinforcements were in place.

RESULTS OF G2

For G2 performing other tasks, the mean and standard deviation during the periods of the experiment are shown in Table 6.

The *t* tests between the different setups of the study have been shown in Table 7. No significant difference was observed between G21 and G22 during the baseline period, $t(38) = 1.99$.

After applying reinforcers, the mean aggregate behavior of G21 went up to 334.39 from the baseline of 311.67. A similar increase in the aggregate behavior was also noticed in G22. The mean went up to 350.22 during intervention from the baseline of 307.94.

TABLE 2
Mean and Standard Deviation of Scores Achieved by G1 Performing Complex Tasks

Period	*Subgroup G11*	*Subgroup G12*
Baseline		
Setup number	1	2
M	648.33	647.50
SD	5.04	4.23
Intervention		
Setup number	3	4
M	809.06	832.72
SD	8.26	20.28
Postintervention		
Setup number	5	6
M	723.89	835.39
SD	8.13	8.23

NOTE: G = group.

TABLE 3
***t* Test Between Setups for G1**

	Setup								
	1 and 2	*3 and 4*	*5 and 6*	*1 and 3*	*1 and 5*	*3 and 5*	*2 and 4*	*2 and 6*	*4 and 6*
t_{cal} value	0.52[a]	4.46	39.68	68.69	32.71	30.31	36.90	83.88	0.50[a]

NOTE: $t_{tabulated} = 3.29$, $t > 0.001$; G = group.
a. There was no significant difference between the setups.

TABLE 4
Mean Scores Obtained by the Subgroups During Various Periods of the Study

Subgroup → / *Period* ↓	*G11*	*G12*
Baseline	648.33	647.50
Intervention	809.06	832.72
Postintervention	723.89	835.39

NOTE: G = group.

TABLE 5
ANOVA Table

Sources of Variation	*Sum of Squares*	*Degrees of Freedom*	*Mean Sum of Squares*	*Variation Ratio (F)*
Between subgroups	3,007.92	1	3,007.92	1.72
Between periods	32,649.42	2	16,324.71	19.36[a]
Error	3,488.45	2	1,744.28	
Total	39,145.79	5		

NOTE: Tabulated $F_{.05}$ for (1, 2), *df* is 18.51; tabulated $F_{.05}$ for (2, 2) is 19.0.
a. Indicates significant difference between the periods.

TABLE 6
Mean and Standard Deviation of Scores Achieved by G2 Performing Other Tasks

Period	*Subgroup G21*	*Subgroup G22*
Baseline		
Setup number	1	2
M	311.67	307.94
SD	5.87	5.45
Intervention (Phase 1)		
Setup number	3	4
M	344.39	350.22
SD	9.79	6.06
Intervention (Phase 2)		
Setup number	5	6
M	333.06	329.89
SD	6.97	5.86

NOTE: G = group.

TABLE 7
***t* Test Between Setups for G2**

	Setup								
	1 and 2	*3 and 4*	*5 and 6*	*1 and 3*	*1 and 5*	*3 and 5*	*2 and 4*	*2 and 6*	*4 and 6*
t_{cal} value	1.99[a]	2.11[a]	1.48[a]	13.47	11.03	4.43	20.73	10.98	9.64

NOTE: $t_{tabulated} = 3.29$, $t > 0.001$; G = group.
a. No significant difference between the setups was found.

TABLE 8
Scores Obtained by the Subgroups During Various Periods of the Study

Subgroup → / *Period ↓*	*G21*	*G22*
Baseline	311.67	307.94
Intervention (Phase 1)	344.39	350.22
Intervention (Phase 2)	333.06	329.89

NOTE: G = group.

TABLE 9
ANOVA Table

Sources of Variation	*Sum Squares*	*Degrees Freedom*	*Mean Sum of Squares*	*Variation Ratio (F)*
Between subgroups	0.20	1	0.20	0.014
Between periods	1,417.62	2	708.81	49.43[a]
Error	28.68	2	14.34	
Total	1,446.50	5		

a. Indicates significant difference between the periods.

Even 6 months into the intervention period, it was observed that the performance level of either subgroup did not return to the baseline level, the mean aggregate behavior for G21 and G22 being 333.06 and 329.89, respectively.

ANOVA tests were conducted as seen in Tables 8 and 9 in the case of G21 and G22. Results show that there was no significant difference between the subgroups. In this case, a significant difference was witnessed between the periods of study.

DISCUSSION

In studies of this kind (Haynes, Pine, & Fitch, 1982; Wikoff, Anderson, & Crowell, 1983), a control group and an experimental group are used for the purpose of comparison. In this case, as all the

employees were working under the same roof, it was felt that it would be difficult to reinforce only some, as the news would be likely to reach the others. The experimental group would then conclude that their reinforcement was a merely temporary measure, just to facilitate a research project. On the other hand, the control group might feel demoralized at not being chosen for the reinforcement. Measurement of true performance levels would then not be possible. Therefore, the entire staff was reinforced. The staff in the department under study was limited in number, and so it was possible to apply the reinforcement to all of them. This may not be a viable option in a larger setting.

DISCUSSION ON GI

Both reinforcers increased the task performance of G1 on expected lines. It is the postintervention period, though, that is more important, as it measures the lasting effects of reinforcers. The aggregate behavior of G11 came down from 809.06 during the intervention period to 723.89 during the postintervention period, whereas the aggregate behavior of G12 showed a slight increase from 832.72 during the intervention period to 835.39 during the postintervention period. This shows that the information passed on to the employees in G12 during the intervention period through feedback had caused them to continue performing at the same level even after the withdrawal of the reinforcer. The employees in G11, on the other hand, showed only an emotional response to the reinforcer, their disappointment at the withdrawal of the reinforcement manifesting in their work performance.

Previous literature suggests that money and social recognition are better reinforcers than feedback for less complex tasks. The main finding of this article, thus, is that, for more complex and technical jobs, the act of providing suggestions and information for future improvement (feedback) has a more enduring benefit than does the use of monetary discounts combined with increased paid leave. However, as this study did not use very high-complexity tasks, future studies using more complex tasks and using them for a longer duration of time will give greater insight into suitable reinforcers for employees performing such complex tasks.

DISCUSSION ON G2

For G2 performing other tasks, observations were so taken that the first half of each period was a lean period (when there was comparatively less work to be done) and the second half of each period covered the peak season (when the workload was heavy). By doing so, changes in behavior cannot be attributed to the level of workload during a certain period.

Though the performance level went down after 6 months as compared to the first 3 weeks of the intervention, it did not return to the baseline frequency level. This shows that the reinforcements were successful but that the management has to come up with new reinforcements to maintain a high level of performance among employees.

What was noted was not only an increase in the performance level but an increase in the satisfaction level among the employees. Their attitude was better than before, their willingness to do the job assigned to them was higher, and overall, their spirits were high. Improvement in the management-employee relationship was also witnessed as a spin-off. The management was of the view that this overall improvement was because the opinions of the employees were heeded and implemented and again at no cost (monetary or work time) to the employer. This shows that there exists the potential for future studies on allowing employees choose their own reinforcements to increase their task performance.

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