The Application of Operant Methodology and Its Effect in Improving Employees' Efficiency on a Quick Service Restaurant

Silva J. Goncalves
Western Michigan University
THE APPLICATION OF OPERANT METHODOLOGY
AND ITS EFFECT IN IMPROVING EMPLOYEES'
EFFICIENCY ON A QUICK SERVICE RESTAURANT

by

Silva J. Goncalves

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Silva J. Goncalves
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The classification or labeling of individuals within an institution or industrial center has been a matter of interest to Psychology, Management, and Supervision. Boyd (1968) suggested that the number of different personnel within a business setting or industrial setting is equal to the number of individuals working within that setting. Boyd suggested that one of the real pitfalls in industry is the tendency to classify individuals in one of two extremes: excellent - poor; efficient - inefficient; fast - slow; etc.

Blum and Naylor (1968) provided an example of performance measures and evaluation in industrial criteria: rate of work; quality of work; job knowledge; etc. Blum and Naylor then discussed the tendency (while evaluating an individual) to be influenced by one of that individual's traits while evaluating another trait. If knowledge of the job and efficiency are requisites for an employee to be promoted or to receive a raise, the promotion or raise may be given to someone else who is not the better qualified person but has a nice personality and is very friendly. As those raises and promotions based on abstract evaluation of the individual are very frustrating to those individuals who did not receive a raise nor a promotion, the use of objective evaluations (using rate of work, quality of work, etc.) to evaluate employees is recommended.

Lawshe and Sutter (1944) proposed several uses for job evaluations and analysis: derivation of training content; establishing personal specifications; and the improvement of job efficiency. These authors also suggested that job evaluations could be used as means for giving
out promotions and increasing salaries.

In an analysis of job satisfaction, Blum and Naylor (1968) considered attitudes as being a very influential variable. Job satisfaction was interpreted as the outcome of several attitudes employees may have with relation to their job, different factors within the job situation, and overall attitudes toward life.

In the business world, there is a solid attitude towards savings. Likert (1967) explained that cash is not necessarily profit and that cash can also be raised by liquidating assets.

Gellerman (1972) in a summary of films on management, discussed Likert's analysis on cash saving and how it affects employees. The emphasis was on cost-cutting (cutting employees' hours, allowing no raises, etc.) when intensively used and, also, when management held an extreme attitude of take it or leave it, the employees may become resentful, frustrated with the job, and eventually leave it. Employees under such conditions and with unfavorable attitudes toward their jobs did not perform better; but, rather, their efficiency and concern about the job decreased.

More elaborations were made on new job evaluation programs by Craig (1973). One of the main propositions was that management should fully support new programs. If management failed to support new programs, the chances for such programs to succeed were minimal.

Boyd (1968) contributed by considering individual differences as an important factor in classification and evaluation. Blum and Naylor (1968) listed aspects of work which were relevant in performance measure and how one trait of an individual may influence a manager or
supervisor when evaluating other traits of the same individual. Attitude and satisfaction were considered by Gellerman (1972) as crucial in influencing performance or efficiency on the job.

Store B, where the present study was conducted, had been open for approximately four months. The number of employees working during peak hours for both day and night shifts ranged from 15 to 20, which was considered high. During those hours (12:00 noon to 2:30 p.m. and 5:30 p.m. to 8:00 p.m.), there were constantly long lines of customers, often forming lines all the way out the front doors. The employees were not fast enough to keep up with business; and many customers abandoned the waiting lines, especially during lunch hours when most of the customers were on a one-half or one hour lunch break. Mistakes were often made by the employees. Incorrect change was given, wrong sandwiches and wrong drinks were served, there was an excess and/or shortage in the order, etc. On two occasions, two consecutive Friday nights, the number of mistakes per hour was recorded as five and six. Then, different programs were implemented, evaluated, and modified when necessary to improve overall performance and service.

The present study represented first an attempt to use the posted evaluation system to provide the employees with some feedback on how the managers classified or evaluated them. The experimenter hypothesized that the employees would perform better if good classifications by the managers were socially reinforcing to the employees and were made contingent upon good performance. A structured training procedure was next implemented to increase the employees' knowledge of the job. And finally, a point system was implemented. With this point system,
the experimenter intended to give the employees not only daily feedback on their performance but back-up reinforcers (free lunches) to reinforce good performance.
Method

Subjects

The subjects of this experiment ranged from 16 to 40 years of age and were employed by Stores A and B. These employees represented a most heterogeneous group in considering variables such as age, educational level, social class, motivation on the job, etc. Some of the typical employees were high school students, college students, housewives, and others.

Employees were hired at minimum wage pay ($1.60); and there were no incentive programs, merit systems, nor specific criteria for an employee to be promoted and/or to receive raises. Managers (manager and his assistants) met once a month or every other month to discuss possibilities of giving raises. A five-cent raise was usually given to a few employees whom the managers felt deserved the most. Not every employee received a raise unless they made it obvious that they were doing a good job and convinced the managers by either a written or verbal request.

The total number of employees was approximately fifty, and each shift (day and night) operated with an average of fifteen employees. Only about seven percent of them worked more than thirty hours a week, and only three or four worked full time (forty hours per week), excluding the managers.

Training History

There was no structured training program. On the employees' first
day of work, the manager, or one of his assistants, gave them a demonstration on how to work on the broiler or grill, usually considered as the first training station. Time spent on this training usually consisted of five to ten minutes.

After exposure to the broiler, training varied. Some employees were next trained on the Drink Section or Fry Station while others were trained on the Right Board or Left Board. Some employees were soon trained to work on different stations; and after the fourth week on the job, they were exclusively working on those stations reserved for the best employees with experience: Order Taker, Cashier and Expeditor. Some employees worked back in the broiler, boards, fryers, and drink station indeterminately until they requested that the manager let them learn the other jobs.

A more structured training program providing all employees with the same opportunities was recommended.

Work Situation

The setting, Store B, was a very popular quick service restaurant and was divided into three main areas: the kitchen (or food preparation area); the service area (cash registers; Order Taker, Cashier; Expeditor; customers); and the dining room with 112-customer seating capacity. The store was located near downtown in an active business area close to a university with a student population of 22,000 and a smaller college of approximately 2,000 students. In a self-service fashion, the customers were served in two lines. The operation was based on three primarily relevant stations: (1) Order Taker, Cashier;
(2) Expeditor; and (3) food preparation line.

The Order Taker, Cashier took the customer's order and called it in over a microphone. He (or she) then billed the customer; and only after returning his change, the Order Taker, Cashier placed the customer's money in the drawer. The ticket or order was next passed to the Expeditor.

The Expeditor read the ticket, filled the order by putting the sandwiches and french fries in one bag and the drinks (which were assembled nearby) in a separate bag and handing the order to the customer.

The food preparation line was in the back room, leading towards a large open window giving access to the chutes where prepared sandwiches were placed. The broiler and boards which composed the food preparation line were perpendicular to the front room where the Order Taker, Cashier and Expeditor operated.

The broiler was operated by two staff members. One placed the buns on a conveyer belt and at the same time placed the hamburger patties on another which took them through the broiler. At the end of the broiler, the other staff member placed a cooked patty of hamburger between two parts of the bun and placed it in a steam-heated drawer where the sandwiches were to stay for not more than ten minutes. If the sandwiches were left in the drawer longer than ten minutes, they would not be fresh.

On the left side of the board, hamburgers, hot dogs, and ham and cheese sandwiches were prepared. On the right side, two employees prepared No. 1, No. 2, and No. 3 sandwiches. The right board was always
busier as the No. 1 and No. 3 sandwiches were the most popular ones served. (No. 1, No. 2, and No. 3 are used here as the actual names of the sandwiches would serve to identify the restaurant where this study took place.)

Between the boards (with access to both) catsup, mustard, pickles, onions, mayonnaise, lettuce, and tomatoes were available in stainless steel pans. These garnishes were added to the sandwiches by an employee. Prepared sandwiches were placed in the sliding chutes which were accessible to the Expeditor.

Procedures

Baseline I. Two weeks of pre-baseline observation were necessary before the experimenter decided on what procedures to use and what variables to measure during baseline conditions.

Baseline was taken by the experimenter, a manager, and a graduate student of psychology during weekends from noon Friday to Sunday night. Data were only recorded on experienced employees. No recording was done when a new Order Taker, Cashier was being trained. The average time it took for the Order Taker, Cashier to wait on a block of five customers during rush hours was recorded. (Average time is presented in the Results section of this experiment.)

Data were computed separately for lunch and dinner time. The experimenter and other observers recorded the time it took the Order Taker, Cashier to wait on a block of five customers. The mean for all the blocks recorded during each observational session was computed and plotted. Each session lasted from one to two hours. The average
number of blocks of five customers recorded per session was nine blocks.

The time spent waiting on a block of five customers was recorded by starting a timer when the Order Taker, Cashier initiated communication with a customer (customer No. 1) and stopping the timer when the Order Taker, Cashier said, "Thank you," after returning the change to customer No. 5.

Recording was conducted without the employees knowing. The Order Taker, Cashiers never reported seeing stopwatches in the observers' hands. Observers were either in the dining room where they had good sight of the customers in the line without having to worry about being noticed by the Order Taker, Cashier; or when in the line themselves, the observers kept their hands down behind the other customers which kept the Order Taker, Cashier (and the other observers) from seeing the stopwatch or noticing the observers' recording behavior.

There was no direct recording nor manipulation on any station other than Order Taker, Cashier. The experimenter's hypothesis was that any improvement in that station had to be generalized to other stations otherwise they would not keep up with the rate of work of the Order Taker, Cashier.

Posted evaluation. The employees were told in a general store meeting that the managers were going to evaluate them on a weekly basis. Evaluation was done in a managers' meeting once a week when each manager assigned a number value to each employee. The numbers assigned by the managers to each individual employee were added
and divided by the number of managers participating in the evaluation. The resulting score was the evaluation given to that employee for that week. The numbers represented specific classifications: (1) excellent; (2) very good; (3) above average; (4) average; and (5) new employee.

In the case of obtained results falling between two numbers, the smaller number which was a better classification was assigned to that employee. There was no "below average" classification. Employees who were on the job for less than 30 days received a "5" which was an indication that the individual was not participating in that particular program of classification because they were new employees. These evaluations were posted. Employees with high classifications were listed on the top of the posted lists, followed by the name of the employees with lower classifications (Table 1). Different areas of the employees' behaviors considered during evaluations were: speed, attendance, and efficiency. This procedure was in effect for three weeks.

**Structured training A.** Structured training consisted of the experimenter writing job descriptions (Table 2) and making out quizzes (Table 3) for the job descriptions. Job descriptions were handed out to employees who read and returned them one or two days later in exchange for quizzes on the material read. Quizzes were answered at home and then returned to the managers. This procedure was in effect for three weeks.

Only a few employees were taking the job descriptions and quizzes, and the managers were not emphasizing the need for structured training. Managers often forgot to hand out the job descriptions and quizzes and
TABLE 1

Posted Evaluation

<table>
<thead>
<tr>
<th>Date</th>
<th>Performance Level</th>
<th>Date</th>
<th>Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent (1)</td>
<td></td>
<td>Excellent (1)</td>
</tr>
<tr>
<td></td>
<td>(Names)</td>
<td></td>
<td>(Names)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very Good (2)</td>
<td></td>
<td>Very Good (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Above Average (3)</td>
<td></td>
<td>Above Average (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average (4)</td>
<td></td>
<td>Average (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>New Employee (5)</td>
<td></td>
<td>New Employee (5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 2

Special Job Description for the "One-to-one Design"
(One Employee Functioning Both as Order Taker, Cashier and Expeditor)

| Table 2 | Special Job Description for the "One-to-one Design"
|---------|---------------------------------------------------
<p>| Some new stores, making use of the plentiful space in the front area, are operating two, three, and four cash registers during rush hours. Under this design, you will operate a cash register by yourself. However, it presents some problems which require special attention for correction purposes. | |
| Some Order Taker, Cashiers take one order; bill the customer; and after receiving the money and finishing the transaction, turn around for the order. If the order is not ready, the Order Taker, Cashier waits three seconds, returns to the cash register, and takes another order. Then, after the money transaction is finished, he turns around looking for order No. 2 or No. 1. If neither order is ready, the Order Taker, Cashier takes the third order, etc. Hopefully, by that time, order No. 1 is ready; and everyone is satisfied. | |
| A better way to operate under the &quot;One-to-one Design&quot; is never to take only one order at a time unless it is a single sandwich or a single drink. Take at least two orders (preferably three) before going after the first one. | |
| If the first two orders were special orders (e.g., extra mayonnaise, 10 fish sandwiches, etc.), take the third and fourth orders. You do not call them out if they are also special or the food preparation line will be confused. If the third and fourth orders are simple, push them out instead of waiting for order No. 1 and No. 2. | |
| It is important that you always greet the customers. It is your job to make sure the customer feels welcome and satisfied with our service. Be as pleasant as possible. Remind your customer of items he might have forgotten (fries, drinks, etc.)... | |</p>
<table>
<thead>
<tr>
<th><strong>TABLE 3</strong> Order Taker, Cashier and Expeditor Quiz</th>
</tr>
</thead>
</table>

1. If the first two orders taken were special orders (for example, extra or minus specific items), what does the Order Taker, Cashier, Expeditor do?

2. A better way to operate under the "One-to-one Design" is never to take only one order at a time unless it is a simple sandwich or a single drink. True or false. Why?
rarely demonstrated much initiative to communicate with employees on that matter. In those instances when employees did not pass a particular quiz, they were asked to read the description again and take the quiz over.

**Structured training B.** A meeting was scheduled with the supervisor of the corporation. The need for structured training was emphasized in the presence of all the employees because only about fifty-five percent of them were reading the job descriptions and taking the quizzes.

The same procedure (taking job descriptions and quizzes home) was used until a week later when a call from the Federal Labor Relations suggested that reading job descriptions and taking quizzes should occur during working hours. All training was to take place on the company's time.

Results on quizzes were recorded on a posted table (Tables 4A and 4B).

**Baseline II.** A second baseline was taken because of a change in the job description of the Order Taker, Cashier. Instead of taking orders and conducting money transactions as under Baseline I to the end of Structured Training B conditions, the Order Taker, Cashier was now also responsible for the Expeditor's functions. Recording was conducted on blocks of five customers as it was done in Baseline I.

**Point system.** After Structured Training A and B, a new procedure was implemented. This procedure was based on a point system under which the managers evaluated all employees who worked under them. This
<table>
<thead>
<tr>
<th>Names</th>
<th>Broiler and Steamer</th>
<th>Drink Section</th>
<th>Fry Station</th>
<th>Right Board</th>
<th>Left Board</th>
<th>Order Taker, Cashier</th>
<th>Expeditor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe</td>
<td>P   P</td>
<td>Q   P</td>
<td>Q</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Mary</td>
<td>Q   P</td>
<td>P   P</td>
<td>P</td>
<td>P</td>
<td>Q</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Dave</td>
<td>P   P</td>
<td>P   P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

P = Pass
Q= Questionable
TABLE 4B

Training Procedure Results on Quizzes

<table>
<thead>
<tr>
<th>Names</th>
<th>Opening Girl</th>
<th>Dining Room Attendant</th>
<th>Night Dishwasher</th>
<th>Night Dining Room Cleanup</th>
<th>Night Board Cleanup</th>
<th>Night Broiler &amp; Trash Cleanup</th>
<th>Janitor (Not Required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe</td>
<td>P</td>
<td>P</td>
<td>Q</td>
<td>P</td>
<td>Q</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Mary</td>
<td>P</td>
<td>P</td>
<td>Q</td>
<td>P</td>
<td>Q</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Dave</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>Q</td>
<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

P = Pass  
Q = Questionable

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was done daily by the managers in charge of the day and night shifts. If any of the employees worked double shift, evaluation was done by the manager in charge during the first shift. Emphasis on evaluation and recording was aimed especially at those employees who were doing very well and deserved to be rewarded in some way (free lunches in this particular procedure of the study).

A first step towards setting up a point system was taken by the managers and the experimenter who together specified criteria which were considered crucial to the best possible operation of that establishment. The criteria set were related to attendance, following the job descriptions, following the store policies, etc. Job descriptions and store policies were reviewed with the employees in a general store meeting. A list of desirable and undesirable behaviors was posted (Table 5), and the employees were told that those who exhibited those behaviors listed as desirable would be considered as good employees and would be rewarded. Evaluation was based on how the employees behaved according to the list of desirable and undesirable behaviors. The possible classifications were 15 (best), 10 (good), 20 (need for improvement), and N (the employee did not work that day).

Employees who were observed performing well (following criteria) received a "15" for that day. A "15" was reserved for those who exhibited a very good performance on the job. The manager in charge plotted a "15" for that employee at the end of the shift. If the manager forgot to plot the points at the end of that shift, all employees who worked that shift received a "10."

Those employees who did a fairly good job but emitted one or two
TABLE 5

Desirable and Undesirable Behaviors

<table>
<thead>
<tr>
<th>Desirable Behaviors</th>
<th>Undesirable Behaviors (Infractions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following job descriptions</td>
<td>Not following job descriptions</td>
</tr>
<tr>
<td>Being clean</td>
<td>Coming to work in dirty uniform</td>
</tr>
<tr>
<td>Wearing hat</td>
<td>Not wearing hat</td>
</tr>
<tr>
<td>Respecting uniform policies</td>
<td>Not wearing hairnet</td>
</tr>
<tr>
<td>Asking permission to use phone</td>
<td>Smoking, chewing gum, eating and/or drinking in front rooms before, during, or even after closing</td>
</tr>
<tr>
<td>Announcing temporary absence from station (to get stock, to go to the bathroom, etc.)</td>
<td>hours</td>
</tr>
<tr>
<td>Keeping stations clean</td>
<td>Talking loud</td>
</tr>
<tr>
<td>Keeping stations stocked</td>
<td>Talking on the phone for more than two (2) minutes even with manager's permission</td>
</tr>
<tr>
<td>Putting away personal cup</td>
<td>Keeping stations messy</td>
</tr>
<tr>
<td>Paying for food before leaving for break</td>
<td>Not stocking station</td>
</tr>
<tr>
<td>Staying at assigned stations</td>
<td>Leaving cash registers without anyone up front to watch them</td>
</tr>
<tr>
<td>Changing station only when okayed by manager</td>
<td>Cleaning fingernails, fixing hair, or fixing makeup while up front or around food preparation line</td>
</tr>
<tr>
<td>Being on time for work</td>
<td>Working up front when you have a cold, bad breath, body odor, etc.</td>
</tr>
<tr>
<td>Being on time returning from break</td>
<td>Not paying for food before leaving for breaks</td>
</tr>
<tr>
<td>Taking your two (2) weekly quizzes until training is completed</td>
<td>Being late</td>
</tr>
<tr>
<td>Attending meetings</td>
<td>Parking in wrong areas</td>
</tr>
<tr>
<td>Respecting assigned parking areas</td>
<td>Horseplaying</td>
</tr>
<tr>
<td>Washing hands after touching anything which is not clean</td>
<td>Not washing hands after picking up litter or food from the floor</td>
</tr>
<tr>
<td>Shaving daily (if you have a beard)</td>
<td>Exhibiting disrespectful attitudes to the managers, customers, or other employees</td>
</tr>
<tr>
<td>Being respectful towards managers, customers, and other employees</td>
<td></td>
</tr>
</tbody>
</table>
different undesirable behaviors (infractions) received a "10" for that day. Those individuals who were observed engaged in more than two undesirable behaviors received a "20." A "20" was also given to all employees who exhibited and were observed by the manager while engaging in the same undesirable behavior twice or more a day, or who continuously exhibited an undesirable behavior like keeping the station dirty or being very slow on the job.

Usually, an evaluation system would follow the order "15," "10," and "5." A "20" was used instead of a "5" following the assumption that a low evaluation ("5") was in itself aversive and a low score had already become a conditioned aversive stimulus to most people. Once the experimenter was attempting to emphasize positive reinforcement and minimize any possible aversive aspect of the program, the conditioned aversive stimulus "5" was substituted by a high number "20." However, "20" was still considered a low score; and employees receiving that number for evaluation realized that a big number "20" was of little value when compared to "15" and "10" under that point system.

The managers were instructed to notify the employees whenever infractions were observed and recorded and to advise them not to commit the same infraction again. If the managers did not respond in that way, the employees were not to be consequated with a "20."

At any time, employees who felt that they deserved a better evaluation were encouraged to discuss the matter privately with the manager. Public or open argument or discussions were discouraged as they were considered incompatible with store policies (noise, disruption, etc.)

Under the Point System, it was important that managers observed
all employees as often and as closely as possible. The managers gave verbal-vocal feedback to all employees at least once a day. This was done by either telling the employees that they were doing a good job or by telling them how they were expected to do specific tasks and to demonstrate, if necessary. For example, if an employee was using too much mayonnaise on the sandwiches, the manager explained to him how it was to be done correctly. Once the employees read the job descriptions, they were not expected to make any major mistakes. Mistakes during preparation of food were considered as infractions, and the managers used a pocket-size notebook to record those infractions. The first mistake was marked by the manager as one infraction. The same mistake was not considered as a second infraction unless the manager had applied the correction procedure.

The experimenter discussed with the managers and with the employees specific criteria for employees to meet before rewards were to be given. The employees who received a "15" for three consecutive days were rewarded by the managers with a free lunch coupon, which entitled them to a lunch of their choice (Table 5). The coupon was nontransferable but could be used by the employee at any time.

The employees who received "10" for five consecutive days or who received five consecutive classifications of "10" and "15" (occasional "15's" were considered as highly desirable and did not disqualify the employee) received a free lunch coupon on the fifth day of such classifications so the only difference in reinforcement was two days' delay.

In order to train the managers to conduct these evaluations, training sessions were scheduled four times during the first week of
### TABLE 6

A Point System - Daily Evaluations

<table>
<thead>
<tr>
<th>Names</th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Helen</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Joe</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>15</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Mary</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Dave</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>N</td>
<td>10</td>
<td>20</td>
<td>N</td>
<td>10</td>
</tr>
</tbody>
</table>

* = Free lunch coupon
15 = Highest possible evaluation
10 = Second best evaluation
20 = Lower evaluation
N = Employee did not work that shift

Three consecutive "15's" = free coupon
Five consecutive "10's" or a combination of "10's" and "15's" = free coupon
"20" nullifies preceding evaluation
manipulation. Training was conducted by an extra observer working with the managers and recording all infractions or mistakes committed by each employee and checking whether the managers responded to those infractions or not. That was done by writing the time, the employee's name, and the infraction. At the end of that hour, the manager and the observer checked their observations; and a percent agreement was computed by multiplying the lowest number of observations by 100 and dividing by the highest number of observations.

Reliability

In order to check the reliability of the data being taken, sometimes during the week the experimenter and an observer entered the dining room by the side door and independently checked on how long it took for the Order Taker, Cashier to wait on a block of five customers. From the dining room area, the experimenter and that observer specified a block of five customers in the waiting line; for example, by saying, "The girl with the yellow purse is customer No. 1, and the man in the black suit is customer No. 5." Customer No. 6 was left out to give the experimenter and the observer time to reset their stopwatches after recording data. Occasionally, an observer went through the waiting line and recorded how long it took for the Order Taker, Cashier to wait on the five customers ahead of him. The experimenter simultaneously recorded from the dining room.

It was common for customers to go through the line with a piece of paper and pencil writing down and adding up their orders before reaching the Order Taker, Cashier. Also, the Order Taker, Cashier's
view was blocked by the other customers; and there was never any indi-
cation that they noticed the observer with a pencil and a stopwatch on
his hand or when the same observer went through the waiting line more
than once.

The experimenter and the other observer then sat in the dining
room and compared the time they recorded for each block of five custo-
mers. At no time they disagreed by more than eight seconds. In most
instances, the difference in time recorded was less than five seconds
for each block of five customers. That was considered very close
because the minimum average time recorded per session to wait on
blocks of five customers was approximately two and one-half minutes.
A difference of five to eight seconds was not considered very signifi-
cant. Percent agreement was computed by multiplying by 100 the shorter
duration in seconds recorded by one observer and dividing this value by
the longer duration in seconds recorded by another observer. Relia-
bility ranged from 94% to 98%.

When the difference between the means obtained by the experimenter
and the observer was five seconds or less, the experimenter rewarded
the observer with free sandwich coupons. During all sessions, observ-
ers were supervised by the experimenter.

After the Point System was implemented, the experimenter worked
with each manager to check on how well each manager understood the
system and if the managers used the correction procedures. This was
done by the experimenter working in the same area as the manager in
charge and recording all observed infractions and marking the ones to
which the managers responded as prescribed. Percent agreement was com-
puted by multiplying the lowest number of infractions recorded by the observer by 100 and dividing this value by the number of infractions recorded by another observer. These checks were made with the purpose of training the managers how to record infractions. The percent agreement served as an informal evaluation of how well defined infractions were and how well the managers recorded them as compared to the experimenter.

During the first week of the Point System, agreement between the experimenter and other observers (the manager and two assistant managers) was 60%, 90%, and 70% respectively. In all instances, the number of infractions recorded by the experimenter was higher than the number recorded by the manager or his assistants.

After each of these observations, the experimenter discussed the Point System with each manager and the need for them to correct the employees whenever they were not following job descriptions nor performing well, for example, not keeping up with the orders, talking too loud, etc.
RESULTS

Baseline on Order Taker, Cashier's performance while waiting on a block of five customers was taken at Store A (control) during four weekends at the busiest times of the day, lunch and dinner time. During baseline, the mean time spent to wait on blocks of five customers was two minutes and ten seconds (Fig. 1).

Baseline I on Order Taker, Cashiers of Store B (experimental) was taken during six weekends. The mean obtained was three minutes and forty-five seconds (Fig. 2). During the Posted Evaluation procedure, there was an initial decline in mean time to wait on blocks of five customers during the first weekend following manipulation. A mean of three minutes and one second was recorded. This represented a forty-four second decrease from the average time necessary to wait on each block of five customers under baseline conditions (Fig. 2).

Means obtained for second and third weekends were three minutes six seconds, and three minutes and forty-two seconds respectively. These data suggested that Posted Evaluation was no longer producing desirable effects. Data from the third weekend indicated an almost complete return to baseline performance level.

After implementation of Structured Training A and B, a gradual deceleration in mean time for blocks of five customers was obtained for weekends of first to seventh week under that system (Fig. 2). Data recording was discontinued for three weeks following the seventh week of Structured Training A and B.

Baseline II data on blocks of five customers indicated a mean of
FIGURE LEGEND

Figure 1: Figure 1 represents the daily ranges and the daily average times spent by the Order Taker, Cashiers of Store A (control) to wait on blocks of five customers. Daily ranges were formed by plotting the two average times for the daily observational sessions (during lunch and dinner periods). The mean for baseline level is also presented.
Figure 1

Average Time in Minutes to Wait on Blocks of Five Customers

- Lunch
- Dinner
- Friday
- Saturday
- Sunday
- Reliability Checks
- Number of blocks of five customers (when less than five blocks per session)

Baseline (Store A)
FIGURE LEGEND

Figure 2: Figure 2 illustrates the daily ranges and the daily average times spent by the Order Taker, Cashiers of Store B (experimental) to wait on blocks of five customers. Daily ranges were formed by plotting the two average times representing each of the daily observational sessions (during lunch and dinner periods). The means for Baseline I, Posted Evaluation, and Structured Training are also shown.
Fig. 2
Structured
Training B

Structured
Training A

Baseline I (Store B)

Posted Evaluation

Reliability Checks

Number of blocks of five customers (when less than five blocks per session)

- Lunch
- Dinner
FR - Friday
SA - Saturday
SU - Sunday
* - Reliability Checks

Sessions
seven minutes and forty-two seconds for the Order Taker, Cashier's (now Order Taker, Cashier and Expeditor) performance under that new system of operation (Fig. 3). Mean time computed from data gathered during three weekends following implementation of the Point System showed a decrease in mean time per block of five customers to six minutes and thirty-eight seconds (Fig. 3). This represented a decrease of one minute and four seconds from Baseline II.
FIGURE LEGEND

Figure 3: Figure 3 illustrates the daily ranges and the daily average times spent by the Order Taker, Cashier, Expeditors of Store B (experimental) to wait on blocks of five customers. Daily ranges were formed by plotting the two average times for each of the daily observational sessions (during lunch and dinner periods). The mean for Baseline II and for the Point System are also shown.
Fig. 3

Average Time in Minutes to Wait on Blocks of Five Customers

FR - Friday
SA - Saturday
SU - Sunday
• - Number of blocks
○ - Reliability Checks
□ - Number of blocks (when less than five customers per session)
△ - Lunch
○ - Dinner

Baseline II

Sessions

0 5 10 15 20
DISCUSSION

Changes in performance were observed in general areas of operation; however, data recording was focused on the Order Taker, Cashier as this was the main station which led the whole operation. Fast Order Taker, Cashiers called out more orders, and all the other operating stations responded accordingly by working faster and/or asking for help.

Overall data and general results obtained by implementing the various techniques in this study strongly suggested that anyone working on a similar project should consider two variables: one is the need for a strong reinforcer (something that employees would not quickly get tired of or lose interest in); and the other is a system for evaluating the managers' performance. (This may not be necessary if a manager's paycheck is directly affected by increase or decrease in profit.)

In most instances throughout this study, the implementation of a new technique was followed by a decrease in the time spent by the Order Taker, Cashiers waiting on blocks of five customers. But this increase in speed was lost after the first or second weekend, and the employees returned to the same rhythm of work as before.

Improvement in performance was probably due to one or more of the following factors: (1) the reinforcing properties of the technique used; (2) the novelty of the system either as a possible source of reward or threat of punishment; (3) the participation by the manager who represented authority and power by having direct influence over the
employees' future in the job.

The temporary increase and eventual loss in speed following each new procedure was explained on the basis of: (1) the weaknessess of the reinforcers used; (2) the decrease of any novelty effect brought about by the new procedures; and (3) the managers' inconsistent and inadequate supervision of the employees. A review of each phase of intervention provided a better understanding of specific experimental variables.

Posted Evaluation was initially of some positive effect in decreasing the mean time for blocks of five customers. However, the managers expressed the need to discontinue posting evaluations "as several employees were unhappy with having their names posted on the bulletin board." The management in addition expressed the fear of the employees quitting the job for that same reason. A question was raised on whether the employees were discontent with being evaluated or with the way evaluation was done. The experimenter interviewed those dissatisfied employees; and it was apparent that more specific criteria for good performance were necessary.

Being classified as "above average" or "excellent" may have had some temporary reinforcing effect on the employees' performance. However, the employees themselves recommended that there was a need for stronger rewards for those employees who received high evaluations.

After the third week of Posted Evaluation, the mean time taken to wait on blocks of five customers had returned to baseline level. At that time, better rewards, such as raises and bonuses, were suggested by the experimenter in a meeting. However, the supervisor and managers
were hesitant about that alternative because the payroll was already high and additional increase in expenses was not desirable at that time. The Posted Evaluation procedure was discontinued following that meeting.

The Structured Training procedure was better defined than the Posted Evaluation procedure; and despite the lack of strong back-up reinforcers, it had a noticeable effect on improving employees' performance. The employees were told that it was a new store policy that everyone read the job descriptions and completed all the quizzes. Among the employees were several students, and most of the non-students had been students at one time. Therefore, they were familiarized with reading assignments and taking quizzes over the material read.

Better knowledge of the job provided by the Structured Training procedure obviously resulted in more efficiency and better service by the employees. However, the experimenter observed two negative aspects in this procedure. One was the need for back-up reinforcers; the other was that employees were not being paid for the time they spent reading job descriptions and answering quizzes at home.

Neither the supervisor of the store nor the managers knew that according to labor laws the employees should be paid for their time spent on training. After receiving a call from the Federal Labor Relations, the managers put up a sign explaining to the employees that they were going to be paid for all the hours spent on training.

The Structured Training procedure (A and B) lasted seven weeks. At the end of the fourth week of implementation, approximately fifty-five percent of all employees had completed almost all job
A question was raised on the possible correlation between the number of employees who completed the quizzes and the reduction in time taken to wait on blocks of five customers. It was hypothesized that the higher the number of well-trained employees the more efficient the operation became. In fact, as shown in Fig. 2, there was a gradual weekly decrease in time taken to wait on blocks of five customers as the number of employees who finished their job descriptions and quizzes increased.

At that point, the experimenter met with the managers to comment that maintaining a structured and well-defined training program possibly made the job more pleasant and interesting to the employees. Such a training program would be much more effective if reading job descriptions, passing quizzes, and exhibiting concurrent improvement on the job were rewarded with raises and promotions or possibly with more hours of work.

Once the payroll was already high, the management did not consider giving out raises nor promotions. Instead, as the employees' performance improved, the managers cut down on employees' hours and also decreased the number of actual staff working during each shift. That had to be done because of a decrease in enrollment during spring and summer sessions in the college and university nearby which, in fact, resulted in a noticeable decrease in business.

This reduction in staff hours and in the number of staff served as informal confirmation of the positive results of the Structured Training procedure. With better-trained employees, the operation was
made possible with fewer people at one time. While operating with a smaller crew and still providing the customers with better services, the management could then consider raises and more investments in incentive programs.

The last procedure, the Point System, immediately attracted the employees' interest. The free lunch coupons represented the first actual expendable reward given to them. Although those rewards were delayed for three days, the employees still showed interest in the classification they received each day of work. The classification in form of points became conditioned reinforcers which were later exchanged for free lunches. The posted list of desirable and undesirable behaviors facilitated the evaluations which were more specific and objective in contrast to the evaluations under the Posted Evaluation procedure.

A general outcome after six months of implementation of these three procedures was that instead of operating the store with fifteen employees (as during Baseline I conditions) the managers were operating that same store during the busiest hours of business with eight to ten employees. No detailed correlation was made between any possible decrease in the amount of business and the lower number of employees utilized later during this study. A few weekly checks were made under the Point System conditions utilizing the records from the cash register (number of customers and gross income). It was indicated that decrease in business during that period fluctuated between fifteen and twenty percent. This difference in business was not significant enough to lessen the merits of the Point System.
The improvement in performance by the Order Taker, Cashier was accompanied by similar improvements on the other stations; otherwise the Order Taker, Cashier could not operate continually without having to stop because of low performance at the other stations. At all times, the other stations performed well enough to keep up with the Order Taker, Cashier except on those instances when special sandwich orders were taken.

An expected shortcoming of this project was the need for an evaluation of the managers' behaviors or a program to improve managers' performance. Initially, under the Posted Evaluation system, it was observed that employees had considerable control over the managers' behavior regardless of differences in age or education. Employees' approval was undoubtedly a variable controlling the managers' responses. Classifying a number of employees as "average" resulted in the employees' dissatisfactions and complaints to the managers. During the meetings when evaluations were done, managers brought out incidents of employees' complaints. Thereafter, they evaluated employees higher not as a function of improvement in performance but rather as a response to employees' complaining that they deserved better evaluations.

Structured Training was delayed a few days even though job descriptions and quizzes were available. The descriptions and quizzes were on the managers' desks for three and one-half days before the managers started handing them out to the employees.

After three weeks of Structured Training, a few instances were observed when questions concerning specific aspects of a job description
(e.g., the weight of a sandwich) arose and the employees knew the answer while the managers had to consult the respective job description. This led the experimenter to suggest the need for the managers to study the job descriptions. Whether this suggestion was followed became a question during the Point System when the managers were recognizing and consequating only eighty percent or fewer of the undesirable behaviors (listed on Table 5) observed by the experimenter. This implied that the managers only were able to recognize less than eighty percent of all the undesirable behaviors which occurred in different areas of the operation being supervised by them. Eighty percent was not considered too low; however, a one hundred percent on those instances was expected because responding to the employees' work was well defined and the managers knew that the experimenter was checking on their responding to infractions. An even lower percentage of responding was expected in the absence of the experimenter.

The Point System was to have included an evaluation of the managers' performance. For lack of time to participate, the supervisor of the store declined that idea. The experimenter himself could not evaluate the managers because the supervisor thought that those evaluations would not be welcomed by the managers.

During the first week of implementation of the Point System, the managers forgot to plot the points for four different shifts.

This project was very inexpensive and at the same time, was very helpful to the store's interests. The free lunches only represented expenses on food costs.

Improvements in efficiency and service under the Point System
were observed even when operating with fewer employees. Fewer employees at work represented savings in wages while improvement in efficiency resulted in more savings in the form of fewer mistakes and minimum waste of products. Better service resulted in greater satisfaction by the customers and an increasing probability of their returning to that store.

The experimenter suggested to the supervisor and the managers that once better service and savings became evident the employees should benefit from the money they helped to save. A lottery system was written and consisted of a way to draw out money prizes every two weeks as another way to reward good employees' performances. That lottery system would later be implemented but would not be included as a part of this study.
REFERENCES


