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Underutilization of Temporary Employees as a Determinant of Turnover

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UNDERUTILIZATION OF TEMPORARY EMPLOYEES
AS A DETERMINANT OF TURNOVER

by

Elizabeth de la Ossa

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Doctor of Philosophy

Western Michigan University
Kalamazoo, Michigan
April 1980
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Elizabeth de la Ossa
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INTRODUCTION

This report describes a first application of the principles and research methodology derived from the experimental analysis of behavior to the study of turnover in a temporary help company specializing in domestic and health care services.

The Temporary Help Industry

Among the alternatives to permanent employment, working for a temporary help company is attracting a growing number of workers, most of them females who reenter the labor force (Leone & Burke, 1976). The job-seekers view the temporary help industry as an option for temporary part-time or full-time work, and some are interested in permanent work which allows for changes in schedule from time to time. In this industry, the workers specify their desired schedules and are offered assignments according to availability of jobs. They have the option of refusing any assignments and are paid only for the number of hours worked. (Assignments are often of short duration.) Supplementary income, flexibility in schedule and in the number of hours worked, and variety of assignments are advantages that temporary help companies advertise to prospective employees. Generally, employees do not receive benefits such as hospitalization, inservice education, sick pay, holiday pay, and merit and longevity raises. Otherwise, nominal wages are comparable to those offered by permanent positions.

Temporary help companies are not registries or employment

1

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agencies; they are businesses who hire clerical, industrial, domestic or professional workers and send them out on assignments. The services of the temporary help industry are often requested by organizations with a transitory demand for workers (for example, vacancies, emergencies, seasonal increases in workload). However, an increasing number of organizations, especially hospitals are interested in flexibility and reduced employee costs, regularly use the services of the temporary help industry. For instance, a hospital with permanent staff for only a 65% census might hire additional personnel as needed from the temporary help company. Pointing out the economy of such an option, the industry gives management and staffing advice to their clients (Wiley, 1976). Temporary help companies claim to contribute to the reduction of overall costs of health care by providing home health care to individuals who otherwise would require hospitalization.

As a whole, the temporary help industry is expanding rapidly. Thirty years ago it employed a few thousand workers. Today, estimates of its numbers of workers range from 1.5 to 3 million (Gannon, 1974); such a growth rate markedly exceeds the growth of the general work force (Fullerton, 1976). However, temporary help companies face a serious problem that compromises their growth: high turnover (i.e., low retention of employees). The median length of employment of temporary workers is three months, according to one study, but is 18 days according to another (Gannon, 1974).

The development of temporary home health care services offers several advantages to health care. First, it has been extensively documented that recovery from surgery and coronary ailments is
hastened in the home environment (Kelsey and Dreamer, 1975). Second, the costs of health care can be significantly reduced by home care, which would benefit both individuals and the culture.

Definition of Turnover

In the temporary help industry, turnover is not such a clear-cut, identifiable event as it is in organizations hiring permanent workers. Temporaries do not resign and leave; instead, the company learns that employees are no longer active when they: (a) stop informing the company of their available hours, (b) refuse assignments until the company stops offering them, (c) move without reporting a change of address, and so on. Another situation complicating the definition of turnover is that a worker may leave the company without having worked any assignments. This occurs when an employee receives no job offers in the initial weeks after being hired and consequently seeks other means of employment.

In order to standardize the use of the term turnover, Peoplepower adopted an operational definition. Peoplepower records a turnover count when an employee does not work for the company for 12 consecutive weeks. The turnover rate is calculated monthly by dividing the number of employees inactive for 12 weeks by the total number of employees. The average annual turnover rate for Peoplepower has been 65% over the past two years.

Consequences of Turnover

Several organizational difficulties are caused by an undesirably
high turnover rate. First, there is business loss. At Peoplepower, estimates indicate that approximately 20% of service requests are not met because of the lack of available workers. A second consequence of high turnover is that training programs are often neglected since they are not cost-effective when employment duration is short. Ironically, training is a significant factor in retaining health care personnel (Archibad, 1971), and it is important in improving the quality of health services. A third difficulty is that the attempt to replace those who leave in order to maintain an effective number of available workers often results in the deterioration of selection criteria, which in turn contributes to higher turnover. Fourth, and perhaps most serious for the organization, is that low retention complicates dispatching. For instance, the dispatcher may call and offer assignments to employees who are no longer active. These needless calls waste the dispatcher's time, for the inactive employee refuses the offer. When dispatching is a trial-and-error, time-consuming task, the office staff cannot engage in training, supervision, promotion, and other activities necessary for increased effectiveness.

In summary, at Peoplepower high turnover results in both direct costs (e.g., each new hiree costs the company $25.00) and indirect costs (e.g., lack of efficiency).

The above organizational difficulties result in increased operating costs, which are normally transferred to consumers. Thus, the overall health care system, along with the companies and the workers themselves, is adversely affected by high employment mobility among temporary health care personnel.

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Turnover in the Organizational Literature

Employee turnover and its determinants have been investigated in a large number of studies with a diversity of work populations and in organizations of various types and sizes. The interest in studying turnover is related to its adverse impact on the functioning of an organization. (For a detailed analysis of turnover and effectiveness, see Price, 1977, Chap. 6.)

Researchers have approached the problem of high turnover from different theoretical positions, but studies are characteristically retrospective and based on data obtained from questionnaires. Five reviews of the literature on turnover (Brayfield & Crockett, 1955; Herzberg et al., 1957; Porter & Steers, 1973; Schuh, 1967; Vroom, 1964) show that a multiplicity of organizational, immediate-work environment, and personal factors can be associated with the decision to terminate employment. In one study of clerical workers (Hulin, 1963), for example, tenure correlated negatively with turnover, while in another study (Ingham, 1970) it was seen that size of the work unit correlated positively with turnover.

In spite of the extensiveness of the business literature on turnover, the variables identified by studies like those cited above do not provide for its prediction and control in the temporary help industry. Two main factors are responsible for such lack of applicability. First, the validity of conclusions made for most studies is questionable due to methodological problems, such as poor choice of research designs and lack of reliability of instruments used. Second, aspects of the work environment vary widely for permanent and
temporary positions and, hence, conclusions derived from the study of the former may not be valid for the latter.

Few studies address the turnover problem among temporaries. Such research follows two main directions. One line of research attempts to isolate employees' personal variables which correlate with retention. Marital status, age, number of children, previous work experience, and methods of job search are among the variables studied. For instance, Leone and Burke (1976) describe the successful (i.e., long-term) temporary employee as an older woman who contributes between 5 and 50% of the total income of her household and who initially desires temporary work. Interestingly, these are the characteristics of the workers that temporary help industries try to appeal to. It is important to note, though, that the work force of these industries is actually composed largely (75%) of women under 30 years of age (Gannon, 1974); moreover, 50% have no additional income (Gannon, 1977).

The correlational studies concerning personal variables and retention offer guidelines for selection (e.g., avoid hiring young people) which should help reduce turnover. Because of a lack of available data, it is difficult to determine whether following selection guidelines contributes to a reduction in turnover. A high turnover rate, however, does promote the deterioration of selection and hiring criteria (Introduction, p. 4); thus, adherence to such guidelines may become progressively difficult as turnover increases. In addition, implementing some guidelines can result in unfair labor practices. These two factors limit the practical utility of studies which concentrate on personal variables alone to
control high turnover.

The other research approach concerning turnover among temporaries focuses on identifying (usually via questionnaires) some of the factors in the work environment that affect retention. Wages, organizational structure, and type of assignments are some of the factors studied. An example of this line of research is provided by a recent survey of 1,657 former Peoplepower employees. In response to the question, "Which of the following [16] reasons explains why you are not currently active as a Peoplepower employee?", employees most often answered "poor wages" (16.8%) and "lack of assignments" (24.3%).

This research approach permits the identification of organizational variables which, reportedly, have an impact on employees' tendency to stay or leave. With this information the companies could redesign policies to control turnover. But such studies are retrospective in nature and rely on verbal reports, and thus, findings may prove inaccurate under prospective and more rigorous methods of study. Consequently, the variables identified by such studies (e.g., wages, utilization) should only be considered topics for further research to determine their relevance to the turnover problem. As with the correlational research on personal variables, correlational studies examining environmental variables typically lack sufficient data for evaluation of their practical usefulness with respect to attenuating turnover.

Field Observations: Implications for Research

Initial observations of Peoplepower office operations were
conducted in three offices with differing numbers of employees. Early observations concerned compensation and utilization, as well as supervision and training. They revealed an outstanding practice -- overstaffing -- and a common assumption among office staff regarding utilization: managers stated that the business of temporary help requires a large labor force; many employees with different schedules, skills, behavioral characteristics, and catchment areas should be available in order to maximize the company's ability to provide service whenever it is requested. As a result, approximately half of available employees work in a given week.

As suggested by previous research (Peoplepower Survey of Inactive Employees, 1976) and confirmed by initial field observations, "lack of assignments" appeared as a potentially important variable affecting turnover. A second significant variable was compensation, which was identified in the pertinent literature as playing a major role in turnover of temporary employees. With regard to compensation, field observations indicated that: (a) various Peoplepower offices with substantially different pay rates (e.g., $4.25/hour versus $7.50/hour for the same job) has similarly high turnover rates, and that (b) weekly pay was determined by pay rate and number of hours worked; that is, compensation and utilization interact to determine actual pay. Consequently, between utilization and compensation, the two prominent variables reported to affect retention, the former was selected for the experimental study here discussed.

A Closer Look at Utilization and Turnover

Field observations suggested that turnover rate was too rough
an indication of the percentage of employees who leave the company and that turnover report (i.e., a list of employees inactive for 12 weeks) sent to local managers was not being used to activate the work status of those employees. Some difficulties with the turnover rate as a measure of job changes are: (a) it groups together individuals who have not worked for such various reasons as voluntary vacation, lack of assignments, company termination, and so on; (b) it averages data from job classifications which could have differing turnover rates; and (c) it does not measure behavior, but its absence.

In an attempt to systematize field observations on turnover and utilization and to develop sensitive dependent variables which could later reflect the effects of experimental manipulations, two sets of measures were constructed and tested for reliability. But before detailing these measures, a brief description of a related process -- the procedures used to schedule employees -- is in order.

At Peoplepower, scheduling is a two-step process:

1. Hospitals, nursing homes, and individuals requesting temporary health care or domestic services telephone the service office. Their calls are directed to a Service Coordinator in charge of the job classification in question (e.g., nurse, nurse aide, companion). By telephone, the Service Coordinator and the client exchange pertinent information, such as medical status of the patient and terms of payment, and reach a decision concerning the purchase of Peoplepower's services. Most service requests are placed at least 72 hours before the assignment begins, as recommended by the company.

2. Employees are required to meet a weekly eligibility criterion.
in order to receive assignments: they must call to inform the Service Coordinator as to the number and schedule of hours available to work the following week. This information is recorded on a form (Placement and Availability Log, Appendix A) which the Service Coordinator uses in identifying employees whose skills and schedules match the requirements of a given assignment. With this information, the Service Coordinator calls eligible employees. If they accept the offer, they receive related information via telephone and are instructed to report to work at the client's home. If they do not accept, the reason for refusal is recorded.

To return to the measures used in determining dependent variables for the study, a first set of measures (Appendix B) was designed to provide an overview of the utilization practices of an office. The main datum of interest was the percentage per week of employees labeled inactive according to two criteria: (a) the employee was available, and (b) the employee was not utilized.

The second set of measures was designed to provide a more precise analysis of utilization practices. This more specific set of variables used to study the scheduling process concerned individual employees. Weekly data on the following topics were recorded in Appendix A: (a) whether or not each employee called, (b) number and schedule of hours requested by each employee, (c) number of hours offered at the time the employee called, and (d) result of the offer. Another form (Telephone Record, Appendix C) was used for keeping daily data on: (a) the names of all employees called by the Service Coordinator, (b) the number and schedule of hours offered to each employee, and (c) result of the offer. In addition, the number of
hours per week actually worked by each employee was obtained from the payroll division.

To summarize, the above variables yielded the following weekly information: for each employee, (a) occurrence and number of availability calls or visits, (b) number and schedule of hours requested, (c) number of hours offered, and (d) number of hours worked; for each job classification, (a) number of employees who called, (b) number of employees who were offered assignments, (c) number of employees who worked, (d) number of hours offered, and (e) number of hours worked.

Initial Findings

The first set of dependent variables was recorded for 12 weeks. The main observations during this period were:

1. In the three offices observed, overstaffing was prevalent — between 30 and 60% of registered workers did not work in a given week, the percentage being larger for less specialized employees.

2. Sales were fairly stable — and hence predictable — for every job classification.

3. Office staff continued to recruit and hire new workers regardless of sales volume and inactivity level of current workers.

The Service Coordinator recorded data on the second set of dependent variables over an 8-week period in one office. The experimenter was present in the office daily during this period to supervise the recording. Two job classifications were observed: nurse and nurse aide. The trends observed are summarized below:

1. On the average, 80% and 70% of nurses and nurses aides,
respectively, reported availability.

2. Availability calls were followed by a job offer for approximately 70% of nurses and 50% of nurse aides.

3. Approximately half of the employees who received assignments were on "regular cases" (that is, cases that remain the same for several consecutive weeks) and were offered a larger proportion of the hours they requested.

4. For those who did not work regular assignments, the probability of receiving a job offer was .5 for nurses and .35 for nurse aides, on the average.

5. Those employees who did not call to report availability seldom received job offers, a major factor being that the Service Coordinator attempted to call them only after scheduling the employees who initially called.

6. Actual availability of employees often varied from reported availability. (That is, employees were actually able to work fewer hours than they reported in availability calls.)

Analysis of Initial Findings

The situation at Peoplepower can be explored in the framework of the three-term contingency: stimuli, response class, and consequences. Peoplepower states a rule: "Call us if you want to work next week." This rule functions as a verbal stimulus for the response of calling, and it states the consequence of doing so. When the response is emitted, however, the announced consequence does not always follow in that while some of those who call are reinforced by receiving job offers, the majority of callers are not. In addition,
When an offer is advanced, the total number of hours requested is not always assigned. Calling to report availability and to inquire about jobs is an operant, its strength being determined by its consequences. When calling does not characteristically result in a substantial job offer and an establishing operation for job-seeking activities exists (e.g., actual economic deprivation, the threat of losing the standard of living maintained by an income), the probability that employees will eventually stop calling and making themselves available to Peoplepower increases. In contrast, when calling does reliably result in the requested job offer, the probability that employees will continue calling remains stable or increases.

Research Objective

Preliminary research and observations suggested that modifications with respect to employee utilization affect the tendency of workers to stay or leave the company. The general purpose of the present experiment, therefore, was to assess empirically the effects of systematic variations on utilization practices on employee retention. Before the general purpose could be translated into specific research objectives, however, it was necessary to further specify two concepts -- retention and utilization practices.

An operational definition of retention at Peoplepower was that employees are retained if they work at least once in a 12-week period (the opposite situation being defined as turnover). But actually working an assignment is the last step in a chain of behaviors which started at least as far back as the previous week when the employee
called to report availability and which continued when the employee accepted the job(s) offered. Calling, accepting, and working assignments are -- operationally -- incompatible with turnover and are prerequisites for retention. Thus, these were the observable, quantifiable responses selected as dependent variables to reflect changes in employees' tendency to continue working or to leave the company's employ.

The second concept, utilization practices, also requires a more concrete description. Utilization practices can be modified in several ways; for example, changes can be introduced in: (a) the number of availability calls required before a job offer is made (in other words, the schedule of reinforcement), (b) the relationship between the number of hours requested by the employee and the number of hours offered by the company (i.e., the magnitude of the consequence), and (c) the temporal relationship between the availability response and the job offer (i.e., immediacy or delay of consequence).

The second of these three possibilities met both experimental and ethical criteria, and thus the relative degree of employee utilization, $\left(\frac{\text{hours offered}}{\text{hours requested}} \times 100\right)$, was the independent variable selected for an initial experimental study of utilization.

Three specific questions were addressed in an attempt to accomplish the general goal:

1. What is the relationship between the occurrence of availability responses and the relative number of job opportunities (hours offered/hours requested) made available to employees?

2. What is the relationship between the tendency to accept and
work assignments and the relative number of job opportunities (hours offered/hours requested) made available to employees?

3. If the relative degree of utilization is observed to be functionally related to calling and working, what are the utilization parameters under which the probability of calling and working is dangerously reduced?
METHOD

Setting

Research was conducted in one Peoplepower service office staffed by approximately 80 female field employees (50% nurse aides, 30% nurses, and 20% companions). The office staff consisted of a Service Director in charge of promotion, recruitment, and payroll duties; a Service Coordinator responsible for receiving service requests and scheduling field employees; and a Nursing Supervisor to direct employee training and to monitor difficult medical cases.

The other office selected for the study was similar to a large number of Peoplepower offices in sales volume, number of field employees, and turnover rate.

Subjects

Among the active field employees -- those who called and worked at least once during the 4-week, pre-baseline phase of the study -- eight experimental subjects and eight control subjects were chosen. The selection process was as follows:

1. First, two job classifications were selected as target populations -- nurse and nurse aide. Nurses were included because of their central role in Peoplepower's health care services and for their comparatively high turnover rate. As the largest and most frequently utilized group, nurse aides were also selected for participation in this study. Other job classifications, such as companion and housekeeper, were excluded due to their relatively small size.
and to the fluctuating demand for their services.

2. Next, active nurses and nurse aides were classified according to the number of work hours requested during pre-baseline. As shown in Table I, employees requesting part-time positions (1-3 shifts or less than 24 hours per week) were assigned to Category A, while those requesting full-time employment (4-7 shifts or more than 32 hours per week) were assigned to Category B. It was important to include a comparable number of subjects requesting part-time (Table I, Category A) and full-time (Table I, Category B) employment because of the possibility that utilization practices and experimental manipulations of utilization would affect the behavior of individuals in each group differently.

TABLE I

Eligible Subjects

<table>
<thead>
<tr>
<th>Hours Requested</th>
<th>Active Nurses</th>
<th>Active Nurse Aides</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = Less than 24</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>B = More than 32</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

3. Eligible subjects were further classified according to their relative degree of utilization during the 4-week pre-baseline period. Based upon relative utilization (hours offered/hours requested x 100) for those employees, three categories were established: low -- less than 33% utilization; moderate -- 33-66% utilization; and high -- greater
than 66% utilization.

4. After completing the above steps, subjects for the experimental and the control groups were selected. Two factors determined the number of subjects selected for each group. First, the use of an individual subject design necessitated the participation of at least two experimental subjects per category to control for order effects, which could otherwise confound results. (See Experimental Design, page 23.) The second criterion affecting group size was the predicted demand for services in terms of hours per job classification per week. These estimates of future needs were derived from data gathered in researching the company's overall utilization practices and past sales (Appendix A).

In considering both of these factors, four subjects were chosen from each of the four subgroups depicted in Table I. Furthermore, the four subjects from each subgroup were selected on the basis of relative utilization: (a) from those who had low percentages of relative utilization, two subjects were randomly selected; (b) from those who had moderate percentages of relative utilization, one subject was randomly selected; and (c) from those with high utilization percentages, one subject was randomly selected. The two subjects with low utilization percentages became experimental subjects, while the other two subjects formed the control group.

To summarize, then, the group participating in the study was integrated as shown in Table II.
Observation and Recording Procedures

Selection of dependent variables

With respect to utilization, the behaviors of all nurses and nurse aides were observed until experimental and control subjects were selected. At that point, data were gathered on the behavior of these subjects only. The dependent variables used are detailed below:

1. Calls or personal visits to report availability or to request assignments were counted per subject per week to determine whether or not each employee reported on a weekly basis. Subjects were instructed to contact the office on Monday rather than on Tuesday,
the usual contact day for field employees. Given that employees who do not contact the office weekly have a significantly reduced probability of working, this variable was included as an early indicator of turnover.

2. The second dependent variable in this set was the number and distribution of work hours requested per subject per week.

3. The third dependent variable recorded was the weekly number of work hours accepted, in relation to the subject's requested schedule (from item two above).

4. The fourth dependent variable recorded was the weekly number of work hours accepted when some portion of the hours offered fell outside the subject's requested schedule (from item two above).

5. Fifth, data were taken on the number of hours worked per subject per week.

6. Weekly records were also kept on the number of hours accepted but later cancelled for each subject.

7. In addition, the various reasons given by subjects for refusal or cancellation of assignments were noted and categorized as follows: (a) doctor's appointment, (b) illness, (c) occupational injury, (d) lack of transportation, (e) location of assignment, (f) family problems, (g) vacation, (h) dislike for case and/or client, (i) other job, (j) weather, and (k) other.

**Measurement**

Six of the seven dependent variables listed in the section above were monitored through a device designed and installed to record
every telephone conversation. When the telephone receiver was lifted, the device automatically activated a cassette recorder; when the receiver was replaced, the tape stopped. The telephone system was capable of putting through several calls at once. The experimenter checked the equipment by visual inspection three times per week and by making a recorded call once a day. Every Monday morning the experimenter replaced the used tape with a blank one. While playing the previous week's tape, the experimenter recorded data on six of the seven dependent variables for each subject. These data were kept in the Placement and Availability Log (Appendix A).

The number of hours worked — the fifth dependent variable on the seven listed in the previous section — was obtained from Peoplepower's Payroll Register, a weekly computer printout issued by the Accounting Department, where it was used processing paychecks.

Reliability

For the six variables recorded during telephone conversations, reliability was calculated as follows:

1. Once a month, both the experimenter and the Service Coordinator independently listened to the previous week's tape and transferred the data to the corresponding form (Appendix A).

2. Then, the experimenter compared both forms for consistency of data on each dependent variable.

3. Percent agreement \( \frac{(agreements \times 100)}{a + d} \) was calculated for each dependent variable.

Reliability of the readings of dependent variables recorded

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from Peoplepower's Payroll Register (the fifth variable) was obtained in a similar manner. Once a month an independent observer read the Payroll Register and recorded the previous week's data. These data were compared with the experimenter's readings. Agreements and disagreements were established for each dependent variable, and percentage of agreement was calculated.

Procedure

**Independent variable**

The variable selected for this study of utilization was the number of work hours offered by Peoplepower to the experimental subjects. To take into account the fact that subjects varied in the number of work hours required, the independent variable manipulated in this study was: \( \frac{\text{number of work hours offered per week}}{\text{number of work hours requested per week}} \times 100 \). This relationship was referred to as "relative degree of utilization" or "percent utilization." The effects of high (above 80%), moderate (50%), and low (below 33%) values of the independent variable were studied.

While manipulating the relative degree of utilization for individual employees, two other variables related to utilization were kept constant. One was the schedule of reinforcement dictating when assignments were presented to employees (noted on page 14). Subjects were offered assignments on a continuous reinforcement schedule; that is, they received one offer per availability call (placed before Tuesday afternoon). The second variable held constant was the time elapsed between the employee's availability call and the
company's work offer. Subjects received assignment offers during availability calls (made on Monday or as late as Tuesday afternoon).

The experimenter and the Service Coordinator met every Monday morning to organize the distribution of subjects' assignments in preparation for the Monday/Tuesday availability calls. At these meetings they determined for the following week the number of hours and the specific caseloads to be offered to each subject, contingent upon the subject's availability call(s). To ensure that these experimental conditions were properly met, the experimenter was present in the office when subjects called and assisted the Coordinator in scheduling.

Experimental design

Experimental manipulations conformed to a reversal design, in which three values of the independent variable were tested. These values were: (a) less than 33%, Condition A or baseline; (b) 50%, Condition B; and (c) greater than 80%, Condition C. In addition, systematic replications and control groups were used.

Four groups of two subjects each were exposed to identical experimental conditions. The four groups were: (a) nurses requesting full-time employment, (b) nurses requesting part-time employment, (c) nurse aides requesting full-time employment, and (d) nurse aides requesting part-time employment. For each of these groups, a control group of two subjects of similar characteristics (with respect to job classification and hours requested) was studied. Although only one experimental group (and its corresponding control) is used below to illustrate the sequence of experimental manipulations, all four
experimental groups (and their controls) received the same treatment.

**Pre-baseline**

Two subjects were selected based on their low percentage of utilization during this 4-week period; in the final week they signed forms acknowledging informed consent, received instructions to use a new telephone number and to call on Monday to report availability, and began using the new telephone line.

**Baseline 1**

During the following 4-week period, the two experimental subjects continued using the assigned telephone line to contact the office. The relative degree of utilization in this phase was similar to the pre-baseline phase (less than 33%). Given that these percentages were low, a safeguard procedure was instituted to protect the subjects: when a turnover indicator was recorded -- that is, when the subject did not call or work for two consecutive weeks -- the Service Coordinator called on Friday of the second week to ask if the employee would be available to work the following week. If the employee answered affirmatively, the Service Coordinator explained that there were assignments for her and reminded her to call on Monday to be scheduled. Upon calling on Monday, the subject was offered a given number of work hours, as determined by the next experimental condition. If the subject did not call on Monday or during that week, the Service Coordinator called a second time. Depending upon the regularity of availability calls made, subjects could terminate baseline after reaching a stability criterion of two weeks.
without contacting the office -- a turnover indicator -- or, after four weeks elapsed (duration of the phase).

**Phase 1**

During this 4-week period, the relative degree of utilization was increased. In order to control for the possibility of order effects which might confound results, each subject underwent a different sequence from this phase on. One randomly-selected subject, Subject 1, followed the sequence ABACA (i.e., 30%, 50%, 30%, 80%, 30% utilization); the other, Subject 2, followed the sequence ACABA (30%, 80%, 30%, 50%, 30% utilization). Consequently, during this phase, Subject 1 was exposed to Condition B (percent utilization = 50% ± 10%), and Subject 2 was exposed to Condition C (percent utilization = greater than 80%).

**Baseline 2**

Upon completion of Phase 1, both subjects returned to baseline conditions, as described in the section Baseline 1.

**Phase 2**

For the following four weeks, the percent utilization was changed again; this time, subjects were exposed to Conditions C and B so as to complete sequences ABACA and ACABA, respectively.

**Baseline 3**

Once again, subjects returned to baseline conditions. After this final phase was completed, subjects joined the regular pool of
employees. Their telephone conversations were recorded for four additional weeks, after which their participation in the study was officially terminated. Total programmed length of the experiment was 28 weeks (subject to individual variation).

Control subjects

During the 28 weeks in which the experimental subjects were exposed to varying utilization conditions, control subjects were offered approximately the same proportion of requested assignments (±10%) as in the pre-baseline period. In each group (nurses vs. nurse aides), one of the control subjects, Subject 3, received approximately 50% of the assignments requested, while the other, Subject 4, received more than 80%. The safeguard procedure, described earlier for experimental subjects during baseline, was operative for control Subject 3 in each group, as needed.

Miscellaneous procedures

There were also some miscellaneous procedural rules to follow. Subjects, experimental or control, who announced termination of employment were asked to complete the Inactive Employee Survey (Appendix E). In addition, experimental manipulations involving control subjects with low percentages of utilization were not used in this study. The policy prohibiting this was not to expose any employee to conditions generating a lower probability of working than under normal conditions.
RESULTS

Data gathered for the 16 subjects who participated in the study suggest that their tendency to make availability calls, to accept and complete assignments, and to remain active as temporary employees was, in part, a function of the relative degree of utilization generated by the contingencies of reinforcement.

Results are summarized below; data on each dependent variable are presented separately.

Availability Calls

Observers agreed 100% on the recording of availability calls. Reliability was not calculated when employees stopped at the office rather than calling to report their selected schedule of work. Nor was it calculated for one of the 29 weeks of the study, during which the recording apparatus was inoperative.

A general trend in the occurrence of availability calls was observed: subjects' tendency to call varied with the degree of utilization. The pattern can be seen in Figures 1-4 (pages 30, 32, 35, and 38, respectively) where the data for each of the four groups studied are presented separately. These data are described in the sections which follow. Presented first are intra-group comparisons and second, inter-group comparisons.

Intra-group comparisons

For each of the four groups studied, these relationships include
intra-subject (between phases) and inter-subject (replications) comparisons, as well as comparisons of data on experimental versus control subjects.

Full-time nurses

Figure 1 shows that the occurrence of calls declined during baseline periods for experimental nurses (Subjects 1 and 2). On the other hand, these subjects called regularly when the percent utilization increased and remained above baseline levels; they called weekly during experimental Conditions B and C. This pattern is reflected by the average number of calls in each phase: during baseline phases, the combined average of Subjects 1 and 2 was .54 calls per week, while their average for Phases B and C was 1 call per week. (Due to their similarity, data for both subjects may be combined.) The order of exposure to the experimental conditions (i.e., ABACA versus ACABA) did not seem to affect the observed results.

Calls made by control nurses, Subjects 3 and 4, are also illustrated in Figure 1. Both control subjects called regularly throughout the study, but not as often as did experimental subjects when exposed to similar contingencies with respect to percent utilization. The average number of calls per week for the nurse, Subject 3, who remained in Condition B throughout the study was .75; the average for the nurse, Subject 4, in Condition C was .93, but she stopped calling and working after Week 15.

Part-time nurses

Experimental nurses (Subjects 1 and 2, Figure 2) from this group
Figure 1. Ratio of hours worked to hours offered (open circles) and occurrence of weekly availability calls (solid dots on the abscissa) for full-time nurses. The average ratio of hours worked to hours offered during each experimental condition is indicated by solid lines; the average number of availability calls during each experimental condition is indicated by dotted lines. An arrow indicates when the office called the subject. Experimental conditions are: $A = \text{less than 33\% utilization}$, $B = \text{50\% utilization}$, and $C = \text{80\% or more utilization}$. 

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Figure 2. Ratio of hours worked to hours offered (open circles) and occurrence of weekly availability calls (solid dots on the abscissa) for part-time nurses. The average ratio of hours worked to hours offered during each experimental condition is indicated by solid lines; the average number of availability calls during each experimental condition is indicated by dotted lines. An arrow indicates when the office called the subject. Experimental conditions are: A = less than 33% utilization, B = 50% utilization, and C = 80% or more utilization.
also called regularly when the percent utilization was high but sporadically when it was low. In this case, the average number of calls per week for both subjects was .65 during baseline periods and 1 during Phases B and C. Similar results were obtained for both subjects, regardless of the two different experimental sequences they followed.

Among part-time nurses in the control group (Subjects 3 and 4, Figure 2), calling stability was observed only in the data on the subject exposed to Condition C: Subject 4's average was .9 calls per week. Subject 3, who remained in Condition B, met the criterion for experimental turnover after 13 weeks in the study. During the time Subject 3 was observed, calls were irregular, averaging .64 calls per week. The average number of calls made by control subjects was lower than the average of 1 recorded for experimental subjects during Conditions B and C.

Full-time nurse aides

Figure 3 shows that the results for one experimental nurse aide, Subject 2, followed the general direction established by the nurses. Subject 2 (exposed to the sequence ACABA) called an average of .38 times per week during baseline and 1 time per week during Phases B and C. The other subject's behavior, however, showed unique results in that calling increased with each baseline phase of the study. The average number of calls per week for this subject was .75 for baseline, .75 for Phase B, and 1 for Phase C; the sequence followed in this case was ABACA.
Figure 3. Ratio of hours worked to hours offered (open circles) and occurrence of weekly availability calls (solid dots on the abscissa) for full-time nurse aides. The average ratio of hours worked to hours offered during each experimental condition is indicated by solid lines; the average number of availability calls during each experimental condition is indicated by dotted lines. An arrow indicates when the office called the subject. Experimental conditions are: A = less than 33% utilization, B = 50% utilization, and C = 80% or more utilization.
Experimental Conditions

![Graphs showing experimental conditions for different subjects (S1 to S4) over weeks (1 to 20). The graphs represent the ratio of hours worked to hours offered, with availability calls indicated.](image-url)
In keeping with the general results for other control subjects, full-time nurse aides showed less stable calling under Condition B than under Condition C. The average number of calls for Subject 3 in Condition B was .5, the lowest among all control subjects. This subject met the criterion for experimental turnover after 10 weeks of participation in the study. Subject 4's calling was more stable, averaging .9 calls per week.

Part-time nurse aides

Subjects 1 and 2 (Figure 4) presented a calling pattern characteristic of other experimental subjects. Their combined average was .52 calls per week during Phases B and C, respectively. Again, results were replicated using the two experimental sequences.

For the control group composed of part-time nurse aides, averages were slightly lower than for their counterparts in the experimental group: control Subject 3, exposed to Condition B, averaged .7 calls per week; control Subject 4, exposed to Condition C, averaged .85 calls per week. This greater variability of responding during Condition B was also apparent in the data on the preceding groups.

Summary of intra-group comparisons

To summarize the results of intra-group comparisons, then, the relative degree of utilization affected the occurrence of calls in that: (a) when percent utilization was low, performance was not only sporadic but even ceased for a time; (b) when percent utilization was moderate, performance was more regular; and (c) when it was high,
Figure 4. Ratio of hours worked to hours offered (open circles) and occurrence of weekly availability calls (solid dots on the abscissa) for part-time nurse aides. The average ratio of hours worked to hours offered during each experimental condition is indicated by solid lines; the average number of availability calls during each experimental condition is indicated by dotted lines. An arrow indicates when the office called the subject. Experimental conditions are: A = less than 33% utilization, B = 50% utilization, and C = 80% or more utilization.
Experimental Conditions

Ratio of hours worked to hours offered

Availability calls

S1

S2

S3

S4

Weeks

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

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performance stabilized.

**Inter-group comparisons**

The experimental design selected for a parametric study of utilization included four comparable groups in order to determine whether the experimental manipulations would affect each population differently. Few differences, however, were observed among the four groups with respect to phone calls made to the home office under vary-conditions. The main difference appeared in a comparison of data obtained for subjects requesting full-time and part-time employment. For full-time nurses in the experimental group, frequency of calling decreased faster and more dramatically than for part-time nurses during phases of low percent utilization; a similar conclusion can be drawn from the data on full-time and part-time nurse aides. Also, when type of employment -- full-time or part-time -- was held constant, results were similar for nurses and nurse aides.

**Relationship Between Hours Worked and Hours Offered**

Reliability of recording was 92% for hours worked and 100% for hours offered.

The data for this dependent variable are presented in conjunction with the results for availability calls in Figures 1-4 because a call requesting work was necessary to determine the number of hours offered to each subject. (In the absence of a request, subjects were not offered assignments; for these cases, the dependent variable was not calculated.)
The main finding here is that subjects, in general, accepted and worked a large proportion of the work hours offered by Peoplepower when the percent utilization was high; conversely, they accepted and worked a smaller proportion of assignments when the relative degree of utilization was low. A more detailed analysis follows in the sections concerning intra- and inter-group comparisons.

Intra-group comparisons

**Full-time nurses.** Figure 1 shows that experimental Subjects 1 and 2 completed a smaller proportion of assignments during baseline than during experimental phases. Specifically, the combined data for the two nurses yielded a .37 ratio of hours worked to hours offered for baseline and a ratio of 1 for Phases B and C. The direction of results was similar for both subjects; however, Subject 1 (sequence ABACA) completed substantially fewer assignments than Subject 2 (sequence ACABA).

Control Subjects 3 and 4 completed a smaller proportion of the assignments offered than did experimental subjects under similar conditions of utilization. For Subject 3, the average ratio of hours worked to hours offered was .84; for Subject 4 it was .93.

**Part-time nurses.** The results for one nurse in the experimental group (Subject 1, Figure 2) are similar to those obtained for full-time nurses (Subjects 1 and 2) in the previous experimental group. The ratio of assignments worked to assignments offered for this part-time nurse was .56 in baseline, which increased to 1 during Phases B and C. In contrast, Subject 2 maintained a constant maximum ratio,
working all but one of the assignments offered throughout the study.

The data for part-time control nurses fit the same description given for full-time control nurses. The average ratio of assignments worked to assignments offered was .85 for Subject 3, and .95 for Subject 4.

**Full-time nurse aides.** The data for both experimental subjects in the third group (Subjects 1 and 2, Figure 3) support the general trend of completion of a smaller proportion of assignments during baseline than during experimental phases. For full-time nurse aides, the results observed for Subject 2 are far more conclusive than for Subject 1. Subject 2's baseline ratio was .11, while Subject 1's ratio was .53. Both showed high ratios for Phases B and C.

Regarding the full-time nurse aides who participated as control subjects, Subject 3 (exposed to Condition B) worked all of the assignments offered, and Subject 4 (exposed to Condition C) worked an average ratio of .9 hours offered to hours requested.

**Part-time nurse aides.** The outcome of the experimental procedures for part-time nurse aides was dissimilar to results for other experimental groups (Figure 4). Subject 1 completed an average of .53 of the assignments offered during baseline and during Phase B, yet she accepted all assignments offered in Phase C. The fact that her average ratios were similar in baseline and in Phase B is atypical. Subject 2 presented a more characteristic pattern in that she completed a greater proportion of assignments during Phases B and C; these data are unusual, though, because one of the baseline periods presented a ratio of hours worked to hours offered of 1. Only one data point for
this phase, however, was available.

One part-time nurse aide in the control group (Subject 3) worked approximately .8 of the assignments available, while the other (Subject 4) completed .9 of the offers. In keeping with the results for the control subjects from the other three groups, the data for this control group support the conclusion that subjects had a higher tendency to accept and complete assignments when the amount of work offered approached the amount of work initially requested.

**Summary of intra-group comparisons**

In summary, a functional relationship between the proportion of assignments completed and the relative degree of utilization emerges from the above intra-group comparisons. That is, the proportion of assignments accepted and completed tended to increase as relative utilization increased. This relationship remains a general observation, even though individual data for this dependent variable presented variability. This general result may be seen in Table III, which summarizes group data for all experimental subjects.

**TABLE III**

<table>
<thead>
<tr>
<th>Group</th>
<th>Experimental Condition</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time nurses</td>
<td></td>
<td>.37</td>
<td>.95</td>
<td>.95</td>
</tr>
<tr>
<td>Part-time nurses</td>
<td></td>
<td>.65</td>
<td>.89</td>
<td>1.00</td>
</tr>
<tr>
<td>Full-time nurse aides</td>
<td></td>
<td>.32</td>
<td>.87</td>
<td>1.00</td>
</tr>
<tr>
<td>Part-time nurse aides</td>
<td></td>
<td>.63</td>
<td>.75</td>
<td>.95</td>
</tr>
<tr>
<td>All Control B</td>
<td></td>
<td></td>
<td>.88</td>
<td></td>
</tr>
<tr>
<td>All Control C</td>
<td></td>
<td></td>
<td></td>
<td>.92</td>
</tr>
</tbody>
</table>
**Inter-group comparisons**

Comparisons between full-time and part-time subjects yielded the most noteworthy comparisons for this dependent variable (hours worked to hours offered), as was true for the previous dependent variable (availability calls). In general, full-time nurses and nurse aides completed fewer assignments than their part-time counterparts when exposed to conditions of relatively low percent utilization. In fact, the group of full-time subjects completed approximately half the proportion of baseline assignments ($\bar{x} = .35$) as part-time subjects ($\bar{x} = .64$). Nonsignificant differences were produced during periods of higher percent utilization for both groups.

**Turnover Indicators**

For the purposes of this study, the term turnover indicator was operationally defined as not working or not calling for two consecutive weeks. As explained earlier (Method, page 16), this operational definition was used to determine changes in experimental conditions. Table IV presents the number of turnover indicators registered in each experimental condition. (For individual data, see Figures 1-4.)

As summarized in Table IV, experimental subjects stopped calling or working for two weeks during baseline periods only. When the relative degree of utilization was above 50%, none of the experimental subjects met the 2-week criterion for a turnover indicator. In addition, control subjects in Condition B averaged more turnover indicators (6) than control subjects in Condition C (2).
TABLE IV

Total Number of Turnover Indicators

<table>
<thead>
<tr>
<th>Group</th>
<th>Experimental</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>Experimental</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nurses</td>
<td>Control</td>
<td>NA*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Part-time</td>
<td>Experimental</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nurses</td>
<td>Control</td>
<td>NA</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Full-time</td>
<td>Experimental</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nurse Aides</td>
<td>Control</td>
<td>NA</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Part-time</td>
<td>Experimental</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nurse Aides</td>
<td>Control</td>
<td>NA</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

*A = less than 33% utilization, B = 50%, C = greater than 80%

**Not applicable

Turnover

Three control subjects, but none of the experimental subjects, left the employ of Peoplepower during the course of the study. They completed the Survey of Inactive Employees, stating the reasons for leaving, which are tabulated below (Table V).

TABLE V

Actual Turnover and Reasons for Leaving

<table>
<thead>
<tr>
<th>Subject</th>
<th>Group</th>
<th>Condition</th>
<th>Weeks in Study</th>
<th>Reasons for Leaving</th>
</tr>
</thead>
</table>
| Control 3 | Part-time Nurse | B | 11 | 1. poor wages  
|          | Full-time Nurse Aide | B | 8  | 1. lack of assignments  
| Control 4 | Nurse | C | 15 | 1. returned to school |

At the time of completing the survey (3 to 4 weeks after leaving...
Refusals and Cancellations

Figure 5 (page 46) illustrates the percentage of work hours refused in the initial offer (hours refused \( \frac{\text{hours refused}}{\text{total hours offered}} \times 100 \)) and the percentage of work hours cancelled after initial acceptance (hours cancelled \( \frac{\text{hours cancelled}}{\text{total hours offered}} \times 100 \)) in each experimental phase. Data were compiled for experimental subjects only. Agreement between observers reached 100% for refusals, and 95% for cancellations.

Relevant findings include that nurses cancelled twice the percentage of hours they refused, and that 70% of these cancellations and 87% of the refusals occurred in baseline periods. For nurse aides, cancellations were fewer — percentage of hours cancelled and hours refused were nearly the same. Again, most of the cancellations and refusals (82% and 55%, respectively) occurred during baseline periods. Finally, more cancellations and refusals were made by nurse aides than by nurses in Phase B.

The reasons given by experimental subjects to justify a refusal or cancellation are listed in Table VI.

Hours Requested

For three of the four experimental nurses, the number of hours requested per week varied throughout the study. Characteristically, these nurses requested more hours during baseline and moderate-utilization phases, but reduced the number of hours requested while...
Figure 5. Refusals and cancellations during each experimental phase.
<table>
<thead>
<tr>
<th>Reason</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor's appointment</td>
<td>0</td>
</tr>
<tr>
<td>Illness</td>
<td>5</td>
</tr>
<tr>
<td>Occupational injury</td>
<td>0</td>
</tr>
<tr>
<td>Lack of transportation</td>
<td>8</td>
</tr>
<tr>
<td>Location of assignment</td>
<td>4</td>
</tr>
<tr>
<td>Family problems</td>
<td>2</td>
</tr>
<tr>
<td>Vacation</td>
<td>2</td>
</tr>
<tr>
<td>Dislike for case and/or client</td>
<td>3</td>
</tr>
<tr>
<td>Other job</td>
<td>1</td>
</tr>
<tr>
<td>Weather</td>
<td>3</td>
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<td>Other</td>
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TABLE VI

Reasons for Refusing or Cancelling Assignments

in high-utilization periods. For instance, one full-time nurse (Subject 2) requested 56 hours of work per week during baseline and Condition B, but requested only 40 hours in Phase C. In general, the variations in hours requested amounted to 1-3 (8-hour) shifts from phase to phase.
DISCUSSION

The general purpose of the present experiment was to assess empirically the effects of different utilization practices on the response classes necessary to remain active as an employee of Peoplepower, (i.e., calling the home office weekly, requesting, accepting, and completing assignments). Specifically, the study focused upon the relationships between the degree of underutilization and these various response classes. Data collected over 18 weeks suggest that the degree of underutilization is functionally related to employees' tendency to maintain an active status at Peoplepower.

Such a conclusion is supported by the finding that the number of assignments offered in previous weeks, relative to the number of assignments requested, affects the probability of future availability calls and the tendency to accept and complete the assignments offered. This finding was systematically replicated with four different groups of subjects in a reversal design which manipulated only one utilization variable (while keeping two other utilization variables constant) and which controlled for order effects. The conclusion is also supported by data on control subjects. These data show that individuals whose work environment is characterized by consistently high levels of relative utilization call, work, and remain on the job to a greater degree than individuals under moderate relative utilization. In addition, the reasons for leaving the company cited by two of the three control subjects who terminated employment during the study, confirm the importance of utilization factors. (Furthermore, the fact that
control subjects took permanent positions after leaving Peoplepower validates their reported reasons for leaving.) Another source of support stems from Peoplepower data on turnover. A recent Field Turnover report shows that as the number of employees increased — without a corresponding increase in sales — so did the turnover rate. One possible explanation is that when an office with stable rates hires more workers, the relative number of assignments that each employee receives decreases. And thus, the number of inactive employees grows. As a consequence, the turnover rate increases.

The general findings of this study may seem surprising to temporary help personnel experts who emphasize flexibility of schedule (as opposed to stability) as the major reason why workers join a temporary help company. This belief has been incorporated into the company's public image for the purpose of recruiting temporary employees. In view of the results of this research, flexibility (i.e., employees select their schedules) remains as an important consideration only if it is accompanied by stability (i.e., employees consistently receive the selected number of work hours). Thus, a change in emphasis from "work when you want" (flexibility) to "work whenever you want" (flexibility plus stability) might aid temporary help companies in increasing length of tenure.

Besides the general finding — that the degree of underutilization of temporary employees is one determining variable affecting their future work-related behavior — the study provided more specific findings warranting analysis. The following sections discuss some of these particular results and their implications.
First, consider the seemingly contradictory finding that during periods of relatively low utilization, Peoplepower employees not only called and worked less but also refused and cancelled more assignments. At first glance, it might seem that when work is scarce, workers would be inclined to accept any offer. But an analysis of a common practice among temporary workers may help to account for data showing the opposite results. Temporary workers are often registered with several companies at the same time (a practice colloquially referred to as "moonlighting"). One advantage of this practice is that the temporary employee may select among various work offers, accepting only the most desirable opportunities. And one of the factors determining the choice — given that pay rates are comparable — could well be the number of hours offered (relative to the number of hours requested). Thus, some Peoplepower workers may become inactive when the company's degree of utilization is low because they are working for other temporary help enterprises.

The results with respect to cancellations further illustrate the point. The fact that in the study cancellations were substantially higher during periods of maximum underutilization not only speaks of a system designed to encourage early commitments (i.e., workers must accept an assignment at least one week in advance), but it may also indicate that some employees rejected Peoplepower's offers when opportunities to work more hours per week became available elsewhere.

Still another strategy which increases the employee's
probabilities of obtaining assignments in periods of relatively low utilization is to report more hours than the employee is actually available to work. Data in the study indicate that this practice was in effect when utilization was low. Such a practice, however, was not observed when the relative degree of utilization increased.

It appears, then, that underutilization practices encourage the use of strategies which are adverse to the company's functioning, but which broaden employees' work alternatives. In contrast, relatively high utilization strengthens employees' commitment to Peoplepower as their main source of work. Improved utilization practices increase actual availability and reliability of employees.

A second point concerning the specific results of this study is the general observation that full-time workers show a tendency to terminate employment more readily than part-time workers when the number of hours offered declines with respect to the number of hours requested. This finding may reflect the demographic description that temporary employees requesting full-time employment are often the only wage earners in their households, while employees requesting part-time jobs often report other sources of income (Gannon, 1977). In applying this information, additional influences must be taken into account before jumping to the conclusion that hiring more part-time than full-time employees will help to reduce turnover. For example, economists who study the trends of U.S. employment suggest that foreseeable declining economic conditions can gradually force part-time workers to seek full-time positions (Fullerton, 1976).
Thus, in this case, Peoplepower might benefit in the long run by focusing on retention of full-time employees, rather than by relying on a part-time work force which may become increasingly unavailable.

A third finding which might be of practical utility is the observation that irregular calling and consecutive non-occurrence of availability calls reflect an employee's increasing tendency to terminate. In the study, failing to call for two consecutive weeks (i.e., a turnover indicator) was followed by actual turnover when utilization conditions were not rapidly changed. Such was the case with control subjects who changed conditions only after completing two turnover indicators, that is, after four weeks in which they did not call or work. On the other hand, when a turnover indicator was followed by immediate changes with respect to utilization, as was the case with experimental subjects, employees resumed calling and reactivated their work status. Thus, in discussing turnover indicators, the procedural difference between experimental and control subjects might help to explain the fact that three control subjects, but none of the experimental subjects, quit employment during the study.

The above observations suggest that failing to report availability for at least two weeks is a valid indicator of turnover. Consequently, a useful rule for management may be to alert dispatchers to this information and to develop procedures (i.e., rapid relative utilization changes) which will help to avert imminent turnover.

The overall findings also warrant a discussion of the three parameters of the independent variable used in the study. The experimental
design selected included three values of the independent variable in an attempt to investigate the underutilization parameters under which the probability of calling and working is dangerously reduced. The research findings clearly indicate that relatively low levels of utilization do not maintain the responses necessary to remain in the organization, but that high levels do (with one exception -- a full-time nurse in the control group who left the company because of a lack of benefits and in order to return to school). Data are not as conclusive, though, for the moderate values of the independent variable. It may be that moderate utilization conditions are conducive to inactivity since for a majority of experimental subjects exposure to four weeks of such conditions resulted in irregular performance. Yet, in some instances the rate of calling and working approached the more stable, higher rate characteristic of high levels of utilization. Perhaps more relevant to the discussion of the effects of median levels of utilization are the data yielded by subjects constantly exposed to such contingencies. In effect, two of the four control subjects who remained under moderate levels met criteria for experimental turnover after only 10 and 13 weeks in the study. To summarize, a moderate level of underutilization could be regarded as instrumental in increasing the probability of employees becoming inactive, even though individual variations occur. It remains for future research to confirm this general observation and to determine the point at which underutilization reliability results in turnover.

The present research is the first reported to attempt a
behavioral analysis of human performance in temporary help organizations. Results are tentative in one respect. While the relative degree of utilization proved to be an important controlling variable in the work environment of temporaries, it is not the only important variable affecting retention. Moreover, its effects might not be held constant across employees. For example, one control subject under conditions of relatively high utilization called and worked at a high, stable rate for 17 consecutive weeks -- and then abruptly terminated employment. This subject's performance was clearly governed by variables other than relative utilization, such as benefits, possibilities of career advancements, and so on. These additional controlling variables seem a good subject for future research, for this study did not attempt to comprehensively analyze all the variables of which retention is a function; instead, it investigated the role of one of the prominent controlling variables that comprise the work environment of temporary employees.

In spite of the limitations in scope of the present study, a behavioral approach to organizational psychology in temporary help industries may represent a useful departure from the traditional orientation of that field. The behaviorist reformulates questions of motivation (e.g., absenteeism, below-standard performance, turnover) into questions concerning reinforcement (Gupton, 1971); for example: What situations -- stimuli or opportunities -- are available in the work environment which, if made contingent upon the emission of behavior, will lead to an increase in desired performance? Traditional organizational theorists answer this question by
considering only the rewards formally administered by the organization, such as salary increases, status improvements, and so on (DeVries & Jablonskey, 1977). But the functional definition of reinforcement used by operant conditioners recognizes a wider variety of strengthening contingencies. In the case of Peoplepower, a behavioral analysis revealed that utilization practices act as a powerful consequence influencing the retention or turnover of field employees.

One advantage of a behavioral analysis is its practical utility, the notion of control being implicit in a functional analysis of behavior. Emerging as byproducts of this experimental analysis are some suggestions for improving the current dispatching system. To aid implementation, these suggestions are presented in the form of a proposal outlining an alternative utilization system (Appendix G). The proposal takes into consideration such issues as the following: (a) demand for services and hence, number of active employees, is predictable; (b) the number of inactive employees is reduced to a minimum; (c) work opportunities are provided regularly; (d) optimum utilization (based upon employee's selected schedule) is guaranteed; (e) differential consequences are arranged to facilitate assignment completion, thus reducing cancellations; and (f) differential consequences provide additional motivation to work additional hours, if necessary. The suggested modifications in the above areas (detailed in Appendix G) may help solve the problem of high turnover by controlling underutilization -- one of the variables responsible for its generation. Research involving these modifications is underway at Peoplepower.
REFERENCES


Leone, R. D. and Burke, D. R. Women returning to work and their interaction with a temporary help service. Center for Labor and Manpower Studies, School of Business Administration, Temple University, May, 1976.


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APPENDICES
APPENDIX A

Placement and Availability Log

(Form is Confidential)

Rationale

The Placement and Availability Log is an alphabetical listing of employees representing those assigned to cases for a three-week period. This record also points out days and times employees are available. Insures proper utilization of all employees.

Procedure (numbers correspond to areas of the exhibit form following this page)

1 Listing of employees by alphabet and job class.

2 Enter number of hours each employee wishes to work per week.

3 Enter the service code which corresponds with each employee's job class and pay rate.

4 Enter the first letter of the customer's name where the employee is assigned, designated by an X, or is willing to work, designated by an O.

5 Enter the time the employee is working on an assignment or is willing to work.

6 Enter the number of hours an employee is working the week-ending date. Add and/or delete as necessary.

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APPENDIX B

Initial Dependent Variables

1. **Amount of $ sales per job class, per office, per week.**
   
   Source: Labor Distribution Report

2. **Number of regular hours worked per job class, per office, per week.**
   
   Source: Labor Distribution Report

3. **Mean number of regular hours worked per employee, per job class, per office, per week.**
   
   Source: Labor Distribution Report
   
   Payroll Register

4. **Total number of employees per job class, per office.**
   
   Source: Inactive Employee Report
   
   Turnover Report
   
   Payroll Register

5. **Total number of active employees per job class, per office, per week.**
   
   Source: Payroll Register

6. **Percent of active employees per job class, per office, per week.**
   
   Source: Payroll Register
   
   Dependent Variable #4

7. **Total number of truly inactive employees per job class, per office, per week.**
   
   Source: Inactive Employee Report
   
   Service Director's Data

8. **Percent of truly inactive employees per job class, per office, per week.**
   
   Source: Inactive Employee Report
   
   Service Director's Data
   
   Dependent Variable #4

9. **Total number of new employees hired per job class, per office, per week.**
   
   Source: Service Office's Data

10. **Percent of new employees hired per job class, per office, per week.**
    
    Source: Dependent Variables #4 and #9.

11. **Field turnover rate per job class, per office, per month.**
    
    Source: Field Turnover Rate Report

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# APPENDIX C

## TELEPHONE RECORD

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<th>EMPLOYEE CALLED</th>
<th>JOB CLASS</th>
<th>NUMBER OF HOURS OFFERED</th>
<th>TIME OF ASSIGNMENT</th>
<th>ACCEPT?</th>
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APPENDIX D

INSTRUCTIONS TO SUBJECTS

"Peoplepower is planning to conduct a pilot study on dispatching procedures. You have been selected randomly, and today we'd like to invite you to participate in this study. However, you may choose not to do so.

"The project involves assigning a new telephone line to a small group of employees. If you decide to participate in the study, we would like you to use this new telephone number to call our office. All of your conversations with the office staff will be recorded for approximately six months. You will hear a beep to remind you that the conversation is being recorded.

"If, during the time of the study, you should decide to quit your job with Peoplepower, we would like you to inform us and to complete a questionnaire. [Appendix E]

"First, we will be happy to answer any questions you may have about this project. Then, if you decide to join the project, we will sign an agreement [Appendix F] granting permission for Peoplepower to record your calls for the specified period of time."
APPENDIX E
SURVEY OF INACTIVE EMPLOYEES

1. How long did you work for Peoplepower?
2. How many assignments did you work?
3. What kind of cases were you assigned?
4. Are you currently working?
5. If you are working, in which area?
6. Is this position temporary or permanent?
7. Is this position part time or full time?
8. Reason for leaving:
   - Lack of assignments
   - Difficult jobs
   - Need for benefits
   - Medical coverage
   - Retirement plan
   - Savings plan
   - Vacation plan
   - Educational plan
   - Family obligations
   - Return to school
   - Moved out of area
   - Better wages
   - Illness
   - Personal relations
   - Other employment
9. Would you work for Peoplepower again?
APPENDIX F

INFORMED CONSENT FORM

Date

I, ________________________________ employees of __________________________ authorize the Service Office to record the telephones calls I make to said office and to use the recorded information for research purposes. I understand that the results of the study can be publicized, but that I will not be identified and my privacy will be protected. I also understand that the results of the study will be shown to me, that I can withdraw from the study whenever I choose to do so, and that I should inform the Service Office if and when I make such decision.

Signed

______________________________
One possible alternative for utilization that would reduce the number of employees that need to be hired, the number of inactive employees, and the turnover rate, and at the same time would facilitate dispatching, supervision, and training revolves around guaranteeing work to a selected number of field employees. The main advantage to be derived from such a system would be the control over a certain number of work-hours scheduled to meet the company's needs. For instance, if an office provides, on the average, the following hours of nursing services:

- 300 hours, from 7-3
- 250 hours, from 3-11
- 150 hours, from 11-7

Then that office could hire enough employees to cover a given percent (e.g., 80% = 560 hours) of those hours without assuming underutilization risks (i.e., without having to pay employees for whom there were no assignments). Additional customer demands would be filled by employees willing to work above their assigned hours and/or by "temporary" employees called upon request.

The main disadvantage of this system would be the loss of flexibility in hiring and turning over employees. A phantom disadvantage would be underutilization, but this is a variable that permits internal control to the point where minimum risks are assumed. Some manipulations will be proposed to avoid these disadvantages, but still, a cost-benefit analysis should take into account any expenses incurred due to the reasons noted above.
A brief preliminary description of the steps needed to develop this utilization strategy follows:

A. Fading into the system

The implementation of the hereby proposed research in utilization will require close and frequent interactions between Service Office personnel and staff specialists. In order to make these interactions cooperative, productive, and reinforcing, careful planning as well as adequate management support and appropriate presentation of the project are necessary. Rationale for selection, benefits to be derived from participation, relation between staff specialists and home office management are some of the issues that should be addressed before field observations begin.

B. Determination of customer demands

Two sources of data will provide this information:

1. An analysis of sales up to date for a given office, for as long as information is available (at least for one year) will be carried out in cooperation with the Service Director. A graph of sales over time will be constructed in which minimum and maximum demands, seasonal trends, and projected expansion plans can be pictured. Ideally, one graph per job class should be drawn. Using past Rate Tables, $ sales can be converted to hour sales in order to generate customer service information for at least one year.

2. A clearer picture of customer demand will be obtained
when information on service request hours not filled, gathered from Placement and Availability Logs and Weekly Assignment Records is added.

C. Determination of labor needs

Based on predicted sales, the number of necessary employees can be determined quarterly, or as frequently as ascending or descending trends in sales recommend it. The selected number of service hours to be guaranteed should not only be determined by past sales, but also by the expansion plans of a given office.

A very important issue in determining labor needs consists of selecting the number of hours that the office is willing and able to guarantee; it is clear that this is one of the crucial points in making this kind of operation functional. If too few hours are guaranteed, a great amount of additional dispatching and scheduling will be needed to provide service, a situation not far removed from the present one. If too many hours are under contract, the company may lose money by having to pay non-serviced hours. These situations are represented graphically below:
$X_1$ represents the bottom of service line, probably a too conservative estimate for staffing.

$X_2$ represents a point below which there is room for underutilization.

$X_0$ is a number to be determined mathematically, associated to a given probability value.

Once $X_0$ is determined, estimates can be made of how many employees are needed.

D. Determination of labor availability

1. Permanent employees
   a. A number of employees superior to the desired team composition will be preselected, based on their schedule, reliability, and interest in becoming a permanent employee. (It should be mentioned that some employees may not consider this situation desirable.)
   b. On an individual or small group (less than 4) basis, the working conditions for the team members will be presented and discussed:
      (1) Wages—The employee will be paid a flat salary
per week, at competitive rates, for the number of hours the employee wishes to work per week. Employees will also have access to a cash bonus system that differentially reinforces hours worked above the number of hours guaranteed. For instance, each additional hour worked would be paid x cents more than the preceding hour:

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Billing rates can be determined by estimating the largest number of hours that employees can work, the maximum pay per hour they can collect, and the probabilities of such events occurring (again, an elaborate but reliable mathematical procedure). Variations of this motivational procedure (e.g., paying a 10% bonus for each extra 5 hours) are abundant; the main point to be considered is that there should be contingencies in the system to secure willingness of the employee to work more hours when demand increases.

(2) Requirements

A basic rule for the team will be to be available and go to work whenever an offer during their scheduled hours is done.

Failure to attend work during scheduled hours should
result in losing team privileges.

Other requirements may include working certain shifts, attending meetings, filling in forms, etc.

c. Based on schedules and acceptance of working conditions, an initial team will be selected. Eligible individuals not selected at this time will be informed about their eligibility and considered for future opportunities.

2. Temporary Employees (Back-up Group)

A small group of temporary employees should be maintained to provide service when demand increases. After dating employee schedules, a number of temporary employees would be offered the following conditions:

a. Wages

Flat rates per categories + bonus in a sliding scale for larger number of hours. Bonus will also be available contingent on those behaviors the Company desires to maintain. For instance:

(1) \[
\frac{\text{# hours accepted}}{\text{# hours offered}} \times X
\]

(It seems very desirable to reinforce employees for accepting assignments.)

(2) cases

(3) emergency calls

The bonus could be cash or could be translated into points that, after a certain total, will make the employee eligible for the team. This procedure will greatly facilitate objective selection of future
E. Dispatching procedures

Because of the importance of the dispatcher's behavior, efforts should be directed to arrange contingencies in the environment that will strengthen adequate dispatching strategies. Dispatchers will be trained in the correct utilization of the labor force; they will be monitored and reinforced for adequate data collection on dispatching effectiveness. They will keep records on: (a) number of hours worked per employee on the team (below guaranteed hours? above?) and (b) progress of temporary employees toward team membership.

F. Team activities

To be a member of the team will be presented as a privilege. In order for this to occur, several reinforcers should be established for specific groups (what is reinforcing to a nurse may not affect the behavior of a typist) but, in general, should include social reinforcement, advancement and participation opportunities.

G. Evaluation

Process and outcome evaluation are essential in a pilot project. The former will detect if the program worked as planned; the latter, what effects it produced. Of special interest are data on: (a) number of hours worked in relation to the number of hours paid, (b) turnover rate, and (c) dispatching effectiveness.
The objective of the strategy generally outlined above is, by increasing the amount of work an employee receives (and necessarily decreasing the number of employees) to reduce the number of employees who leave the company. The completion of this objective with greater benefits than costs will be the definitive evaluation of the proposed strategy.