STOCK, John Robert, 1927-
A TASK ANALYSIS METHOD FOR SOCIAL WELFARE
JOBS.

The Ohio State University, Ph.D., 1971
Psychology, industrial

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A TASK ANALYSIS METHOD

FOR SOCIAL WELFARE JOBS

DISСЕRТАTION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

John Robert Stock, B.A., M.A.

* * * * * *

The Ohio State University
1971

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ACKNOWLEDGEMENTS

I wish to thank my adviser, Dr. Robert J. Wherry, for his advice and guidance during the course of this study. Also, I want to thank Dr. Milton D. Hakel and Dr. Ralph M. Stogdill for serving on my study committee.

For assistance and cooperation in the conduct of the study, I express my appreciation to Dr. Jack Hutchison, Director, and the administrative staff of the Bureau of Vocational Rehabilitation, State of Ohio. My deepest thanks are extended to the Rehabilitation Service Team members who provided the task information for this study. For assistance in programming and working with the BASIS-70 system, I wish to thank Mr. John R. Powers III, Mr. David S. Colombo, and Mr. Richard E. Krohn, my colleagues at the Battelle-Columbus Laboratories.

My wife, Lois, and my children, Virginia, John, Michael, Margaret, and James, inspired me to complete the study.

The task model, task description, and concept of the work sampling method used in this study were adapted from work completed under Contract No. SRS 69-19, for the Social and Rehabilitation Service, U.S. Department of Health, Education, and Welfare.
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CHAPTER I

INTRODUCTION

The Problem

One of the fastest growing job markets in the American economy is the social welfare industry, which expanded from 74,000 workers in 1950 to 105,000 workers in 1960, an increase of about 42 percent. Proportionate growth is projected for the period 1960 to 1970. The anticipated growth will be characterized not only by an increase in the numbers of workers, but also by new and different jobs and workers with non-traditional education, training, and experience backgrounds. Such changes are reflected by the establishment of Model Cities, Community Action, inner city, and neighborhood programs which provide services such as day care, homemaking assistance, pre-job training of school drop-outs, and referral services utilizing indigenous workers with little or no professional training or experience. Even professional social welfare workers find their jobs changing rapidly as new services are provided for by expanding social welfare legislation. Hence, the social welfare industry is faced with a critical need for immediate manpower research to provide the information required for planning, organization, and administration.

Because of its recent emergence and rapid growth, the social welfare industry does not have a base of occupational or job information to build upon as do most other industries. Also, social welfare work with its "soft" technology and emphasis upon personal client-worker relations has not had a history of exposure to the methods of industrial and methods engineering, and job analysis. In fact, the nature of social welfare work has militated against analysis by these methods, especially those requiring direct observation. Moreover, workers in the industry have resisted the application of traditional job and task analysis methods on the grounds that the methods are not appropriate for capturing the essential features of social welfare work. Of course, this resistance stems in part from the fact that the terminology and procedures of job and task analysis for structuring work are foreign to the social welfare worker. Thus, the social welfare industry not only needs the required occupational information, but also needs the tools and techniques to obtain the required information.

The urgent need for large masses of current, valid, and reliable job information in the fast-growing social welfare industry for use in manpower research requires the development of a method for obtaining the job information that differs in several important respects from traditional job and task analysis methods. First, the method as designed cannot assume the availability of trained job or task analysts for implementation. Few social welfare agencies would have personnel
skilled in job analysis on the staff. Therefore, the method must be
designed to collect job information by means of worker self-reports.
Second, and perhaps most important, the method must be capable of
capturing the essential work features of the soft technology, cited
earlier, which is so important in the industry. This requires that the
terminology and procedures for structuring work be acceptable and under­
standable to social welfare workers. Finally, because quick, broad
coverage is required, the method must be implementable through the use
of survey methods for data collection and analysis. This requirement
demands that all definitions, requirements, and procedures be made
explicit and incorporated in survey instructions and instruments.

Developmental Considerations

The foremost consideration in developing a method for collecting
job information by means of a worker self-report survey method is the
lack of success in past efforts to obtain useful job information by a
questionnaire method. Otis and Leukart\(^2\) state that

The questionnaire method has given consistently
undesirable results. Those who have had experience with
attempts to accumulate usable job information by this
method have found that the principal objections are as follows:
1. It is almost impossible to design a
   questionnaire which will bring forth
   the essential information.
2. The average employee will not take the
time necessary to make out the question­
   naire correctly.

\(^2\)Otis, J. L., and Leukart, R. H. *Job evaluation: A basis
for sound wage administration*. Englewood Cliffs, N. J.: Prentice-
3. If the worker does this while he is on the job, production is held up.
4. Shop workers particularly are rarely skilled at reducing to writing what they do, let alone how they do it, why they do it, and what skill is involved.

Objection number three is not a shortcoming of a questionnaire, but is a matter of management discretion. If management feels it is necessary to obtain the job information, production will be held up in order for the employees to complete the questionnaire. Objection number two is also somewhat of an administrative problem; however, it does relate to the time required to complete the questionnaire which is a function of the size of the unit of observation, i.e., the unit of work to be analyzed. Therefore, objection number two will be considered in the discussion that follows.

Objection numbers one and four, and number three, tangentially, concerning questionnaire design and eliciting essential details of work from the worker, reflect three of four developmental problems identified at the outset of this study. These are the unit of observation, defining the unit of observation, and isolating the unit of observation. The fourth developmental problem is concerned with the reduction and analysis of the data collected.

The first consideration in the development of a survey method for obtaining job information was concerned with the question what unit of work can be analyzed in detail by a survey method. The job as a unit was rejected "out-of-hand" as being too gross to obtain detailed information. Three units of work were seriously considered for study, the case, the "episode of service", and the task. The case and the episode
of service are units of work common to the social welfare industry. The task was selected as the unit of observation for study because it was judged to be a sufficiently small enough unit of work to be analyzed in detail if the task was properly isolated and rigorously defined. It was felt that past efforts using questionnaires were unsuccessful largely because the unit of observation was too large, which led to poor isolation of the unit to be reported by the worker, and to an insufficiently detailed definition of the unit.

The second developmental consideration was concerned with defining the unit of observation, the task, at a level of detail and in a manner that would elicit usable job information from workers. A number of task descriptions, task models, and conceptual frameworks of tasks developed by other investigators were studied for potential use in developing the survey method. No task model or conceptual framework was found that was judged to be completely sufficient for the purposes of this study. Selected task components or elements of other investigators were adapted and additional components were developed to produce a task model judged appropriate and applicable to social welfare work. The development involved structuring the task components and defining the task components in a manner such that they were meaningful to social welfare workers and would provide the details required. The task model developed could now be used as the framework for constructing survey instructions and data.

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collection instruments that would provide usable job information, thus, answering objection number one concerning questionnaire design and partially answering objection number four concerning eliciting the what, how, why, and what skills required in usable job information.

The third developmental consideration was concerned with isolating the unit of observation to be reported by the worker. Out of the myriad of tasks performed daily by a social welfare worker, how might a given task be pinpointed for reporting? Initially, schemes for isolating tasks based upon criteria such as level of difficulty or frequency of occurrence were considered. However, these schemes all involved a great deal of recall on the part of the worker and were subject to the inaccuracies of memory, e.g., dropping out of detail, areal or halo effect, etc. These schemes were rejected in favor of an adaptation of work sampling methods using a random point-in-time procedure for isolating tasks. Having a worker report a task that is being performed at the point-in-time sampled should eliminate to a great extent the need for recall and, in addition, since the details of the task are of extremely recent origin, the what, how, why, and what skill involved in the task could be accurately elicited from the worker using the survey instructions and instruments. This approach answers the remaining portion of objection number four concerning the required detail of usable job information.

The final developmental consideration was concerned with the methods for reduction, processing, and analysis of the job information collected using the survey method. Obviously, the large amount of essentially textual data that would be generated in a pilot application
of the survey method could not be feasibly processed and analyzed by manual methods. Electronic data processing procedures for storing and retrieving textual data were sought. An EDP system designed for processing and analyzing the content of textual data, BASIS-70, was found to be available. With the help of EDP specialists, procedures were devised for the reduction, processing, and analysis of job information obtained in a pilot application of the survey method.

Thus, the essential features of the task analysis method for social welfare jobs developed and implemented in this study were:

(1) Selection of the task as the unit of observation,

(2) Development of a task model structured and defined in a manner meaningful to social welfare workers which served as a framework for the construction of survey instructions and data collection instruments,

(3) Adaptation of work sampling methods to provide a random point-in-time sampling procedure for isolating tasks to be reported by workers,

(4) Development of procedures for the reduction, processing, and analysis of job information obtained in a pilot application of the survey method by means of an available EDP textual content analysis system.

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4Battelle automated search information system for the 70s (BASIS-70). Columbus, Ohio: Battelle-Columbus Laboratories, 1970.
Significance of the Study

Method development studies, as contrasted with theory building or testing studies, have little or no implicit significance. Only after the method developed is applied successfully to study other problems does the development study then have significance. The task analysis method developed in this study is designed to obtain job information for social welfare jobs that is useful in manpower planning, organization, and administration. Examples of operational problems that might be studied using the method are: personnel selection and placement, job classification and evaluation, specification of training requirements, performance evaluation, assessment of worker aptitudes, and surveying the job composition of a field of work. Thus, the significance of this study depends upon the use of the method, or an adaptation thereof, in subsequent manpower research of social welfare jobs.
CHAPTER II

UNIT OF OBSERVATION

Selection of the Task

In collecting job information for use in manpower research, the initial problem is one of selecting the most appropriate unit of work for analysis. If the unit selected is too large, the information requirements imposed on the reporter or analyst are impracticable and, as a result, the information provided is usually too general to be useful. On the other hand, if the unit selected is too small, the information obtained must be synthesized considerably before it is analyzed and there is a danger of distortion being introduced in the analysis. Hence, the unit of work selected for analysis should specify job information at a level of detail consistent with the research analysis requirements.

The development of a method for collecting job information for social welfare jobs by means of a survey implied a number of constraints which had to be considered in selecting an appropriate unit for analysis. The unit had to be small enough to be feasibly reported by the worker in a worker self-report. Alternatively, the unit had to be large enough to be a meaningful event in social welfare work. That is, the unit had to comprehend the essential characteristics of the soft technology of social welfare work. Also, the unit should
encompass only the work performed by the reporting worker. Finally, the unit selected had to have a definable beginning and end, or other boundaries, in order to be isolated for reporting purposes.

The traditional administrative units of work were the first units reviewed for selection. These included the position, a grouping of activities performed by one worker; the job, a grouping of similar positions within an establishment; and the occupation, a grouping of jobs across establishments. The occupation was viewed as an administrative unit because it establishes work boundaries in terms of one or more units of work. These units were considered because administrative work boundaries certainly effect the work requirements, e.g., knowledge and skills, activities performed, etc., of the individual worker. However, these units were judged inappropriate when evaluated in terms of the constraints cited previously.

In the social welfare industry, several units of work have been considered in connection with efforts to enhance manpower utilization. These units include the case, the episode of service, and the task.

The Case

"Social work has most commonly used the case as its unit of (work) differentiation." The case consists of essentially all activities directed toward the resolution or treatment of the problems of an individual client or client-family. In the case method a single social

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1Barker, R. L., and Briggs, T. L. pp. 217-31
welfare worker is assigned the single case and is responsible for all of the services that must be provided for the client. This is analogous to the situation in the medical profession in which the family physician treats all of the ills of the patient.

The Episode of Service

The episode of service is a relatively new concept in social work. It is defined as "a unit of (work) differentiation that encompasses a single manifest organizational goal of filling a client need and all the alternative means and activities used by the social work team to achieve it." The episode of service has a beginning, middle, and ending phase and includes the dimensions of time, activity, and judgment.

The Task

The task is defined as a specific unit of work performed by a single person, having an identifiable beginning and end. It is the smallest unit of work activity that results in an end product or end result that can be acted upon by another worker or by the same worker. This definition is consistent with the explicit or implicit definitions underlying the task models discussed later.

In discussions of the case, the episode of service, and the task as units of work to be allocated among social welfare staff, it has generally been conceded that the task is the smaller unit. Since the case and the episode of service normally require performance of numerous tasks, it should be possible to analyze a case or episode of service in terms of the work requirements of aggregated tasks comprising each
of them. To do this, however, the task as a unit must be conceptualized in a manner that permits meaningful relationships to emerge among the aggregated tasks into the more inclusive units of work such as the case or the episode of service.

Within the constraints discussed earlier, the task as a unit of observation appeared to have the greatest potential for the development of a method for obtaining job information for social welfare jobs by means of a survey. The task was judged to be small enough to be feasibly reported in a worker self-report, large enough to be a meaningful event in social welfare work, and capable of comprehending the soft technology - assuming it was properly defined, and isolatable for reporting purposes. Hence, the task was selected as the most appropriate unit of observation.

Task Models and Conceptual Frameworks

The selection of the task then led to a review and comparison of selected models and conceptual frameworks for viewing tasks in relation to work performance. The review proceded from the simple to the more complex models. The primary objective of the review was to examine both the common and distinctive components of existing task models and conceptual frameworks for potential use in the development of the survey method.
The S-R Model

One approach to conceptualizing tasks draws upon the classic stimulus-response model of psychology. "This approach is perhaps the most direct, and it is the one which most closely parallels initial classification systems for other sciences." ²

The S-R model conceives of tasks in terms of the stimuli presented to the task performer, the responses required of the performer for acceptable task performance, and the relational properties which exist among the task stimuli and the task response requirements. The properties of stimuli, responses, and their interrelationships which are used to characterize tasks are those which are common to all stimuli, responses, and their interrelationships (e.g., number, sequence, etc.).

Cotterman ³ has applied the S-R model to an analysis of traditional laboratory learning tasks. His analysis led to identification of 389 different types of tasks. Each of the 389 tasks was described in terms of a unique combination of stimulus properties, criterion response properties, and their interrelations.

The S-O-R Model

The major distinction between the S-R model and the stimulus-organism-response (S-O-R) model is that the latter model makes explicit


provision for the attributes of the task performer. This is illustrated in the work of Haggard\textsuperscript{4} which relates the S-O-R model to a hierarchical system for classification of behavior. This system, shown in Figure 1, views complex behavior merely as a compound of simpler behaviors. The system was proposed for the purpose of structuring behavior for training. The system calls for tasks to be classified on the basis of relationships and elements of behavior which are common to all three levels of the hierarchy.

The lowest level of the hierarchy provides for classification of simple behaviors in terms of laboratory learning situations. At this level, S-O-R behavioral descriptions would be used to define such labels as verbal learning, perceptual-motor learning, concept formation, and thinking.

The highest level of the hierarchy consists of compound behaviors. These would be classified "in terms of systems analysis and would indicate the simple behaviors involved and their amount and degree of integration". In psychotechnological situations, the S-O-R model would be used to define such labels as identifying ammunition types, administering first aid, and using direct fire sights.

Haggard's system also requires an intermediate level to provide the "combinational rules" for forming compound behaviors from simpler behaviors. At this level, S-O-R descriptions would be used to provide such labels as analysis of relationships, techniques, procedures, and

\textsuperscript{4}Haggard, D. F. p. 28
Psychotechnology
(Compound behaviors)

Training
Psychology
(Combinational Rules)

Learning
Psychology
(Simple behaviors)

Figure 1. Diagram of a Three Level Hierarchical Classification System for Behavior
(Haggard, 1963)
knowledge of specifics. According to Haggard, the S-O-R model provides a unit of behavior that would permit classification of tasks in terms of relationships and elements of behavior that are common to all levels of the hierarchical system.

Whereas Haggard has not elaborated on the types of human transformations that might serve to distinguish among different classes of tasks, Fine has developed a comprehensive "structure of functions" for classifying tasks. Viewed as a conceptual system, it appears that the structure of functions focuses on and characterizes the human transformations performed by workers.

The "Structure of Functions"

The "Structure of Functions" is shown in Figure 2. According to Fine, "the functions have been drawn from the universe of activity which is continuous through time and which, when it occurs as human work activity, can be described at infinitely minute levels and from different perspectives". One of these, the industrial perspective, has traditionally provided the basis for establishing work requirements. The other one, the behavioral perspective, has been used in specifying personnel qualifications. Fine distinguishes between these two perspectives as follows:

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STRUCTURE OF FUNCTIONS

Note: 1. Each successive function reading down usually or typically involves all those that follow it.

2. Feeding, Tending, Operating-Controlling and Driving-Controlling, and Setting Up are special cases involving machines and equipment of Handling, Manipulating, and Precision Working respectively and hence are indented under them.

3. The hyphenated functions Operating-Controlling, Driving-Controlling, and Taking Instructions-Helping are single functions.

4. The functions separated by a comma are separate functions on the same level separately defined. They are on the same level because empirical evidence does not make a hierarchical distinction clear.

5. Learning and Observing are adaptive functions basic to functioning in all three areas.

Figure 2. Structure of Functions
The industrial perspective...is defined within the framework of technology. This perspective classifies work in terms of the relationships of the worker to things through which (machines, tools, equipment, and work aids) and to which (materials and products) work gets done; to the data (subject matter, information, ideas) which enter into the plans, decisions, and specifications of the work; and the people (subordinates, supervisors, clients, customers, students) to whom the worker relates. Thus this perspective involves a three-fold analysis of all jobs (in relation) to three basic primitives: Things, Data, and People.

The worker-oriented behavioral perspective leads to personnel qualifications defined within the framework of physical, mental, and interpersonal capabilities, i.e., skill and knowledge requirements, and adaptability. For the individual worker this perspective is concerned with the fact that although he may perform what may be described as a work action, a task, or sequence of tasks, with or without the aid of hardware, he is nevertheless involved as a whole person, in a job-worker situation.

The structure of functions represents a proposed solution to a classical problem of work analysis; namely, the problem of translating work requirements into worker requirements. In terms of this study the problem is to develop research methodology for translating task requirements into worker requirements. As Fine points out, the structure of functions may be viewed as a "system of Janus-like, two faced concepts". As such, they may be characterized as work functions when viewed from the industrial perspective. However, when viewed from the behavioral perspective, they are worker functions.

As work functions, each function consists of a homogeneous grouping of tasks involving either things, data, or people. As worker functions, "the functions are ways that people use patterns of physical, mental, and interpersonal capabilities...to carry out the kinds of tasks
represented by the functions". Thus, the structure of functions is designed to be taxonomic for both tasks and behaviors in that tasks are grouped within functions to reflect their physical, mental and/or interpersonal skills in similar ways. In contrast, tasks which are not grouped within the same function are presumed to have dissimilar human requirements (i.e., they require workers to use their physical mental and/or interpersonal skills in different ways).

The functions have hierarchical relationships within each of the three "primitives", see Figure 2. Thus, a data-oriented task that requires "analyzing" would be expected to include "compiling" and the other functions beneath it, while excluding the requirements of higher functions such as "coordinating". Because the functions are ordered hierarchically, it would appear meaningful to characterize tasks in terms of the highest level of functioning required of the worker.

In comparing the S-O-R model and the structure of functions, it may be observed that the functional paradigm divides the universe of work content (S) into the three primitives: things, data, and people. With respect to each primitive, the functional paradigm then proceeds to characterize the work actions or behaviors (R) of the task performer in terms of the highest level of human functioning (O) involved.

Up to this point in the review and comparison of the S-R model, the S-O-R model, and the structure of functions, it has not been necessary to distinguish conceptually between the responses emitted by the task performer and those required for satisfactory performance of the task. In fact, the previously discussed models have all drawn
upon the task requirements perspective. In the following section, however, a model is presented which has been developed through factor analysis of human performance data. This model, the "Structure of Intellect", has been proposed by Guilford as a "unified theory of human intellect".6

The Structure of Intellect

Guilford's model of the "Structure of Intellect", shown in Figure 3, has been an important outgrowth of his efforts to analyze human intelligence into its components. Of particular interest is the fact that the theory has emerged from considerable research on human intellectual performance using a wide variety of intellectual tasks. As a theoretical model, the structure of intellect predicts the existence and properties of as many as 120 distinct intellectual abilities.

The model proposes that there are three major dimensions for classification of intellectual abilities. These are in terms of: (a) the basic kind of process or operation performed by the human - cognition, memory, divergent production, convergent production, or evaluation; (b) the kind of material or content involved - figural, symbolic, semantic, or behavioral; and (c) the kind of product involved - units, classes, relations, systems, transformations, or implications.

According to Guilford, cognition refers to the process of discovery, rediscovery, or recognition. Memory, in turn, refers to

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Figure 3. A Cubical Model Representing the Structure of Intellect
retention of that which is cognized. In addition, new information can be generated from known information or remembered information through either of two types of productive-thinking operations. Divergent production refers to thinking in different directions. In convergent production, information is processed to arrive at a single correct answer or at a recognized best or conventional answer. Evaluation involves those operations concerning decisions as to goodness, correctness, suitability, or adequacy of what is known, what is remembered, and what is produced in productive thinking. It should be noted that as one proceeds from cognition to memory to production to evaluation, "there is increasing dependency of one kind of operation upon others".

Both the content and product dimensions of the structure of intellect pertain to kinds of information. Guilford believes the four content categories and the six product categories represent "the basic classes for all the things that we can cognize, remember, produce, or evaluate".

The content categories correspond to very broad, substantive areas of information. Figural content is concrete materials such as are perceived through the senses. It does not represent anything except itself. Symbolic content is composed of letters, digits, and other conventional signs, usually organized in general systems, such as the alphabet or the number system. Semantic content is in the form of verbal meanings or ideas. Behavioral content is defined as "information, essentially nonverbal, involved in human interactions, where awareness of attention, perceptions, thoughts, desires, feelings, moods, emotions, intentions, and actions of other persons and of ourselves is important".
The product categories of the structure of intellect refer to the way or form in which information occurs. As such, they refer to ways of knowing or understanding. Units represent one way that information can be conceived (e.g., things, segregated wholes, figures on grounds, or "chunks"). A class consists of a set of objects with one or more common properties plus a class idea. A relation involves some kind of connection between two things, "a kind of bridge or connecting link having its own character". Systems are complexes, patterns, or organizations of interdependent or interacting parts, such as a verbally stated arithmetic problem, an outline, a mathematical equation, or a plan or program. Transformations are changes, revisions, redefinitions, or modifications by which any product of information in one state goes over into another state. Finally, an Implication is something expected, anticipated, or predicted from given information.

Each cell in the model of the "Structure of Intellect", see Figure 3, may be viewed as representing a particular kind of ability. Each of these abilities may be described in terms of the operation, content, and product involved because each cell lies at the intersection of a unique combination of kinds of operation, content, and product. Importantly, specific tests for each of the specific abilities have the same operation, content, and product attributes as are associated with the abilities themselves. As Guilford states:

...each intellectual component or factor is a unique ability that is needed to do well in a certain class of tasks or tests. As a general principle we find that certain individuals do well in the tests of a certain class, but they may do poorly in the tests
of another class. We conclude that a factor has certain properties from the features that the tests of a class have in common.\textsuperscript{7}

The structure of intellect may be viewed as an S-O model for the classification of tasks. Both the content and product categories represent ways of classifying the stimulus information that the human operates upon in producing tests responses. The operation categories, in turn, represent distinct ways that the human functions in producing his responses.

\textbf{A Systems Model}

Stolurow has applied the systems approach to the conceptualization of tasks.\textsuperscript{8} Although his task conception was developed within the context of a training system, its application extends beyond learning tasks to include performance tasks. A modified version of his task model appears in Figure 4.

Stolurow's model identified five components of a training system: input, trainee, output, feedback, and performance standards. The adaptation in Figure 4 substitutes a "Worker" for Stolurow's "Trainee". The input to the worker corresponds basically to the stimulus component of the S-R or S-O-R models. The worker is essentially equivalent to the organism in the S-O-R model. The output refers to the responses emitted during task performance. The performance standards pertain to the

\textsuperscript{7}Ibid., p. 48

response requirements of the task. Feedback results from comparison of worker output with the performance standards.

According to Stolurow, a specific set of constraints is imposed on the stimulus inputs and performance standards when a particular task is superimposed on the training system. Furthermore, the performance standards imposed by each task are seen as output states toward which the learner or worker strives.

In effect, Stolurow's model assumes that the universe of potential task characteristics can be represented in terms of stimulus inputs and performance standards. Accordingly, his task model provides for differentiation between tasks on the basis of stimulus inputs, performance standards, and the relationships to be developed between them through learning or during task performance. This approach to task differentiation corresponds highly with the approach taken by Cotterman cited previously. As such, Stolurow's model might be viewed as an S-R task conception. However, his explicit provision for "feedback" as a major component of the training system suggests that his task conception can
be understood fully only if it is viewed within the context of a training system or performance system, as shown in Figure 4.

A Model for the Description of Officer Job Behavior

A model of officer job behavior was developed for the Army "to illustrate how tasks are performed to accomplish goals on the job". The model offers an information-processing view of purposive human behavior. Unlike the models and frameworks discussed earlier, this model divides the physical activities of job incumbents into "input" and "output" functions. The input functions consist of those activities that serve to provide the officer with information. The output functions involve those activities of the officer that "directly influence some state of affairs or alter the status of some job condition or situation". Thus, this model conceives of the officer as an active seeker of information rather than merely a passive recipient of stimulus inputs.

Ammerman found there was a need for a mediating process which would link the officer's acquisition of information to his subsequent corrective actions:

From even the simplest of observations it can be demonstrated that the patterns of job actions are dynamic and variable. The actions of a man checking the pressure of his automobile tires at a service station can be viewed as a simple prototype of purposive behavior. There often is no observable stimulus for his actions. Sometimes after checking a tire he will

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inflate it; other times he will take no further actions. The same picture appears in much of the observable job behavior of supervisors: overt causes for gathering information are often lacking, and subsequent action appears inconsistent from one occasion to another.

Yet certainly there is more to this job behavior than meets the eye. In the example of tire checking, any one of a number of circumstances might well have caused the man to check the tires—deliberate preparation for a long trip, a neighbor's suggestion that a tire looked low, a planned program of preventive maintenance, recent observation of someone else's having a flat tire. Similarly, it can be assumed that the man applied a particular standard for tire inflation; that is, he had a goal, to keep his tires inflated to within a certain range of pressure. If upon checking he found the tire pressure to be outside this range, he took action to have that situation corrected; if the pressure was within tolerance, he took no corrective action at that time.

The concept of "plans" of Miller, Galanter, and Pribram,\(^\text{10}\) was adopted by Ammerman for the purpose of linking job activities and functions together in a closed loop of meaningful job actions. Miller, et al. view a plan as a hierarchical process in the individual that controls the order in which a set of operations is to be performed. Plans are hierarchical in nature in that they may be used to generate other plans.

The model illustrates the behavioral functions by which an officer accomplishes his job. These functions are combined in an ongoing series of events, reflecting the dynamic nature of supervisory jobs. The entire cycle is directed toward the attainment of the specific job goals and standards that are of concern to the individual at the particular point in time.\(^\text{11}\)


\(^{11}\) Ammerman, p. 19.
Figure 5. A Model for the Description of Officer Job Behavior

Each of the components of the model is described briefly under the following headings: job goals and standards, selection of a plan of action, action to obtain information, integration of information, the making of determination, and action to control the situation.

**Job Goals and Standards.** The job goals and standards are conceived as specific job states of affairs that will exist if a job is done well.

**Selection of a Plan of Action.** This is the most critical function for efficient officer performance and is the "keystone" of the model. As Ammerman points out: "...the matter of deciding what activities to perform and when to perform them counts heavily in determining his overall job proficiency and his value to his unit".
A four step decision process is hypothesized to underlie the selection of a plan of action: (1) awareness of need for a plan, (2) consideration of the availability of alternative plans, (3) evaluation of the available plans, and (4) choice of a plan of action.

**Action to Obtain Information.** Selection of a plan of action leads either to action to obtain information or to action to control the job situation. Four general types of information-gathering activities may occur:

1. Seeking and/or receiving information from others by means of verbal communications,
2. Observing the manner in which persons perform tasks,
3. Observing the results of performance by others, to obtain information from the equipment or system without active participation in the job operation, and
4. Actively performing a job operation and then observing the results of such performance, to obtain information from the equipment or system.

**Integration of Information.** The model assumes that the individual processes the information that he gathers before using it for making a determination about the state of job conditions. Although the individual may be unaware of the information processing, the sources of the information are evaluated, "weights" are assigned to the information, and conflicts are presumably resolved.
The Making of Determinations. In making a determination about the state of job conditions, three kinds of judgments are involved: (1) those about the existing state of affairs, (2) those about whether the goal or standard has been met satisfactorily, and (3) those to determine the nature of deficiencies when the state of affairs has been judged to be inadequate.

Action to Control the Situation. Three general types of controlling activities may be performed by the officer, including: (1) performing no controlling action, (2) personally performing a procedure to alter or maintain a job condition or situation directly, or (3) initiating action on the part of others to alter or maintain the status of a job condition or situation.

The job goals and standards in Ammerman's model, Figure 5, may be viewed as the basic stimuli which guide and direct officer performance. Nevertheless, the impetus for action lies much more clearly with the officer in this model than it has with the worker in earlier discussions of the S-O-R model, the structure of functions, the structure of intellect, or Stolurow's systems model. In fact, none of the previously discussed models or frameworks suggests explicitly that the worker himself determines the tasks to be performed to achieve job goals or standards. Fine's functional paradigm comes the closest of the other frameworks in its recognition of the discretionary aspects of task performance. However, the structure of functions appears to focus on the worker's discretion in how a particular task is carried out rather than with the worker's discretion in determining what tasks need
to be performed to accomplish job goals and standards. In this regard, it should be noted that Fine's paradigm is designed to apply to workers of all levels and types while Ammerman's model was conceived essentially to describe officer management and supervisory behavior in the Army.

Excluding job goals and standards, Ammerman's model may be viewed in terms of the "O-R" components of the S-O-R model. Accordingly, the actions taken by an officer to obtain information or to control a job situation correspond to the responses actually emitted in performing work tasks, and not necessarily to the actions required to achieve job goals and standards. Of significance, Ammerman's model does not explicitly provide a task requirements component analogous to Stolurow's use of the concept "performance standards". In certain instances, job goals and standards might be applicable at the task level. In general, however, job goals and standards would apply to outputs or outcomes expected to accrue from performance of several tasks.

Ammerman's model also suggests that several covert functions are performed by an officer. These include the selection of a plan of action, integration of information, and making a determination about the state of job conditions. These internal functions appear to relate most directly to Fine's data functions and somewhat less directly to Guilford's operation categories. In addition, however, they play the fundamental role of linking job goals and standards to the actual activities undertaken by an officer to obtain information or to control job situations. Therefore, when job goals and standards are specified
clearly and in operational terms, it would be expected that the linkage between goals and worker actions could become more predictable, and thus, less dependent on covert worker processes and plans.

A Framework for Analyzing Tasks Effects on Behavior

Hackman has recently proposed a framework for analyzing the effects of tasks on human behavior. The framework posits a basic performance sequence as shown in Figure 6. The main elements of the sequence are described below.

The first element in the performance sequence is the objective task input. This input is viewed as having three components: (1) stimulus materials, (2) instructions about operations, and/or (3) instructions about goals. According to Hackman, there can be no task if identifiable, physical stimulus material is absent from the objective task input. Thus, identifiable stimulus material is required of every task. This is so whether the task is assigned to or self-generated by the performer. Every task also requires instructions of one kind or another, either about the operations to be performed or about the goal to be achieved. However, it is not necessary that each task include objective input concerning both the operations and the goals of task performance. Hackman's framework provides for task instructions to be self-generated as well as the result of an assignment from an external source. Significantly, this means that self-generated instructions are

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Figure 6. A Framework for Analyzing the Effects of Tasks

1. Understanding of task
2. Acceptance of task
3. Idiosyncratic needs, values, etc.
4. Previous experience with similar tasks
5. Ability
6. Performance motivation
7. Level of arousal
conceptually independent of redefined instructions which result through the process of task redefinition, the second element in the task performance sequence, Figure 6.

The process of task redefinition is hypothesized as leading to redefinition of the three components of the objective task input. Thus, the performer is presumed to redefine the task materials and the instructions about operations and/or goals. Each performer's redefinition of the objective task input is thought to be a function of his (1) understanding of the task, (2) acceptance of the task, (3) idiosyncratic needs and values, and (4) previous experience with similar tasks. It is of interest that this framework views task redefinition as part of the performance process itself. In fact, Hackman suggests that "...while the objective and redefined tasks occupy different temporal positions in the performance sequence, they both are still tasks and therefore can be described and differentiated on the same dimensions".

The third element in the performance sequence represents the hypotheses of the performer about how he should perform the task. The framework proposes two kinds of hypotheses, those relevant to the strategy of performance and those pertaining to the specific behaviors to be performed. Hackman indicates that the strategy hypotheses are addressed to the question: "How should I go about dealing with this task?" The behavioral hypotheses, in turn, are presumably guided by the question: "Given that I am going to approach the problem this way, just what should I do or say."
In Figure 6, the fourth state in the performance cycle is referred to by the term process. In this framework, the term "process" represents the actual behaviors of the performer. These behaviors are viewed by Hackman as following directly from the hypotheses about what ought to be done in performing the task. However, personal factors involving task-relevant abilities and motivation to perform are thought to moderate the performer's actual behaviors.

Next, in the framework, are the process-outcome links which are conceived as the means whereby the particular responses (process) of the performer are translated into trial outcomes. The process-outcome links refer to those "aspects of the task or the situation which determine what outcomes result from various behaviors on the part of the performer".

Generally, the trial outcomes may be viewed as having two components. These are objective outcomes and personal outcomes. The objective outcomes consist simply of the "products" of the performance process, e.g., a child is placed in an adoptive home, the annual budget is allocated to agency departments, etc. The personal outcomes are the performer's own responses to the task experience, e.g., learning, a feeling of accomplishment, frustration, etc.

The framework assumes further that the objective and personal trial outcomes are evaluated either by the performer, the system in which performance is taking place, or both. Personal evaluation is concerned with the extent to which the performer judges a trial outcome
as being "good enough". Actually, personal evaluation may play a minimal role in cases where system evaluation is based on specific and comprehensive criteria, e.g., "give me the letter when it has been typed without error, erasure, or snopake". Both types of evaluation may operate jointly as well.

The evaluation of trial outcomes is seen as leading either to a final outcome, i.e., following positive evaluation, or to recycling through the "hypothesis" stage where the performer presumably decides to "try something different", i.e., following negative evaluation.

Implications for this Study

Hackman's framework has many features in common with the models and frameworks discussed earlier. It also has several distinctive features that are deserving of special emphasis. In the following discussion, the objective is to highlight the more significant of these common and unique features as background for a subsequent presentation of the task model used in this study.

Important, for this purpose, is the fact that Hackman clearly specifies that tasks may be either assigned or self-generated. This distinction is a meaningful one from the standpoint of manpower planning, organization, and administration. His explicit recognition of this dimension of task performance is consistent with the earlier observation that Ammerman's model provides for officers to determine the tasks appropriate to accomplishment of job goals and standards.
Hackman's framework also has the distinction of being the only one, of those reviewed, which explicitly incorporates "instructions" into the conception of the task inputs to the worker. Although it was noted earlier that Fine has suggested that the degree of prescription/discretion in worker instructions appears to be reflected in the hierarchies of the structure of functions, Fine has not made "instructions" an integral component of his task concept. Nevertheless, Fine has certainly recognized the central role of instructions in job-worker situations.

Hackman's treatment of self-generated instructions as part of the objective task input is problematic. However, if self-generated instructions are reclassified as functions of the organism, the comparison of selected elements of Hackman's framework and the S-O-R model becomes straightforward. Essentially, the physical stimulus materials required for a task and the assigned instructions comprise the "S" component of the model. Self-generated instructions, the task redefinition process, and the task performer's hypotheses constitute the "O" component. And, the process in Hackman's framework is equivalent to the "R" component of the model. Clearly, there are several elements in Hackman's framework that need to be accounted for by some other model, or that represent the unique components.

One of the most important features of Hackman's framework is his concept of "process-outcome links". This concept refers to those situational and/or task factors that determine the outcomes that result from various behaviors on the part of the task performer. For example, a task might be assigned as follows: "Start my car. Here is the
ignition key". The task performer might proceed as follows: "Inserts the ignition key; turns the ignition key to 'start' and simultaneously depresses the accelerator pedal". In this task situation, the linkage between the performer's actions (process) and the objective task outcome (i.e., the car "starts") is mediated by several electrical and mechanical components and subsystems. These mediating "mechanisms" provide the means whereby the task performer's actual responses are translated into trial outcomes. Hackman's concept of the "process-outcome links" thus appears to offer a bridge across the conceptual distinction that Fine has emphasized between "what gets done and what workers do to get work done". 

Hackman's distinction between trial outcomes and final outcomes is also important in that it reflects a potential two-stage linkage between the performer's product and the objective or goal to be achieved by the production of the product, e.g., a child is placed in an adoptive home in order that the child may develop in a home-like environment. It is apparent from the example that the product and the objective are not deterministically related and that the two should be distinguished.

In the social welfare field, it would be unrealistic to expect that process-outcome links can be identified or applied with the confidence enjoyed by the engineering sciences. As a matter of fact, the nature of social reality and the state-of-the-art in social welfare often preclude identification of the outputs associated with specific worker actions, let alone their impact on objectives and goals.

is obvious. Such relationships among direct outcomes and final outcomes of tasks in the social welfare field represent the rule rather than the exception. Thus, this distinction should be maintained for study purposes.

In the following chapter, the model used in this study for viewing worker performance in relation to social welfare tasks is presented. The study task model is heavily indebted to the several task models and conceptual frameworks reviewed and compared in the preceding discussion.
CHAPTER III

TASK ANALYSIS METHOD

Study Task Model

It was pointed out earlier that the development of a task analysis method for social welfare jobs that could be implemented by means of a survey required three integrated developments: (1) a task model for defining a task and to serve as a foundation for survey instructions and instruments, (2) a method for isolating the tasks to be reported, and (3) procedures for reducing, processing, and analyzing significant amounts of textual content data. The first development effort centered on the development of a task model that would satisfy study requirements.

The Need

The need for development of a model for task analysis of social welfare jobs became increasingly apparent as the relevant literature was reviewed, issues concerning the appropriate unit of observation were studied, and the state-of-the-art of task analysis methods was assessed in terms of the study requirements. However, because of a concern for not wanting to "reinvent the wheel", existing task models and conceptual frameworks were studied in detail to determine if they were sufficiently comprehensive to provide for obtaining the required job information. It was concluded that none of the models reviewed would suffice without further development, elaboration, and refinement. Although no model or
framework was found to include all of the task components which appear in the study task model, nearly all of the components in the model derive from one or more of the models and frameworks reviewed. In fact, the developmental work was essentially of the "cut and try" variety in that successive approximations were needed to achieve an acceptable fit between the task model and the conceptual and methodological requirements of the study.

Overview of the Model

The components of the study task model are shown in Figure 7. As may be seen there, the components of the model are ordered from left to right to illustrate the precedence relationship that exists among them. However, it is recognized that this is a rational model, and as such, it may not represent the worker's perception of a task; nor does it necessarily reflect the sequence in which task information would be recorded. In addition, Figure 7 presents the components of the model from the perspective of how a single task may be viewed in relation to a single worker, an important methodological consideration.

The study task model which emerged is a transformation model that serves to define task units. The model postulates that a task can be characterized as a set of states of the work situation and a class of active elements called transformation. This emphasis upon transformation as a process was taken from Hackman's model.\textsuperscript{1} The transformation was

\textsuperscript{1}Hackman, J. R. p. 34.
Figure 7. Study Task Model
elaborated to include worker actions and the technology used by workers to change the states of the work situation. As can be seen in Figure 7, the transformation model is operationalized by specifying the task information that must be obtained concerning the beginning state, the transformation, and the end state of the task unit.

**Beginning State.** The beginning state is viewed as the state of the work situation at the start of the task. The model assumes that the task commences either as the result of an explicit assignment or the occurrence of an event that precipitates task initiation. The assignment includes instructions that may apply to the actions to be performed, the procedures to be followed, the end products to be produced, or the final outcomes to be achieved by the worker during task performance. The instructions aspect of the assignment category parallels Hackman's instructions in the objective task input. A further aspect that has been added to the assignment category is a descriptor of the person making the assignment.

The precipitating event accounts for the initiation of a task not resulting from an assignment. Such events would include the completion of a preceding task, a phone call or client walk-in, the arrival of mail, etc. The precipitating event would include Hackman's self-generated task, but would also include many other kinds of events that would result in task initiation. The essence of the precipitating event is the circumstances that signal a worker to begin a task. The inclusion of some such category as the precipitating event in the
task model is extremely important because most of the work performed in the social welfare field is very loosely supervised and cannot be accounted for by assignment.

The category of information required by the model which is central to social welfare work is the client problem. This category is analogous to Hackman's stimulus materials and the stimulus aspect of S-R models. At the task level, the information desired is the specification of the immediate client need served by task performance rather than a problem category. The immediate client need, combined with the type of client, reflected as a separate category in the model, to a great extent determines the actions and technology open to the worker for task performance. From the perspective of the worker, the client problem and characteristics of the client are intertwined such that they co-determine the appropriate actions.

The final category of information included in the beginning state is the fields of knowledge. Fields of knowledge refer to the information brought to the task by the worker, distinct from process knowledge of techniques and procedures, which is used in task performance. Fields of knowledge include the specialized information learned during formal education and in on the job training. It was found that this category of information was not distinctly specified by the task models reviewed. In job analysis it is usually specified under the heading of job information or job knowledge.
Transformation. The transformation component of the task model includes two categories: worker actions and technology, reflected in terms of a process. The worker actions category encompasses the behaviors that workers emit in performing tasks. This category of the model has had a central role in job and task analysis efforts over the years. In the model, worker actions are subdivided into three categories consistent with Fine's functional hierarchies. That is, the worker actions are categorized as they relate to the three primitives of work content: people actions, data actions, and things actions. This subdivision provides a framework for linking specific worker actions to the other categories within the model, e.g., people actions with clients, other persons, and aspects of technology, data actions with fields of knowledge and aspects of technology, and things actions with aspects of technology, tools, and equipment. Further, this categorization should simplify the recording of action descriptions by workers by organizing the actions in terms of the target of the actions.

The technology category includes methods, techniques, and procedures as well as tools and equipment. Here, technology is equivalent to Hackman's process-outcome links and represents the linkage between the workers actions and the task end products. The latter aspect, tools and equipment, reflects hardware translations of actions into products, while the former aspect, methods, techniques, and procedures, provides

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for translation "mechanisms" characteristic of the services to people focus of the social welfare industry. This aspect of the model is most closely related to Fine's higher level people functions which are composite or sequence of individual worker actions.

The final category of information included in the transformation component of the task model is a description of the special skills required to apply the methods, techniques, and procedures or to use the tools and equipment. The special skills category is distinct from the field of knowledge category. As noted previously, fields of knowledge are viewed as specialized information used in task performance whereas special skills are viewed as specialized application capabilities bound to particular methods, techniques, procedures, tools, and equipment. This category is equivalent to the job skills specified in job analysis.

**End State.** The end state component of the task model represents the transformed work situation which results after task performance. However, the categories of the end state are not directly equivalent to the categories of the beginning state. Rather, the end state categories were developed to reflect meaningful service delivery outputs in terms of end products, final outcomes such as organizational objectives, criticality of end products, standards for end products, and worker perceived impact upon the client.

The end product category of information in the model requires a description of the immediate output of the task performed. The end product must be tangible although it may not be material, e.g., a
completed interview. Of course, a written summary is usually made of an interview and this record would be the material end product of an interview task. The end product is further qualified in that it must be something that can be acted upon by another worker or the same worker. In the example above, the information obtained in the interview could be used by another worker. As the assignment or precipitating event identifies the initiation of a task, the end product identifies the completion of a task. Therefore, the end product cannot be ambiguous or amorphous, but must be readily identifiable and definable. There may be more than one end product for a single task. An initial interview may result in a written summary and a completed application form.

The final outcome category is distinct from but related to the end product. The final outcome is the objective or goal, usually organizational, that is to be achieved by means of one or more end products. Determination of eligibility for services is an example of a common social welfare organization objective or goal. Eligibility is usually determined through a review of an application and other documents reflecting information concerning eligibility criteria. Thus, the tasks resulting in the application and other documents serve the objective of determining eligibility for services. More than one final outcome may of course be related to a single end product, but at the task level the outcomes described should be immediately related to the end product.
The category criticality of end product was developed for the task model to reflect the relation between the end product and the achievement of the specified final outcome. This category might be viewed as a bridge across important distinctions such as those between what the worker produces and how the organizational goals are achieved. The category reflects a shift in orientation from the worker to the organization, but as perceived by the worker. The category requires a specification of whether the end product is necessary or optional in the achievement of the objective. This category appears to be unique in that none of the task models reviewed had an equivalent component.

The standards for end product category is a modification of the evaluation and performance standards components common to the models of Hackman, Ammerman, and Stolurow. In these tasks models, this component indicates a detection of conformance with or variance from system standards. In the study task model, however, the category is designated to obtain information specifying what, in fact, the standards are for the end product. In this respect, the category does not assume that standards for the end product have been specified. The category is exploratory in the sense that it provides for determining what standards for the end product are used in social welfare tasks.

3 Hackman, J. R. p. 39.
4 Ammerman, H. L. p. 19.
5 Stolurow, L. M.
The final category of information required in the end state of the task model is a description of the impact on the client resulting from task performance. This category also reflects a change in orientation from the worker to the client, but, again, as perceived by the worker. It is recognized that the worker's perception of the impact on the client may be completely at odds with the client's perception, but the methodological dependence upon worker self-reported tasks imposes this restriction. The importance of impact on the client in the rendering of services in social welfare work requires the inclusion of this category in the model even though the worker report of impact may be erroneous. Moreover, the worker's perception of client impact, whether erroneous or not, does influence task performance. The category of impact on the client is also unique in that it was not specifically reflected in the models reviewed.

Summary. An operational description of the study task model might be summarized as follows:

In response to an assignment or a precipitating event, a worker deals with a client problem and type of client. The worker's approach is determined by the fields of knowledge used and the instructions received. The worker completes the task by performing actions in relation to people, data, and things applying the technology of methods, procedures, and techniques and tools and equipment requiring special skills. Task
performance results in an end product(s) that achieves a final outcome(s). The end product(s) is (is not) critical to achievement of the final outcome and has an impact on client.

Task Isolation Method

During the course of task model development, study of a method for selecting the tasks to be reported began. It was obvious that the amount of information required for a single complete task description limited the number of tasks that an individual worker could practically report during a survey administration. Therefore, the task selection method had to be capable of "isolating" a small number of specific tasks to be reported by each worker surveyed.

The initial approach taken in the development of a method for isolating tasks was based on the formulation of criteria for differentiating tasks which would then be used for selecting the specific tasks to be reported. Among the candidate criteria most seriously considered were frequency of occurrence, difficulty of task performance, and relative task importance. Each of these criteria were studied with a view toward devising procedures for isolating tasks along the lines of the developmental steps in Flanagan's "critical incident" technique.\footnote{Flanagan, J. C. A new approach to evaluating personnel. \textit{Personnel}, 1949, 26, 35-42.}

The developmental stage of the critical incident technique requires workers to recall incidents occurring within a specified past time
period which characterize particularly effective or ineffective job per-
formance. This procedure has proven to be effective in isolating a
small number of incidents of job performance. That is why it was con-
sidered for potential application in this study.

It was recognized from the outset that this procedure of the
critical incident technique would have to be modified in order to iso-
late tasks along some such continuum as effectiveness as well as at the
extremes. The study requirements called for a selection of tasks that
would reflect the range of work performed from simple to difficult,
unimportant to important, and infrequent to frequently occurring.
Therefore, attempts were made to modify the procedure to yield an
acceptable method for task isolation. All of these efforts proved
fruitless because no satisfactory means was conceived for systematically
isolating one task from the many others falling at points along the con-
tinua of the criteria considered.

It became apparent that the problems encountered in the initial
approach taken were concerned with the presence and effect of bias
in the worker's selection of tasks to be reported. Once this fact was
recognized, the approach changed to one of devising an unbiased sampling
procedure that could be implemented rather simply by a worker for iso-
lating the small number of tasks to be reported. Since the tasks could
not be enumerated a priori for sampling purposes, another variable suit-
able for sampling had to be selected or defined. The obvious alterna-
tive variable that could be enumerated was time. This led to a consid-
eration of time sampling procedures.
Work Sampling

The observation of work performance at random intervals for purposes of assessment is known as work sampling. As Barnes points out, "Work sampling has two main uses... work sampling may be used to measure activities and delays... under certain circumstances, may be used to measure manual tasks..."\(^7\) The second main use, called performance sampling, is the one of interest for this study. Performance sampling is the sampling procedure for obtaining information concerning a worker's activities during a work period. These sampling procedures evolved from the continuous time and motion studies used in industrial engineering. It has been found that for certain types of work studies the work sampling procedures have provided reliable measures, if sufficient observations are made. Work sampling procedures are based upon the theory of random sampling and the statistics appropriate to the theory are used in the procedures.

For purposes of this study, recent developments in work sampling procedures were found to be particularly relevant. In the work of Mindlin,\(^8\) Moder and Halladay,\(^9\) and Moder\(^10\) sample survey methodology


\(^8\)Mindlin, A. The application of sample survey methodology to work sampling. The Journal of Industrial Engineering, 1959, \(X(4)\), 286-295.

\(^9\)Moder, J. J., Jr., and Halladay, W. J., Jr. Work sampling applied to long cycle operations performed by a variable labor force. The Journal of Industrial Engineering, 1956, \(VII(4)\), 164-167.

\(^10\)Moder, J. J. Activity sampling with applications to time standard estimation. The Journal of Industrial Engineering, 1967, \(XVII(1)\), 24-29.
has been applied to work sampling studies. These recent applications are termed "activity sampling" because they involve the study of numerous distinct worker activities rather than the productive vs. non-productive time distinctions of traditional work sampling studies. Mindlin used a survey design to study eighteen work activities, codified a priori, in government regional offices throughout the United States. A recorder in each of the offices tallied the activities that different workers were engaged in at points-in-time specified on a random sample time sheet. It may be noted that one stratum in the survey design broke out the workers by position type.

In the study of Moder and Halladay, the work activities were classified into nine descriptive elements. Again, observations were recorded of the activities engaged in by the workers at points-in-time specified by a random time schedule. Here, the activities of work crews consisting of two workers were analyzed. Although this study was not as complex as Mindlin's study, the design considerations were essentially the same.

The application of survey methods in the studies cited is particularly pertinent to the problem in the present study of isolating the tasks to be reported. The random point-in-time schedules were used in those studies for essentially the same purpose, i.e., to isolate the activities engaged in by the workers at that time. It is recognized that the activities were completely defined and categorized before the observations were made, but this is not required by the underlying survey principles. Of course, in the case where the activities were
not specified, the statistical analysis would have to take into account this important distinction. Moreover, the use of the point-in-time sampling procedure within the framework of a survey design involving stratification and clustering demonstrated its potential capability for a task analysis survey of social welfare jobs. Hence, point-in-time sampling was selected as the method for isolating the tasks to be reported by workers. The specific procedures devised for operationalizing the method are described later.

Task Information Analysis Method

The heart of task analysis is the textual content of the task descriptions. This is also the source of a difficult methodological problem in task analysis in that large amounts of content information must be reduced, processed, and analyzed. These operations have been manually performed by job and task analysts, with supervised clerical help, over the years. Of course, in some methods such as Fine's Functional Job Analysis the information is eventually reduced to reflect levels or values on scales of work dimensions. However, the scaling is done only after the manual reduction, processing, and analysis is completed.

11 If a large number of distinct tasks were observed in a survey, the estimates of the proportion of time workers were engaged in each task would necessarily be quite small and the sampling errors large relative to the estimates. Extremely large sample sizes would be required to achieve proportional estimate-variance relations. Further, if the survey design were at all complex, the variance calculations would be burdensome even with a computer.

The requirement in this study, discussed earlier, that the task analysis method for social welfare jobs is to be implemented by means of a survey dictated that at least some of the information reduction and processing had to be performed by other than manual means. Further, because the content and vocabulary of the task descriptions could only be determined after the fact, pre-codification, construction of scaled categories, and other methods usually used to facilitate data reduction and processing were precluded. Also, the fact that the basic datum would for the most part be in the form of text ruled out the use of numerical processing methods at least until the text had been processed. If a method could be found for reducing and processing the textual data, then job or task analysts could analyze the task information by any method deemed appropriate. Therefore, a search for methods capable of reducing and processing textual data using electronic data processing equipment was begun.

Several specialists working in the field of information storage and retrieval were consulted at this point concerning the availability of EDP programs or systems capable of processing textual information. It was learned that the first phase of a system was in the final stages of development and would soon be available for automated search and retrieval of textual information. The requirements of the task analysis method study were discussed in order to determine if the system under

Colleagues of the author, John B. Fried, David S. Colombo, and Richard E. Krohn, Battelle-Columbus Laboratories, Columbus, Ohio were consulted and found to be developing the system.
development would be satisfactory for processing the task information. The requirements considered in these discussions were the categories of information to be obtained for each of the components in the task model; the fact that the vocabulary and content of the information could not be specified in advance; the data obtained would probably be in the form of hand written descriptions recorded on a data collection form; and, the potential operational uses to be made of the task information. Each of these study requirements were considered in terms of the storage, search, and retrieval capabilities of the developing EDP system. Based upon these preliminary discussions, it was tentatively determined that the system being developed should be capable of meeting these requirements. The information specialists requested that the survey instruments to be used be submitted to them for study and that they be informed of plans for data reduction, processing, and analysis.

**Computerized Information Storage and Retrieval**

The focus of computerized information storage and retrieval is content or meaning analysis. The function of the computer "is to accept a request for a fact or a document, to search mechanized files for the terms stated in the request, and to deliver all, and only, those documents which the requestor considers pertinent".\(^{14}\) An essential feature of the program or system is a procedure for categorizing or

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"tagging" the information entries (documents) in the file according to the content words which might be used by a requestor calling for them. These procedures are known as automatic indexing or abstracting techniques. In a search, the program first links the request terms with the content words in the index. Then, it links the selected content words from the index with the information entries in the file which contain the content words. Finally, it delivers by printing out or displaying the information entries selected from the file. (Some programs, to assist the user, printout the index of content words in the form of a dictionary or thesaurus.)

The steps involved in operationalizing an information storage and retrieval system are summarized as follows. The first step consists of defining the categories used for filing the information entries. The next step involves selecting or collecting an information base. In the third step, the information is edited to select out errors or to eliminate nonessential information. The information is then reduced to punched cards, punched paper tape, or magnetic tape for processing. If the information has been selected or collected by category, each information entry is identified by category when it is keypunched, etc. The final step consists of putting the information into the system. At this time, the information entries are stored in the file by category and the content word index is generated to be used by the system. The content word list and other listings may also be produced at this time. The system is then ready to accept queries for information search and retrieval.
The system selected for processing the task information in this study, BASIS-70, is an on-line, interactive information storage and retrieval system. The user interrogates an information file by means of a teletypewriter. The system provides the necessary instruction in how to conduct a search while the user sits at the keyboard. The user constructs his search by entering index terms, i.e., content words characterizing the information of interest, simple commands such as DISPLAY, LIST, etc., and the logical connectives AND, OR, and NOT. The results of the search are then printed out by the teletypewriter. If an invalid search term or command is entered, the system signals the user of his error and suggests corrective courses of action.

Each information base has an identifying acronym which the user enters to access the files for search. For this study the acronym is TAM, for Task Analysis Method. The information file is subdivided into items, here complete task descriptions. Each item is further subdivided into fields or elements, here the categories of information for each of the task model components. Items may be retrieved by whole or partial field entries such as index terms, numerical values, free-text words, and combinations thereof. The items, fields, and search variables are specified for each particular information base.

The system is designed to be utilized by a varied community of users, each having unique requirements. To meet these unique needs, special search and retrieval options are provided. These options function automatically via the system and are keyed to the system by either the acronym of the information base or the user's name.
Method Summary

The essential features of the task analysis method for social welfare jobs selected, adapted, and developed included:

(1) A transformation task model was developed defining the components and categories of task information required for a complete task description. The task model would serve as the framework for the construction of survey instructions and data collection instruments.

(2) Work sampling methods were selected to provide a random point-in-time sampling procedure to isolate the tasks to be reported. Random point-in-time schedules would be devised and incorporated in the survey procedures.

(3) An EDP system was found that was designed for storage, search, and retrieval of textual information. The system would be used for the reduction, processing, and analysis of job information obtained in a pilot application of the task analysis method.
CHAPTER IV

PILOT APPLICATION OF THE TASK ANALYSIS METHOD

Survey Procedures

During the course of method development, a number of social welfare agencies and organizations were visited to obtain background information and to gain familiarity with the work in the industry. The director of a state social welfare agency visited expressed an extreme interest in the task analysis method as conceived up to that time and asked if the method would be available to him when it was fully developed. His agency had recently undergone a reorganization and he viewed the task analysis method as a potential tool to study the effects of the reorganization. It was pointed out to the director that the method would have to be pilot tested after it was developed to determine if it would, in fact, obtain and reflect usable job information. At this point, the director indicated that his agency would participate in a pilot application of the method and, further, that his staff members would assist by providing a review and critique of the survey instruments and procedures yet to be developed. Thus, the groundwork was laid for the implementation of the conceptualized method.

Survey Instructions and Data Collection Instruments

The first document of instruction developed for the survey respondents, titled "A Task Description", shown in Appendix A, was
designed for an orientation to the task model. This instruction includes the definition of a task presented in a preceding chapter and a narrative description of the task model. Each of the components of the transformation model are discussed and the categories of task information required for each component are explained and illustrated with a few examples. The instruction stresses the distinctions among the categories of task information.

The next two documents, shown in Appendices B and C, were developed concurrently and include instructions in how to record a task description and a companion task description recording form. The instructions for task recording, titled "Task Description Recording", tie in the point-in-time sampling procedure for isolating a task and the procedure for proceeding to describe the isolated task. The respondents were instructed to describe the actions being performed at the point-in-time sampled and then to proceed backward in time to the assignment or precipitating event that defined the beginning of the task. The task description recording would then proceed forward in time from the beginning state to the end state of the task. Because this study was not interested in capturing non-work related tasks, the respondents were instructed to record the first work related task following a non-work related task isolated by the point-in-time schedule.

Six categories of task related information not reflected in the task model were prescribed in the recording instructions and on the recording form. These were judged difficulty of the people actions,
data actions, things actions, and total task, task interrelations, and task duration. A procedure for obtaining judged difficulty of people actions, data actions, things actions, and total task on a five-point self-anchored scale was included to provide information that might be used in subsequent task and worker performance differentiation studies. The task interrelation category requested information reflecting several simple relations of the task being recorded with preceding and following tasks, without specifying those tasks. This category might be elaborated in subsequent studies of work allocation and work flow. The final category, task duration, requested the time required to complete the task being recorded and estimates of the shortest and longest time required to perform the same or a similar task in the past, if it had been previously performed.

A random point-in-time schedule was generated for use in the pilot application. The schedule, shown in Appendix D, provides ten random points-in-time, five in the morning and five in the afternoon, for each of forty persons. The schedule was generated using a short program written in SIMSCRIPT. The program called up the random number and event timer routines in the SIMSCRIPT compiler and produced


2The program was prepared by Glenn H. Beatty, Battelle-Columbus Laboratories, Columbus, Ohio.
random clock times, in hours and minutes, for the periods eight to twelve o'clock and one to four-forty-five o'clock. These were the scheduled working hours for the agency participating in the pilot study.

The final document developed was a personal data form, shown in Appendix E, designed to obtain information about the characteristics of the workers recording the task descriptions. Standard variables such as sex, age, position, educational level, other training, and years of experience and training were included. Also included were variables relating specifically to the agency and the field of work. These were team number, team specialty, certification, field of work, and other positions held in the agency.

These were the five documents that were used for instructing the survey respondents and for collecting the data in the pilot application. The documents were a narrative description of the task model, instructions on how to record a task description, a task description recording form, a schedule of random points-in-time for work periods, and a personal data form for the worker. Drafts of each of the documents were reviewed by several staff members of the participating agency. Minor changes were made in wording and additional examples were included based upon their recommendations.

**Field Visits**

The services of the participating state welfare agency are provided by approximately one-hundred three or four person service teams located throughout the state. Each team is composed of either two or three professionals and one clerical person. Although the services
that may be provided are universal to all teams, most of the service teams specialize with regard to the type of client or client problems handled. For example, some teams are located at mental hospitals and service only former or present patients of these hospitals. Therefore, it was determined in conjunction with the agency staff that the service teams selected for the pilot application would reflect a number of these team specialties. This determination was made with the hope that a spectrum of different tasks would thereby be obtained.

Initially it was planned that the approximately 100 service teams would be categorized by team specialty by the agency staff and a ten percent sample of ten teams would then be selected at random from among the categories. However, the staff member responsible for field administration expressed the opinion that because of the reorganization and the rapid growth in the number of service teams that random selection was inadvisable at this time. He indicated that new teams were formed by taking one experienced professional and a clerical from an established team and replacing them with new personnel. Thus, many new teams had only two members and many established teams had several inexperienced personnel. Therefore, he suggested that the study would be better served if he were to select ten teams reflecting a range of specialties which were made up of relatively experienced team members. The teams were selected in the manner suggested. He further selected a team located locally for a tryout of the survey procedures. It might be noted, that after the tryout, this team participated as the eleventh team in the pilot application.
Arrangements were made by the field administrator for the ten service teams selected to participate in the pilot application, and for the local service team to tryout the survey procedures. A schedule of visits to each of the service teams was set up and letters were sent to the teams to notify them of the dates of the visits. The local service team was visited first for the tryout. In a group session, the team was informed of the purpose of the study and the cooperation of the members was requested. Each team member was provided with a set of the five survey documents, arranged as shown in Appendices A through E, and was asked to study them. Then, questions that arose concerning definitions, explanations, examples, and procedures were discussed. When the team members indicated that they understood the survey procedures, arrangements were made for each of the three team members to record two task descriptions, one occurring in the morning and one occurring in the afternoon of a work day in that week. Each team member was assigned an individual person number corresponding to one of the person numbers reflected on the random point-in-time schedule. Thus, each team member had an individual schedule of random points-in-time for isolating the tasks to be recorded. For the tryout, only two time points were required for each team member. The team manager was then requested to contact the author when the task descriptions were completed to arrange a group critique of the tryout.
The problems encountered in the tryout were concerned mainly with distinctions among particular categories of task information. Those causing problems were the distinction between an assignment description and a precipitating event; the distinction between an end product and a final outcome; the fact that most tasks are critical, should distinction be essential versus optional; and, the fact that standards are not specified for the end products of many tasks. Further, it was recommended that the headings of the categories on the recording form be modified to be more consistent with the descriptors in the instructions. No problems were encountered in isolating the tasks using the random point-in-time schedule. Finally, the team members indicated that the time required to record each of the task descriptions ranged from fifteen minutes to one hour with a crude average of thirty minutes. At the close of the critique, the local service team expressed a desire to participate in the pilot application. This request was granted. Then, the instructions, forms, and procedures were revised and elaborated consistent with the tryout findings. Further, it was decided after consultation with the agency staff that each participating team member would be requested to record no more than ten tasks descriptions because of the time required.

A visit was then made to each of the ten service teams selected to participate. The details of these visits were essentially the same as the orientation visit with the local service team for the tryout. Each team member was given a set of the survey documents, including ten task description forms. Stamped, self-addressed envelopes were
provided for returning the completed forms. The documents were studied and discussed. The team members agreed upon a five-day work period during which they would record task descriptions. Each team member was assigned an individual person number to identify the particular random points-in-time on the schedule to be used for isolating the tasks to be recorded. This person number was also recorded on the task description forms to serve as an identification number for the completed task descriptions. At two of the locations, a team member was absent during the visit. The other team members agreed to pass the information and the documents along to the absent members. Including the local service team, nine of the teams had three members and two teams had four members. Thus the potential pool of respondents consisted of thirty-five persons, twenty-four professionals and eleven clerical personnel. The field visits with each service team lasted from one to one-half hours.

Results of Pilot Application

Of the thirty-five potential respondents, twenty-three workers representing ten of the eleven service teams visited returned 202 recorded task descriptions. However, two of the task descriptions were incomplete and could not be used. Thus, 200 complete recorded task descriptions were obtained in the pilot application.

Selected characteristics of the workers submitting task descriptions are shown in Table 1. Eight of the respondents were Counselor Managers, seven were Counselors, and eight were Clerk Typists. Of the
TABLE 1

SELECTED CHARACTERISTICS OF SURVEY RESPONDENTS

<table>
<thead>
<tr>
<th>Position</th>
<th>Sex</th>
<th>Age</th>
<th>Level of Education</th>
<th>Specialty</th>
<th>Years of Experience</th>
<th>Tasks Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counselor Hgr.</td>
<td>Female</td>
<td>27</td>
<td>Masters</td>
<td>Mentally Ill</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Counselor Mgr.</td>
<td>Male</td>
<td>26</td>
<td>Bachelors</td>
<td>Deaf</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Counselor Mgr.</td>
<td>Female</td>
<td>24</td>
<td>Bachelors</td>
<td>Inner-City</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Counselor Mgr.</td>
<td>Male</td>
<td>27</td>
<td>Masters</td>
<td>Mentally Ill</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Counselor Mgr.</td>
<td>Female</td>
<td>26</td>
<td>Masters</td>
<td>Mentally Ill</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Counselor Mgr.</td>
<td>Male</td>
<td>63</td>
<td>Bachelors</td>
<td>Corrections, Alcoholics, Drug Addicts</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Counselor Mgr.</td>
<td>Male</td>
<td>26</td>
<td>Bachelors</td>
<td>Corrections</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Counselor Mgr.</td>
<td>Male</td>
<td>24</td>
<td>Masters</td>
<td>General</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Counselor</td>
<td>Male</td>
<td>26</td>
<td>Bachelors</td>
<td>Deaf</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Counselor</td>
<td>Female</td>
<td>25</td>
<td>Bachelors</td>
<td>Mentally Ill</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Counselor</td>
<td>Female</td>
<td>23</td>
<td>Bachelors</td>
<td>Inner-City</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Counselor</td>
<td>Female</td>
<td>42</td>
<td>Masters</td>
<td>General</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Counselor</td>
<td>Male</td>
<td>43</td>
<td>Bachelors</td>
<td>Mentally Ill and Mentally Retarded</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Counselor</td>
<td>Male</td>
<td>51</td>
<td>Bachelors</td>
<td>Corrections</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Counselor</td>
<td>Male</td>
<td>52</td>
<td>Bachelors</td>
<td>Corrections</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Clerk Typists</td>
<td>Female</td>
<td>20</td>
<td>High School</td>
<td>Deaf</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Clerk Typists</td>
<td>Female</td>
<td>20</td>
<td>High School</td>
<td>Mentally Ill</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Clerk Typists</td>
<td>Female</td>
<td>20</td>
<td>Business School</td>
<td>Inner-City</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Clerk Typists</td>
<td>Female</td>
<td>43</td>
<td>High School</td>
<td>Mentally Ill</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Clerk Typists</td>
<td>Female</td>
<td>49</td>
<td>Business School</td>
<td>Mentally Ill</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Clerk Typists</td>
<td>Female</td>
<td>19</td>
<td>High School</td>
<td>General</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Clerk Typists</td>
<td>Female</td>
<td>22</td>
<td>High School</td>
<td>Deprivation Economics</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Clerk Typists</td>
<td>Female</td>
<td>23</td>
<td>High School</td>
<td>Corrections</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>
Counselor Managers, five were males and three were females; their median age was twenty-six with a range from twenty-four to sixty-three years of age. Four had Masters degrees and four had Bachelors degrees. The median years of experience for the Counselor Managers was four years with a range of two to forty years. They returned sixty-eight completed task descriptions.

Four of the Counselors were males and three were females with a median age of forty-two and a range of twenty-three to fifty-two years of age. Six had Bachelors degrees and one had a Masters degree. Their median years of experience was three with a range of one to six years. Counselors returned sixty-one completed task descriptions.

The eight Clerk Typists submitting task descriptions were females with a median age of twenty-one and a range of nineteen to forty-nine years of age. Two were business school graduates and six were high school graduates. Their median years of experience was less than one year and ranged from less than one year to two years. (It appears the Clerk Typists of these service teams were relatively inexperienced.) They submitted seventy-one completed task description records.

The specialties of service teams reported by the respondents were deaf clients, mentally ill and retarded clients, inner city and economically deprived clients, corrections (parolees and probationers) clients, alcoholics and drug addicts, and general service clients. Thus, a range of different types of clients and client-related problems are dealt with by the workers submitting task descriptions.
Information Reduction and Processing

A format for reducing, processing, and storing the information obtained in the pilot application was designed with the assistance of the information specialists who developed the BASIS-70 system. The format for one complete task description, including task identification, field or element number, field or element descriptor, and the category of information stored in each field or element, is shown in Table 2. The format reveals that a task description, as the basic information unit, consists of three parts: the four-digit task identification number made up of the two-digit person number, the one-digit day number, and the one-digit morning or afternoon code; the task information broken out into twenty-three fields reflecting the categories of information for each of the task model components; and, the personal data describing the characteristics of the worker respondent subdivided into twelve fields of information. The format was developed with this design so that any one, combination, or all of the fields specified could be selectively searched, retrieved, and displayed from the total information base.

As discussed earlier, the information to be reduced consisted of handwritten entries recorded in each of the fields of the 200 complete task description recording forms and the twenty-three complete personal data forms. It may be noted that one respondent typed the task descriptions, but the others recorded theirs with pen or pencil. The task descriptions were edited before keypunching by the author and a volunteer clerical assistant. The editing consisted of checking to
### TABLE 2
FORMAT OF EACH TASK DESCRIPTION

<table>
<thead>
<tr>
<th>Element or Field Number</th>
<th>Descriptor</th>
<th>Category Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX</td>
<td>Person Number</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Day Number</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Morning or Afternoon Code</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>AD</td>
<td>Assignment Description Instructions, From Whom</td>
</tr>
<tr>
<td>2</td>
<td>PE</td>
<td>Precipitating Event or Circumstances Description</td>
</tr>
<tr>
<td>3</td>
<td>CD</td>
<td>Client Description</td>
</tr>
<tr>
<td>4</td>
<td>CP</td>
<td>Client-Problem or Immediate Need</td>
</tr>
<tr>
<td>5</td>
<td>FK</td>
<td>Fields of Knowledge</td>
</tr>
<tr>
<td>6</td>
<td>LK</td>
<td>Level of Knowledge</td>
</tr>
<tr>
<td>7</td>
<td>FA</td>
<td>People Activities Actions</td>
</tr>
<tr>
<td>8</td>
<td>FD</td>
<td>Difficulty</td>
</tr>
<tr>
<td>9</td>
<td>DA</td>
<td>Data Activities Actions</td>
</tr>
<tr>
<td>10</td>
<td>DD</td>
<td>Difficulty</td>
</tr>
<tr>
<td>11</td>
<td>TA</td>
<td>Things Activities Actions</td>
</tr>
<tr>
<td>12</td>
<td>TD</td>
<td>Difficulty</td>
</tr>
<tr>
<td>13</td>
<td>MT</td>
<td>Methods, Procedures, and Techniques</td>
</tr>
<tr>
<td>14</td>
<td>TE</td>
<td>Tools and Equipment</td>
</tr>
<tr>
<td>15</td>
<td>SS</td>
<td>Special Skills Required</td>
</tr>
<tr>
<td>16</td>
<td>EP</td>
<td>End Product Description</td>
</tr>
<tr>
<td>17</td>
<td>FO</td>
<td>Final Outcome, Organizational Goals or Objectives</td>
</tr>
<tr>
<td>18</td>
<td>CR</td>
<td>Criticality of End Product</td>
</tr>
<tr>
<td>19</td>
<td>ST</td>
<td>Standards for End Product</td>
</tr>
<tr>
<td>20</td>
<td>IM</td>
<td>Impact Upon Client</td>
</tr>
<tr>
<td>21</td>
<td>DI</td>
<td>Task Difficulty</td>
</tr>
<tr>
<td>22</td>
<td>TI</td>
<td>Task Interrelations</td>
</tr>
<tr>
<td>23</td>
<td>DU</td>
<td>Task Duration</td>
</tr>
<tr>
<td>24</td>
<td>TN</td>
<td>Team Number</td>
</tr>
<tr>
<td>25</td>
<td>RS</td>
<td>RST Specialty</td>
</tr>
<tr>
<td>26</td>
<td>SX</td>
<td>Sex</td>
</tr>
<tr>
<td>27</td>
<td>AG</td>
<td>Age</td>
</tr>
<tr>
<td>28</td>
<td>PO</td>
<td>Position</td>
</tr>
<tr>
<td>29</td>
<td>ED</td>
<td>Education</td>
</tr>
<tr>
<td>30</td>
<td>TR</td>
<td>Other Relevant Training</td>
</tr>
<tr>
<td>31</td>
<td>TT</td>
<td>Years and Months of Training</td>
</tr>
<tr>
<td>32</td>
<td>CE</td>
<td>Certification</td>
</tr>
<tr>
<td>33</td>
<td>EX</td>
<td>Experience</td>
</tr>
<tr>
<td>34</td>
<td>FI</td>
<td>Field of Work</td>
</tr>
<tr>
<td>35</td>
<td>PP</td>
<td>Previous Positions</td>
</tr>
</tbody>
</table>
see that the task identification number was complete and legible; underlining with a red pencil the words or numerals from each field that were to be keypunched, thus eliminating excess verbiage; making corrections in spelling and adding connectors such as "and" between words; entering the word "none" or a "0" in fields containing no information; entering the task interrelations "sequential", "separate", "continuous", "discontinuous", "independent", and "dependent", but only as reflected by the information given; entering commas between separate subelements within a field; and, entering the two letter descriptors for each field at the top left of the field. An example of an edited task description form is shown in Table 3. The entries underlined and those added by the editors enclosed in parentheses were the information coded into each field by the keypunch operators. As can be seen in the example, the editors attempted to retain the exact wording of the respondent to the extent possible, and when changes or additions were made the editors attempted to distort the content as little as possible. In a few cases, respondents reported multiple tasks, as defined by the task definition, in one task description. In these few cases, the editors selected out those field entries comprising the one task following from the assignment description or precipitating event.

It might be noted that the clerical assistant who assisted the author in editing the task descriptions had no previous knowledge of the task analysis method and no experience in job or task analysis. Yet, after a short orientation using the survey documents and editing one
### TABLE 3

**EXAMPLE OF EDITED TASK DESCRIPTION FORMS**

<table>
<thead>
<tr>
<th>PERSON NO.</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAY NO.</td>
<td>1</td>
</tr>
<tr>
<td>A.M. K P.M.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AD</th>
<th>PE</th>
<th>CD</th>
<th>CP</th>
<th>FK</th>
<th>LK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BEGINNING STATE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASSIGNMENT DESCRIPTION</td>
<td>INSTRUCTIONS, FROM WHOM</td>
<td>PRECIPITATING EVENT OR CIRCUMSTANCES DESCRIPTION</td>
<td>CLIENT DESCRIPTION</td>
<td>CLIENT-PROBLEM OR IMMEDIATE NEED</td>
<td>FIELDS OF KNOWLEDGE</td>
</tr>
<tr>
<td>Incoming telephone call from supervisor of work evaluation program at Goodwill</td>
<td>(None,)</td>
<td>Male, 35 years old, divorced, completed 9th grade (education,) lives with mother-father-and-two sons, epilepsy, diabetes, alcoholism.</td>
<td>To determine whether this client should be enrolled at dormitory, with his alcoholism, epilepsy, and diabetes</td>
<td>Counseling and guidance, training</td>
<td>Experience needed to determine how combination of problems might affect situation.</td>
</tr>
</tbody>
</table>
TABLE 3 (Continued)

<table>
<thead>
<tr>
<th>PEOPLE ACTIVITIES ACTIONS</th>
<th>DATA ACTIVITIES ACTIONS</th>
<th>THINGS ACTIVITIES ACTIONS</th>
<th>METHODS, PROCEDURES, AND TECHNIQUES</th>
<th>TOOLS AND EQUIPMENT</th>
<th>SPECIAL SKILLS REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counselor talking with family.</td>
<td>An analysis of data to determining procedure.</td>
<td>Dictating data from conversation, (using phone) telephoning for new information.</td>
<td>New directive approach to family, Directive approach to probation officer, and supervisor</td>
<td>Phone, Files, Notes, Dictaphone.</td>
<td>Counseling techniques, Decision-making based on information and past experience</td>
</tr>
<tr>
<td>Counselor talking to Probation Officer.</td>
<td>Goodwill representative.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature: (relationship) cooperative and cordial.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 3 (Continued)

<table>
<thead>
<tr>
<th>EP</th>
<th>FO</th>
<th>CR</th>
<th>ST</th>
<th>IM</th>
<th>DI</th>
<th>TI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>END PRODUCT DESCRIPTION</strong></td>
<td><strong>FINAL OUTCOME ORGANIZATIONAL GOALS OR OBJECTIVES</strong></td>
<td><strong>CRITICALITY OF END PRODUCT</strong></td>
<td><strong>STANDARDS FOR END PRODUCT</strong></td>
<td><strong>IMPACT UPON CLIENT</strong></td>
<td><strong>Task Difficulty</strong></td>
<td><strong>TASK INTERRELATIONS</strong></td>
</tr>
<tr>
<td>Decision to place client in dormitory.</td>
<td>Final goal is to make an initial effort to help rehabilitate this client.</td>
<td>Very critical to future rehabilitation of client as the work evaluation will lead to eventual job placement or further training</td>
<td>Unspecified, standards</td>
<td>This task is significantly related to the final rehabilitation of client, in that it will give future actions a direction</td>
<td>4a</td>
<td>The task is continuous, as it had to be continued until a final decision was made - it is a complete task in and of itself (dependent, sequential)</td>
</tr>
</tbody>
</table>

DU

**TASK DURATION**

- **shortest** 0 hrs. 00 min.
- **longest** 0 hrs. 00 min. not applicable

**END STATE**

DU

**TASK DURATION**

- **shortest** 0 hrs. 00 min.
- **longest** 0 hrs. 00 min. not applicable
task description under the guidance of the author, the clerical assistant was able to edit independently, retaining the essential information and introducing as little distortion of content as possible. The author checked a sample of the task descriptions edited by the clerical assistant before keypunching. Few changes were made in those reviewed.

The editing of the task description forms prior to keypunching required approximately sixty man-hours of the combined times of the author and clerical assistant. Thus, the rough average per form was eighteen minutes. Descriptions of short clerical tasks required as little as five minutes while involved professional task descriptions, especially those containing descriptions of multiple tasks discussed above, required as much as thirty-five minutes. Thus, a significant, but practical, amount of time is required for the clerical editing of the task descriptions prior to keypunching.

The edited task descriptions were then coded in text form on punched cards by keypunch operators working directly from the edited forms. Each field of information was coded on a separate card, or cards when the field required more than one card, and contained the task identification number, a card sequence number, and the two letter field descriptor followed by the task information recorded in that field, with separate subelements within a field separated by commas. Each task description consisted of a minimum of twenty-three cards, one for each of the fields of task information. The personal data describing the characteristics of the worker respondent was coded in a separate set of cards, again one card or cards for each field of
personal data. These cards contained the person number part of the task identification number, a card sequence number, and the field descriptor followed by the information recorded in that field. (The system tied the personal data of the respondent to each task described by the respondent by means of the person number.) Approximately 5,700 punched cards were required to code the 200 task descriptions obtained in the pilot application of the task analysis method. After the cards were coded they were printed out and the entries were checked for errors in spelling, incomplete or incorrect entries, and errors in coding. Sixty-four cards containing errors were found in this review of the printout, an error rate of slightly more than one percent. (An additional one percent was detected later in reviewing the list of content words in the information base.) Considering that the coding was done from handwritten entries, this is an exceedingly low error rate. The cards found to contain errors were corrected and then the cards were read into the BASIS-70 information storage and retrieval system.

Processing and Analysis of Task Information

After reading the task information for the 200 task descriptions into the system, a list of the content words stored in the word index was generated. Three pages from the content word list, placed side by side, are shown as examples in Table 4. It will be noted that the content word list reflects each unique word in the information base alphabetically for the total information base and by field within the base. The field two-letter descriptors are alphabetized within the
TABLE 4
EXAMPLE PAGES FROM THE CONTENT WORD LIST

| AD | ASKS | 1 | ARRIVE | 3 | 16 |
| AD | ASSEMBLE | 1 | ARRIVED | 8 | 17 |
| AD | ASSIGNED | 1 | ARRIVES | 17 | 18 |
| AD | ASSIGNMENT | 1 | ARRIVING | 25 | 19 |
| AD | ASSIGNMENTS | 1 | ART | 1 | 1956 |
| AD | ASTHMA | 1 | ARTICULATE | 1 | 1968 |
| AD | ATTEND | 1 | ARTIST | 109 | 2 |
| AD | ATTENDING | 1 | ARTS | 59 | 20 |
| AD | ATTENTION | 5 | ASK | 12 | 21 |
| AD | AUTHORIZATION | 3 | ASKED | 15 | 22 |
| AD | AUTHORIZATIONS | 6 | ASKING | 10 | 22YRS |
| AD | BECAUSE | 1 | ASKS | 30 | 23 |
| AD | BOY | 1 | ASPECTS | 22 | 24 |
| AD | BRINGS | 3 | ASSEMBLE | 27 | 25 |
| AD | BROUGHT | 1 | ASSEMBLED | 20 | 253 |
| AD | BRUCE | 1 | ASSESSMENT | 31 | 26 |
| AD | CALL | 1 | ASSESS | 20 | 58 |
| AD | CALLED | 1 | ASSESSING | 8 | 28 |
| AD | CAP | 3 | ASIGNED | 77 | 3 |
| AD | CARE | 21 | ASSIGNMENT | 1 | 3RD |
| AD | CASE | 1 | ASSIGNMENTS | 64 | 30 |
| AD | CASES | 1 | ASSIGNS | 6 | 300 |
| AD | CENTER | 1 | ASSIMILATE | 7 | 300A |
| AD | CERTIFICATES | 1 | ASSIMILATING | 1 | 300S |
| AD | CHANGE | 7 | ASSIST | 1 | 31 |
| AD | CLAIM | 9 | ASSISTANCE | 1 | 32 |
| AD | CLASSIFICATION | 1 | ASSISTED | 1 | 34 |
| AD | CLEVELANDS | 1 | ASSISTING | 10 | 341 |
| AD | CLIENT | 1 | ASSOC | 11 | 35 |
| AD | CLIENTS | 1 | ASSUME | 4 | 36 |
| AD | CLOSURE | 4 | ASSURANCE | 1 | 37 |
| AD | COLLEAGUE | 1 | ASSURED | 1 | 38 |
| AD | COHES | 1 | ASTHMA | 1 | 39 |
| AD | COMMITTEE | 1 | ATMOSPHERE | 37 | 4 |
| AD | COMMUNICATION | 1 | ATTACHED | 17 | 40 |
| AD | COMPLETE | 1 | ATTACK | 20 | 413 |
| AD | COMPUTER | 1 | ATTACKS | 11 | 42 |
| AD | CONCERNING | 1 | ATTEMPTED | 27 | 421 |
| AD | CONFERENCE | 8 | ATTEND | 21 | 43 |
| AD | CONFERENCE | 1 | ATTENDANCE | 1 | 44 |
| AD | CONSULTANT | 1 | ATTENDIDO | 28 | 45 |
| AD | CONSULTANTS | 5 | ATTENDING | 1 | 46 |
| AD | CONSULTATION | 3 | ATTENTION | 12 | 49 |
| AD | CONTROLLED | 1 | ATTITUDE | 27 | 5 |
| AD | COORDINATOR | 1 | ATTITUDES | 6 | 50 |
| AD | COUNSELOR | 1 | AUDILOGICAL | 11 | 51 |
| AD | COUNSELORS | 3 | AUDIT | 15 | 514 |
| AD | DATA | 1 | AUNT | 11 | 52 |
| AD | DAYS | 1 | AUSPICES | 1 | 53 |
| AD | DECIDED | 3 | AUTHORITIES | 1 | 55 |
| AD | DENTAL | 1 | AUTHORITY | 54 | 5 |
| AD | DICTAPHONE | 32 | AUTHORIZATION | 1 | 57 |
| AD | DICTATES | 4 | AUTHORIZATIONS | 1 | 59 |
| AD | DICATION | 1 | AUTHORIZE | 9 | 6 |
| AD | DIRECTION | 3 | AUTHORIZED | 4 | 6TH |
list and the words in the field alphabetized within the field descriptor. The frequency with which each unique word occurs within the total information base and within each field is shown in the left column. For example, the word "AUTHORIZATION" occurs thirty-two times in the total information base and it occurs four times in the AD field, Assignment Description. Both alphabetic and numeric terms are listed in the content word list. The numeric terms are listed after the alphabetic terms and are listed in the order from zero to the highest numeric term sorted on the leading integer. This arrangement is shown in the right most column of Table 4. The content word list for the task analysis method (TAM) contained 4,866 unique words and the total information base included approximately 47,000 terms.

The content word list is generated to assist the user in searching the information base. The user may select particular content words to be used as search terms in a specific search strategy of selected fields of information. This procedure will be illustrated later in the analysis discussion. Dictionaries and thesauri have been developed for the content analysis of particular text information bases. These dictionaries have been constructed by investigators by listing homogeneous content words, or phrases, together under common content categories which have theoretical or construct implications for content analysis studies. The words in a text being analyzed are then "tagged"

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to the categories under which they are listed in the dictionary. In some studies metrics or scale values are assigned to the categories for "scoring" the texts being analyzed. In this study, however, the categories of task information have been devised for the classification of content information to permit selective storage, search, and retrieval of the content.

**Analysis of Difficulty Ratings.** The first analysis of task information was of the difficulty ratings assigned by the respondents to the categories: people actions difficulty (PD), data actions difficulty (DD), things actions difficulty (TD), and total task difficulty (DI). As described previously; the respondents were to describe each of the actions relating to people, data, and things involved in the performance of a task. They were then to rate each of the actions on a one-to-five scale of difficulty using the self-anchoring procedure described in the survey instructions. If no actions were performed relating to a category, a "0" was entered. Then the respondents were to rate the total task on a one-to-five scale of difficulty using the same procedure. Only one of the twenty-three respondents listed each action under a category separately and assigned a separate difficulty rating to each action as prescribed in the instructions. The other respondents described the actions under each category in paragraph form.

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4Phase one of the BASIS-70 system does not include statistical programs. Therefore, the analysis of numeric terms in this study had to be executed with other programs external to the system. Later phases of the system will incorporate statistical programs.
and assigned one difficulty rating to the category. Therefore, the multiple difficulty ratings of the one respondent were collapsed and the highest difficulty rating for each category was coded. Thus, one difficulty rating for each of the four categories was coded for each task description. If a respondent did not record a difficulty rating even though actions were described for that category, the editors coded a "0" for that category. Hence, a zero difficulty rating may mean missing data as well as meaning that no actions were described for a category.

The distribution and summary statistics of difficulty ratings for Counselor Managers are presented in Table 5. It will be noted that the distributions of the difficulty ratings for all four categories in the sample of sixty-eight tasks described by Counselor Managers are positively skewed, especially the distribution for Things Difficulty. This effect is reflected in the lower mean for the TD ratings compared to the other categories. This further reflects the fact that Counselor Managers do not perform difficult things actions in the performance of tasks in their jobs. They use pens and pencils, operate a dictation machine, handle forms, and sometimes drive a car in task performance. The emphasis in the professional social service job is on people and data actions. The means for these two categories are higher and comparable and, in turn, are comparable to the total task difficulty rating. The standard deviations for the four categories are very similar.
The difficulty ratings for Counselors are reflected in Table 6. The distributions and summary statistics for the difficulty ratings of Counselors for the four categories are extremely similar to those for the Counselor Managers. Again, the mean for Things Difficulty is lowest, while the means for the other categories are higher and relatively comparable, but with a somewhat higher total task mean. The
standard deviations for PD, DD, and DI are again comparable, but the standard deviation for TD is somewhat lower. A comparison of Tables 5 and 6 reflects the similarity in emphasis of the two professional jobs.

The distributions and statistics of the difficulty ratings for Clerk Typists presented in Table 7 are very different from those for Counselor Managers and Counselors. No ratings above a difficulty level of three were recorded for any of the categories for the seventy-one tasks reported. In fact, all thirty-five of the ratings for the People Difficulty category were of difficulty level one, with a mean of 1.00 and a standard deviation of 0.00. This result reflects the fact that the Clerk Typists interacted at a very superficial level with persons in the tasks reported. Clerical personnel in social service work normally come into contact with clients only in telephone calls and in reception to the agency. Interaction with supervisors or peers is usually for purposes of routine work assignments. The restricted range of the ratings for the other categories is reflected in the low mean

<table>
<thead>
<tr>
<th>TABLE 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIFFICULTY RATINGS FOR CLERK TYPISTS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PD</th>
<th></th>
<th>DD</th>
<th></th>
<th>TD</th>
<th></th>
<th>DI</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Difficulty Level</strong></td>
<td><strong>Frequency</strong></td>
<td><strong>Difficulty Level</strong></td>
<td><strong>Frequency</strong></td>
<td><strong>Difficulty Level</strong></td>
<td><strong>Frequency</strong></td>
<td><strong>Difficulty Level</strong></td>
<td><strong>Frequency</strong></td>
</tr>
<tr>
<td>1</td>
<td>35</td>
<td>1</td>
<td>30</td>
<td>1</td>
<td>60</td>
<td>1</td>
<td>43</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>2</td>
<td>11</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td><strong>MEAN</strong></td>
<td>1.000</td>
<td>1.386</td>
<td>1.211</td>
<td>1.333</td>
<td>1.355</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S.D.</strong></td>
<td>0.000</td>
<td>0.618</td>
<td>0.532</td>
<td>0.575</td>
<td>0.575</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>35</td>
<td>44</td>
<td>71</td>
<td>62</td>
<td>62</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
values and the small standard deviations. Thus, the low difficulty ratings of Clerk Typists for the categories PD, DD, and DI appear to distinguish the make up of tasks they perform from the tasks of the professional Counselor Managers and the Counselors.

The relations among the difficulty ratings for the four categories for each of the three groups were analyzed. The correlations among the category ratings were computed using the data only from those task descriptions having a complete set of ratings for the four categories, i.e., no zero entries for any of the categories.

The correlations among the four categories of the difficulty ratings for Counselor Managers are presented in Table 8. The highest correlation is between People Difficulty (PD) and total task Difficulty (DI). The next highest is between Data Difficulty (DD) and DI, and then between PD and DD. The correlations of Things Difficulty (TD)

<table>
<thead>
<tr>
<th></th>
<th>PD</th>
<th>DD</th>
<th>TD</th>
<th>DI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>1.000</td>
<td>0.526</td>
<td>0.192</td>
<td>0.690</td>
</tr>
<tr>
<td>DD</td>
<td>0.526</td>
<td>1.000</td>
<td>0.205</td>
<td>0.559</td>
</tr>
<tr>
<td>TD</td>
<td>0.192</td>
<td>0.205</td>
<td>1.000</td>
<td>0.135</td>
</tr>
<tr>
<td>DI</td>
<td>0.690</td>
<td>0.559</td>
<td>0.135</td>
<td>1.000</td>
</tr>
</tbody>
</table>

\[ r \geq 0.380 \text{ significant at } p = 0.01 \]
with the other categories are all nonsignificant. Again, these relations reflect the emphasis on people actions and data actions in task performance in the Counselor Managers job.

Table 9 presents the correlations among the categories for the Counselor ratings of difficulty. Again, the highest correlations are among DI and PD, DD, in that order. However, Things Difficulty also correlates significantly with the other categories for Counselor ratings. This relation could be a reflection of the Counselors' concern for the formal record keeping aspects of tasks, i.e., completion of forms, dictation, etc., which may present some difficulty because of lesser experience than the Counselor Managers.

**TABLE 9**

**CORRELATIONS OF DIFFICULTY RATINGS FOR COUNSELORS**

<table>
<thead>
<tr>
<th></th>
<th>PD</th>
<th>DD</th>
<th>TD</th>
<th>DI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>1.00</td>
<td>0.548</td>
<td>0.407</td>
<td>0.738</td>
</tr>
<tr>
<td>DD</td>
<td>0.548</td>
<td>1.00</td>
<td>0.489</td>
<td>0.623</td>
</tr>
<tr>
<td>TD</td>
<td>0.407</td>
<td>0.489</td>
<td>1.00 ( r \geq 0.389 ) significant at ( p = 0.01 )</td>
<td></td>
</tr>
<tr>
<td>DI</td>
<td>0.738</td>
<td>0.623</td>
<td>0.508</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The correlations for the Clerk Typists ratings among the four categories are shown in Table 10. As can be seen in Table 10, the only significant correlation is between Data Difficulty (DD) and total task difficulty (DI). As would be expected, the correlation of PD with the
other categories is 0.00, reflecting the nonvarying level one ratings for PD cited earlier. The relation of DD to DI indicates that the data actions of the Clerk Typists account for the difficulties encountered in task performance. Further, the lack of correlation between TD and DI would tend to indicate that the things actions such as typing, transcribing, etc., involved in task performance are routinized to the point that they do not enter into task difficulty.

### TABLE 10

**CORRELATIONS OF DIFFICULTY RATINGS FOR CLERK TYPISTS**

<table>
<thead>
<tr>
<th></th>
<th>PD</th>
<th>DD</th>
<th>TD</th>
<th>DI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>1.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>DD</td>
<td>0.000</td>
<td>1.000</td>
<td>0.289</td>
<td>0.828</td>
</tr>
<tr>
<td>TD</td>
<td>0.000</td>
<td>0.289</td>
<td>1.000</td>
<td>0.239</td>
</tr>
<tr>
<td>DI</td>
<td>0.000</td>
<td>0.828</td>
<td>0.239</td>
<td>1.000</td>
</tr>
</tbody>
</table>

\[ r \geq 0.537 \text{ significant at } p = 0.01 \]

The correlations among the difficulty ratings for the four categories also differentiate the tasks reported by the professionals from those reported by the clerical personnel. Whether the tasks reported by Counselors could be differentiated from those reported by Counselor Managers on the basis of the relation between TD and DI would require further study.
To study further the differences among the difficulty ratings for the positions of Counselor Manager, Counselor, and Clerk Typist, an analysis of variance was done for each of the four categories, PD, DD, TD, and DI, across the positions. It is recognized that the use of analysis of variance here is exceedingly questionable because of the nature of the measures taken, the skewness of the distributions, and the differences in variation across the positions. However, analysis of variance was used for lack of a nonparametric method suitable for the desired design and, further, was used only as a means for portraying the study data, i.e., not for generalizing to other populations.

The design employed for the analysis was a two-factor with one factor nested design\(^5\) with unequal measures per cell. The two factors analyzed were Positions - Counselor Managers, Counselors, and Clerk Typists, and Workers nested within Positions. The second factor was analyzed to study the differences in difficulty ratings among differences in the tasks reported or by the systematic harshness or leniency in rating by the individual workers. As stated previously, a separate analysis was done for each of the four categories.

The results of the analysis of variance of the difficulty ratings for the category People Difficulty (PD) are shown in Table 11. As can be seen, both factors are significant. The significant differences

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among positions for this category were to be expected and were reflected in the means and standard deviations in Tables 5, 6, and 7. The mean and standard deviation for Clerk Typists were 1.000 and 0.000, while the means and standard deviations for the Counselor Managers and Counselors were 2.175 and 1.136, 2.370 and 1.336, respectively. The significant differences among workers within positions is accounted for by differences in tasks reported and, perhaps by systematic rater bias.

**TABLE 11**

**VARIANCE ANALYSIS FOR PD**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sums of Squares</th>
<th>d.f.</th>
<th>Mean Squares</th>
<th>F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Positions</td>
<td>43.990</td>
<td>2</td>
<td>21.995</td>
<td>6.41a</td>
</tr>
<tr>
<td>Between Workers Within Positions</td>
<td>68.652</td>
<td>20</td>
<td>3.433</td>
<td>4.30a</td>
</tr>
<tr>
<td>Between Ratings Within Workers</td>
<td>98.186</td>
<td>123</td>
<td>0.798</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>210.828</td>
<td>145</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a*Significant at p = 0.01.

Table 12 presents the results of the analysis of variance for the Data Difficulty ratings. Here, the differences among positions were not quite large enough to be significant. The means and standard deviations for Clerk Typists were 1.386 and 0.618, for Counselor Managers were 2.212 and 1.271, and for Counselors were 2.152 and 1.215. Again, the factor, among workers within positions was significant.
The results of the analysis of variance of difficulty ratings for the category Things Difficulty are shown in Table 13. Again, the differences in ratings among positions were not significant. In fact,
the F-ratio indicates essentially no obtained differences. The means and standard deviations for Clerk Typists, Counselor Managers, and Counselors were 1.211 and 0.532, 1.464 and 1.044, 1.470 and 0.924, respectively. The differences among workers within positions was again significant.

The results of the final analysis of variance for the category total task difficulty (DI) are presented in Table 14. In this analysis, the differences among positions are significant, but at a lower level of significance than for the category People Difficulty. The means and standard deviations for Clerk Typists were 1.355 and 0.575, for Counselor Managers were 2.309 and 1.136, and for Counselors were 2.623 and 1.331. The factor, workers within positions, was significant again.

**TABLE 14**

VARIANCE ANALYSIS FOR DI

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sums of Squares</th>
<th>d.f.</th>
<th>Mean Squares</th>
<th>F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Positions</td>
<td>54.073</td>
<td>2</td>
<td>27.036</td>
<td>5.00a</td>
</tr>
<tr>
<td>Between Workers Within Positions</td>
<td>108.168</td>
<td>20</td>
<td>5.408</td>
<td>8.66a</td>
</tr>
<tr>
<td>Between Ratings Within Workers</td>
<td>104.868</td>
<td>168</td>
<td>0.624</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>267.109</td>
<td>190</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

^aSignificant at p = 0.05.
^bSignificant at p = 0.01.
The analysis of variance results indicate that the tasks reported by professionals can be differentiated from those reported by clerical personnel, in this study, on the basis of the difficulty ratings assigned to people actions and to the total task. This result is consistent with the obtained correlations between these same categories for each of the three positions.

Analysis of Task Duration. In the discussion of survey procedures, it was pointed out that the respondents were instructed to record the time required to perform the tasks being reported. The respondents were further instructed that if the same or a similar task had been performed in the past, they were to estimate the shortest and longest times required to perform the task that they could recall. The task durations were recorded in hours and minutes. In those cases where the respondents failed to record a time, zeros were recorded by the editors. These zero entries were eliminated before the tables that follow were produced.

The task durations recorded by Counselor Managers are summarized in Table 15. For the tasks recorded in the task descriptions, the maximum task duration reported was six hours and thirty minutes, the minimum task duration was five minutes, and the median of the task durations was forty minutes. The shortest times recalled range from three hours and fifteen minutes to one minute, with a median of twenty minutes. The longest times recalled range from six hours and thirty minutes (also the maximum for reported tasks) to ten minutes, with a median of one hour and thirty minutes. The magnitude of these times
reflect that the units of work defined as tasks by Counselor Managers are relatively large in terms of duration. The distributions of durations are positively skewed as would be expected.

**TABLE 15**

**TASK DURATIONS FOR COUNSELOR MANAGERS**

<table>
<thead>
<tr>
<th>Task Reported</th>
<th>Shortest Time Recalled</th>
<th>Longest Time Recalled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours Minutes</td>
<td>Hours Minutes</td>
<td>Hours Minutes</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>1 14</td>
<td>0 45</td>
</tr>
<tr>
<td>Median</td>
<td>0 40</td>
<td>0 20</td>
</tr>
<tr>
<td>25th Percentile</td>
<td>0 15</td>
<td>0 10</td>
</tr>
<tr>
<td>Maximum</td>
<td>6 30</td>
<td>3 15</td>
</tr>
<tr>
<td>Minimum</td>
<td>0 05</td>
<td>0 01</td>
</tr>
<tr>
<td>N</td>
<td>65 58</td>
<td>59</td>
</tr>
</tbody>
</table>

Table 16 summarizes the distributions of task durations reported by Counselors. The range of the durations reported for the tasks recorded in the task descriptions is from four hours to two minutes and the median is twelve minutes. The maximum of the shortest times recalled is three hours, the minimum is one minute, and the median is five minutes. For the longest times recalled, the durations range from a maximum of ten hours to a minimum of two minutes, with a median of thirty minutes. With the exception of the ten-hour longest duration, the times for the Counselors are slightly less than those for the Counselor Managers.
TABLE 16

TASK DURATIONS FOR COUNSELORS

<table>
<thead>
<tr>
<th>Task Reported Hours</th>
<th>Shortest Time Recalled Hours</th>
<th>Longest Time Recalled Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>60</td>
<td>49</td>
</tr>
</tbody>
</table>

The summary of the task durations reported by the Clerk Typists is shown in Table 17. For the tasks recorded in the task descriptions, the durations range from a maximum of four hours to a minimum of two minutes, with a median of twenty minutes. The range for the shortest times recalled is from three hours and forty-five minutes to one minute and the median is three minutes. For the longest times recalled, the maximum reported is five hours, the minimum is three minutes, and the median is ten minutes. Excluding the maximum task durations, the times reported for the Clerk Typist tasks appear to be roughly half of the times reported for the Counselor Manager tasks. However, the magnitude of the durations reported by Clerk Typists still reflect relatively large units of work in terms of duration, defined as tasks. This result tends to indicate that the respondents may have aggregated units of work that would meet the requirements of the task definition, discussed earlier, and reported the larger unit as a task.
# TABLE 17

**TASK DURATIONS FOR CLERK TYPISTS**

<table>
<thead>
<tr>
<th></th>
<th>Task Reported</th>
<th>Shortest Time Recalled</th>
<th>Longest Time Recalled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours Minutes</td>
<td>Hours Minutes</td>
<td>Hours Minutes</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>0 38</td>
<td>0 15</td>
<td>0 45</td>
</tr>
<tr>
<td>Median</td>
<td>0 20</td>
<td>0 10</td>
<td>0 25</td>
</tr>
<tr>
<td>25th Percentile</td>
<td>0 05</td>
<td>0 03</td>
<td>0 10</td>
</tr>
<tr>
<td>Maximum</td>
<td>4 00</td>
<td>3 45</td>
<td>5 00</td>
</tr>
<tr>
<td>Minimum</td>
<td>0 02</td>
<td>0 01</td>
<td>0 03</td>
</tr>
<tr>
<td>N</td>
<td>62</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

**Content Analysis of the Task Information.** The content analysis procedure for which the task information base was designed is distinctly different from the computerized content analysis procedure traditionally used in content analysis studies. In these studies, "The content analysis procedure involves the interaction of two processes: the specification of the content characteristics to be measured and the application of rules for identifying and recording the characteristics when they occur in the data".\(^6\) The content characteristics referred to above are equivalent to the categories of task information, e.g., Assignment Description (AD), under which the appropriate information was recorded, coded, and stored in this study. Thus, in this study, the content of the text was identified and recorded before it was put

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into the system for analysis. Whereas, the traditional procedure identifies and records the categories of the text content as part of the analysis after the text is in the system. After the content of the text has been categorized by the traditional procedure, then the patterns of category occurrence are analyzed by means of frequency counts, application of metrics to the categories, generation of category profiles, etc. These measures are then used to test hypotheses or to construct theory.

In contrast, the computerized content analysis procedure to be used for analyzing the task information is empirical in orientation, and is designed to search out, retrieve, and display the exact content words (numeric as well as alphabetic) stored within each task description or within each category of task information. The rationale for this procedure, discussed earlier, is that it provides for the selective search and retrieval of categorized task information that can be used for personnel selection and placement studies, job classification and evaluation, specification of training requirements, and other manpower research studies. The computerized analysis procedure facilitates and considerably speeds up the selective searching and retrieving of information that has been done manually in the past.

Several example searches are presented in the tables that follow to illustrate the content analysis procedure. The steps involved in executing a search, discussed briefly in a preceding chapter, will now be described. A search is conducted by the user by means of a teletypewriter. The user gains access to the system by "logging in", i.e.,
he types the word LOGIN followed by a period and presses the carriage-
return key. The system then requests a valid user name and valid pass-
word. The user types in these entries and, again, presses the carriage-
return key. The carriage-return key must be pressed after every
complete entry because it is the signal that activates the system to
perform. The system then types the word COMMAND and the user responds
by entering the word BASIS followed by a period. The user then types
his last name and the acronym for the information base to be searched, 
here TAM. This completes the logging in. The system is now ready to
accept search requests.

The system directs the user to enter a search request, one term
at a time. The user may then type in one of the words from the content
word list. The system responds by indicating how many items, here com-
plete task descriptions, in the information base contain the word enter-
ed. Or, the user may enter a two-letter field descriptor, shown pre-
viously in Table 2, followed by a space and a content word. The system
then indicates how many of the specific field entered contain the con-
tent word. After the user has entered several search terms and the
system has indicated how many items or fields contain the search terms,
the user may then construct logical combinations of the search terms by
typing in logical statements containing the entry numbers of the search
terms of interest and the words AND, OR and NOT. These statements are
enclosed in parentheses. The system then indicates the number of items or fields that contain the logical combinations of the search terms. If the user wishes to study these items or fields, he types in the command DISPLAY with the entry number of the logical statement. The command is also enclosed in parentheses. The system responds by asking the user what elements of the items he wishes to see. The user types in the desired element numbers, shown previously in Table 2, separated by commas. The system prints out the specified elements, here categories of task information, for each entry, here complete task description, containing the logical combination of search terms. The user may take this printout for further study or analysis. At this point, the user may exit from the system by typing the command QUIT enclosed in parentheses, or he may continue searching, as described above, using other search terms or combinations of search terms. If the user exits, he types in the word LOGOUT followed by a period and presses the carriage-return key. This completes a search cycle. These steps, and a few others not described above, are illustrated in the following examples.

The first search example shown in Table 18 illustrates a search of the MT field (Methods, Techniques, and Procedures) using the search term COUNSELING, taken from the content word list. The system indicates that twenty-eight items, task descriptions, contain the search term. The second term entered for the MT field is the second spelling of COUNSELLING. The system indicates no such term and asks if nearby terms are wanted. The word YES is typed in and the nearby terms are
TABLE 18

FIRST SEARCH EXAMPLE

Enter your search request (one term at a time)

1/MT COUNSELING
26 ITEMS.

2/MT COUNSELLING
NO SUCH TERM. WANT ADJACENT TERMS? YES: NO/YES

ITEMS-NEARBY TERMS TO YOUR TERM
1 MT COUNSELED
26 MT COUNSELING

***YOUR TERM
13 MT COUNSELOR
2 MT COUNSELORS

2/MT COUNSELOR
13 ITEMS.

3/MT DIRECTIVE
3 ITEMS.

4/MT NON-DIRECTIVE
NO SUCH TERM. WANT ADJACENT TERMS? YES: NO/YES

ITEMS-NEARBY TERMS TO YOUR TERM
1 MT NEUTRAL
1 MT NON

***YOUR TERM
35 MT NONE
1 MT NUMBER
4/MT NON
1 ITEMS.

5/(1 AND 3 OR 4)
2 ITEMS.

Enter your search request (one term at a time)

6/(DISPLAY 5)
WHAT ELEMENTS DO YOU WANT TO SEE?
ENTER ELEMENT NUMBERS SEPARATED BY COMMAS OR ALL

/4, 7

Tasks from the TAM data base are .......

Task 1
1812CP NEED FOR SUPPORTIVE COUNSELING AND REASSURANCE.

1812PA COOPERATIVE RELATIONSHIP, DEMONSTRATING AN UNDERSTANDING OF CLIENTS NEEDS.

Task 2
2331CP CLIENT CLAIMS NEED FOR TRAINING IN FIELD THAT WILL PROVIDE STEADY LIVING.

2331PA REVIEW PREVIOUS CASE SERVICE WITH CLIENT.

*/FIRM STATEMENT THAT SERVICES AVAILABLE
IF CLIENT WANTS THEM*
displayed with the number of items containing each term. The MT field is entered again with the search term COUNSELOR, from the nearby term list. Then the MT field is entered with the term DIRECTIVE in order that it may be combined with COUNSELING to yield DIRECTIVE COUNSELING in the MT field. The term NON-DIRECTIVE is entered in the MT field with the above rationale in mind. The system responds no such term and the nearby terms are requested. The term NON is entered in the MT field. One task description contains the term NON in the MT field. Then entry number one, MT COUNSELING, is combined with entry number three, MT DIRECTIVE, or entry number four, MT NON. The system indicates that two task descriptions contain this combination of terms in the MT field. The system is commanded to display the selected combination. The elements desired are four, Client-Problem (CP), and seven, People Actions (PA). The system then prints out the descriptions of these fields contained in the task information base. This is the information recorded in these fields by the worker respondents. Note that the four-digit task number is also printed out to the left of the two-letter field descriptor, e.g., 1812CP. If the user becomes interested in more than just these two fields, after reading the descriptions, he may have the complete task description printed out by entering the command DISPLAY with the task number enclosed in an inner set of parentheses, e.g., (DISPLAY (1812)). Only an item, here a complete task description, can be displayed in this manner.
The second search example, shown in Table 19, reflects a search using a numeric search term of the total task difficulty rating (DI). The term entered is a difficulty rating of five, most difficult, for the total task. The system indicates that seven task descriptions contain a rating of five. The terms COUNSELOR and MGR are entered in the PO field, Position, in order to combine these terms with the task difficulty rating of five. The term MGR in the PO field is first combined with the term five in the DI field. One task description contains this combination of terms. The DISPLAY command is given and eleven elements (fields) are requested. The eleven elements are printed out for task number 2441. The fields are Precipitating Event, Client Description, Client-Problem, Fields of Knowledge, People Actions, Data Actions, Things Actions, Methods, Techniques, and Procedures, Special Skills, End Products, and Final Outcomes. This example illustrates two benefits of the procedure, first, it reflects how a large amount of detailed task information can be selectively retrieved for study and, second, it demonstrates how indices such as task difficulty ratings can be used to search out the content of the task information underlying the rating.

In the third example search, shown in Table 20, the procedure for generating a list for a specific field is illustrated. The strategy for this search is to generate a list of End Products (EP) reported by Counselor Managers (PO MGR) who hold a Masters degree (ED MASTERS or MASTER). An examination of the content word list revealed that the EP field contained the term CLIENT in 58 items and that both MASTERS and
TABLE 19
SECOND SEARCH EXAMPLE

ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)
1/ DI 5
   7 ITEMS.
2/ PO COUNSELOR
   129 ITEMS.
3/ PO MGR
   85 ITEMS.
4/(1 AND 3)
   1 ITEM.
ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)
5/(DISPLAY 4)
WHAT ELEMENTS DO YOU WANT TO SEE?
ENTER ELEMENT NUMBERS SEPARATED BY COMMAS OR ALL
/2, 3, 4, 5, 7, 9, 11, 13, 15, 16, 17

TASKS FROM THE TAM DATA BASE ARE

TASK 1
2441PE CLIENTS FATHER-IN-LAW IS CABINET MAKER-P LUMBER-PAINTER AND HANDY MAN CALLED COUN SELOR THAT HIS PAROLEE SON-IN-LAW WAS IN TERESTED OJT SITUATION WITH HIM SUGGESTED COUNSELOR COME OUT AND TALK THINGS OVER.
2441CD 24 MARRIED, NEGRO, MALE, PAROLEE, AVERAGE INTELLIGENCE, GOOD MANUAL DEXTERITY, READY FOR SOME VOCATIONAL PLAN.
2441CP NEED TO BE SET UP IN TRAINING PROGRAM-PREFERABLY OJT PLAN SO CAN LEARN FROM AND WORK WITH FATHER-IN-LAW.
2441FK KNOWLEDGE OF HOW TO SET UP FAIR AND EQUABLE OJT; KNOWLEDGE OF TRAINING AGENCIES IN FIELD OF CLIENT INTEREST.
2441PA MET WITH CLIENT AND FATHER-IN-LAW IN WORK SETTING TO DISCUSS APPROPRIATE OJT FOR CLIENT, CONFERRED WITH CLIENTS PAROLE OFFICER TO ADVISE WHAT WE ARE THINKING ABOUT AND TO GET HIS FEELING IN MATTER. TO LD CLIENT AND IN-LAW ANY OJT OF 6 MONTHS OR LONGER WOULD REQUIRE REVIEW, SHOWED CLIENT AND FATHER-IN-LAW SOME OJTS USED BY BVR WITH TIME AND FINANCIAL LIMITATIONS.
2441DA REVIEWED APPROPRIATE TEST RESULTS OF CLIENT IN FILE FOLDER, DREW UP A SAMPLE OJT FOR CLIENT AND FATHER-IN-LAW TO DISCUSS TO SEE IF THEY FELT IT TO BE FAIR.
2441TA DROVE CAR TO SHOP OF CLIENTS FATHER-IN-LAW, PEN USED IN DRAFTING SAMPLE OJTS.
2441MT OJTS ARE HARDEST PART OF HIS TASKS, SEEING CLIENT AND FATHER-IN-LAW IN JOB SETTLE IS GOOD TECHNIQUE.
2441SS KNOWLEDGE OF SUPERVISORS REACTION TO OJT PLANS, GOOD COUNSELING TECHNIQUES.
2441EP SAMPLE OJT WRITTEN FOR CONSIDERATION BY CLIENT-FATHER-IN-LAW AND BVR SUPERVISOR.
2441PS TO GET CLIENT IN TRAINING EITHER ON OJT OR WITH ANOTHER TRAINING AGENCY.
TABLE 20
THIRD SEARCH EXAMPLE

ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)
1/PM MGR
68 ITEMS.
2/ED MASTERS
56 ITEMS.
3/ED MASTER
10 ITEMS.
4/(1 AND 2 OR 3)
46 ITEMS.
ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)
5/EP CLIENT
58 ITEMS.
6/(4 AND 5)
18 ITEMS.
ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)
7/(DISPLAY 6)
WHAT ELEMENTS DO YOU WANT TO SEE?
ENTER ELEMENT NUMBERS SEPARATED BY COMMAS OR ALL
/16
THIS PRINTOUT COULD BE LENGTHY.
HOW MANY DO YOU WANT TO SEE FIRST?
/10

TASKS FROM THE TAM DATA BASE ARE

TASK 1
411EP DECISION THAT CLIENT CAN RETURN TO WORK.

TASK 2
421EP CLIENT NOT READY TO RETURN TO SCHOOL, PROMISES TO KEEP IN TOUCH, SUGGEST A DENTAL EVALUATION AND HE AGREES.

TASK 3
422EP CLIENT DECIDES TO GIVE TRAINING A TRY.

TASK 4
432EP CLIENT FINISHES THE INTERVIEW.

TASK 5
1312EP KNOWLEDGE WAS IMPARTED, CLIENT FELT MORE SECURE.

TASK 6
1821EP BEHAVIOR CHANGE IN CLIENT MORE APPROPRIATE BEHAVIOR.

TASK 7
1832EP PLANS FOR PARTICULAR CLIENT CRYSTALLIZED.

TASK 8
1841EP CLIENT DECLARED DISABLED.

TASK 9
1842EP CLIENT PLAN Dictated.

TASK 10
1851EP TEAM GIVES APPROVAL FOR CLIENT PLANS.

DO YOU WANT TO SEE MORE?
YES/NO
MASTER appeared as terms in the ED field. The term CLIENT was used because it appeared most frequently in the word content list. These terms were entered and combined, and the EP fields of the items satisfying the combined terms were displayed. The feature of the system that cautions the user that the list may be lengthy and asks the user to specify the number he wants to see first is also illustrated. In the example, the number specified was ten.

Table 21 presents the final search example. This search illustrates the stem-option search feature of the system. If the user is unsure of the ending letters of words contained in the information base, e.g., are the words singular or plural ending in "s", do the verbs end in "ing" or "ed", then he may enter the stem of the word followed by an asterisk. The system prints out the words with this stem contained in the information base and the frequency with which they occur. The user may then select the complete search terms he desires from the list provided and enter these terms to proceed with the search. In the example, the stem PHON* was used as a search term in a strategy to determine the Assignment Descriptions (AD) and Precipitating Events (PE) involving a phone reported in task descriptions by Clerk Typists. These terms were then logically combined and the AD and PE fields of four task descriptions were displayed.

The four search examples were presented to illustrate the content analysis procedure and to reflect the details of some of task information contained in the information base. It is not possible within the scope of this study to demonstrate empirically the use of the procedure
and the task information to develop specifications for training requirements, or in job classification and evaluation, etc. More examples could be easily generated to supplement those provided, but no number of examples is equivalent to an empirical verification. Examples can only reflect the potential utility of a method. The examples presented were chosen to reflect this potential.

Reliability of Categories - Construct Validity. In the final analysis of data, procedure to check the clarity and specificity of the task information categories for classifying entries in a recorded task description was devised and implemented. The first step in the procedure involved the drawing of a random sample of 130 entries from thirteen categories of the 200 task descriptions obtained from the worker respondents in the pilot application. Only thirteen of the twenty-three categories of task information were sampled for entries because the remaining ten categories either contained information that was obvious to the category, e.g., information on age, sex, etc., in the Client Description category, or the information contained in the category could not be meaningfully classified when taken out of context, e.g., a difficulty rating for People Actions when only the rating is presented. The sampling was proportional in that ten entries were randomly selected for each of the thirteen categories. However, the persons who judged the entries for category placement were not informed that there were an equal number of entries for each category. Therefore, they could not use a strategy of
## TABLE 21

### FOURTH SEARCH EXAMPLE

<table>
<thead>
<tr>
<th>ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)</th>
<th>1/AD PHONE*</th>
</tr>
</thead>
<tbody>
<tr>
<td>HITS-TERMS CONTAINING THIS STEM</td>
<td></td>
</tr>
<tr>
<td>3 AD PHONE</td>
<td></td>
</tr>
</tbody>
</table>

**END OF TERMS CONTAINING THIS STEM**

<table>
<thead>
<tr>
<th>ENTER REQUEST*</th>
<th>2/PE PHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 ITEMS*</td>
<td></td>
</tr>
<tr>
<td>3/PE CLERK</td>
<td>71 ITEMS*</td>
</tr>
<tr>
<td>4/(3 AND 1)</td>
<td>1 ITEMS*</td>
</tr>
</tbody>
</table>

**ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)**

| 5/(3 AND 2) | 3 ITEMS* |

**ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)**

| 6/(4 OR 5) | 4 ITEMS* |

**ENTER YOUR SEARCH REQUEST (ONE TERM AT A TIME)**

| 7/(DISPLAY 6) | WHAT ELEMENTS DO YOU WANT TO SEE? |

**ENTER ELEMENT NUMBERS SEPARATED BY COMMAS OR ALL /1,2**

**TASKS FROM THE TAM DATA BASE ARE *****

**TASK 1**

1231AD NONE,
1231PE PHONE CALL FROM FACILITY WHERE CLIENT IS IN TRAINING,

**TASK 2**

1251AD NONE,
1251PE PHONE CALL FROM WARD PERSONNEL REFERRING NEW CLIENT,

**TASK 3**

2251AD NONE,
2251PE ANSWERING PHONE,

**TASK 4**

3512AD COUNSELOR REQUESTED INFORMATION TO BE OBTAINED BY PHONE CALL TO LOCAL UNIVERSITY

3512PE NONE,
elimination for classifying the entries. The list of entries chosen for category placement is shown in two forms in Appendix F. As can be seen, one list presents the task identification number and the two-letter descriptor for the category from which the entry was sampled. The other list, the one given to the judges, precedes each entry with a row of asterisks. The entries were presented out of context because the format of the task description, shown in Table 2, was such that if the entries preceding and following the entry to be judged were presented, the category from which the entry was sampled would have been identified. Thus, the judging in this study was more difficult than the typical tests of category reliability in which the judges classify the entries presented within context.

Five persons judged the list of entries for category placement. Each of the five persons serving as judges was familiar with task analysis. In addition to the list of entries to be judged, the judges were provided with the instructions for the judging shown in Appendix F. They were also provided with the description of a task used in this study, "A Task Description", Appendix A, the instructions for task description recording, "Task Description Recording", Appendix B, and a "Task Description Recording Form", Appendix C. These were the documents used by the worker respondents for recording task descriptions.
The judges were instructed to study the documents until they felt they understood the thirteen categories to be used to classify the sample of entries. Further, they were instructed not to consult with anyone concerning the categories or the judging. They were then instructed to read each entry, determine the category that best classifies the task information contained in the entry, and then to record the two-letter descriptor of the category selected immediately following the entry. All five judges completed the judging. However, all judges left a small number of entries blank because they could not reach a determination of the best category. Of the 650 possible judgments, 620 judgments were obtained and thirty were omitted.

The results of the check on the clarity and specificity of the categories for classifying task information entries are shown in Table 22. The results are presented in a comparison matrix in which the judged category placement of the entries is compared with the observed category placement of the entries, i.e., the categories under which the worker respondents recorded the entries. The numbers not in parentheses indicate the frequency of times entries were judged to fall in that category. The frequencies sum across the rows and the total number of judgments per row is shown in the right most column. The numbers enclosed in parentheses are percentages of the totals at the right and sum across the rows to 100 percent, within rounding error. The rows that have a total of fifty indicate that all ten of the observed entries for that category were judged by all five of the judges. Those with totals of less than fifty indicate omitted judgments. The extent
<table>
<thead>
<tr>
<th>Judged Category Placement of Entries</th>
<th>AD</th>
<th>PE</th>
<th>CP</th>
<th>FK</th>
<th>PA</th>
<th>DA</th>
<th>TA</th>
<th>MT</th>
<th>SS</th>
<th>EP</th>
<th>FO</th>
<th>CR</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD</td>
<td>23 (47)</td>
<td>7 (14)</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
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<tr>
<td>CP</td>
<td>3</td>
<td>3</td>
<td>18</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>13</td>
<td>1</td>
<td>4</td>
<td>50</td>
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<td>40</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>48 (99)</td>
</tr>
<tr>
<td>DA</td>
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<td>0</td>
<td>29</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>47 (99)</td>
</tr>
<tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>44</td>
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<td>0</td>
<td>0</td>
<td>50 (100)</td>
</tr>
<tr>
<td>MT</td>
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<td>0</td>
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<td>2</td>
<td>7</td>
<td>10</td>
<td>15</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>47 (99)</td>
</tr>
<tr>
<td>SS</td>
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<td>0</td>
<td>10</td>
<td>3</td>
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<td>5</td>
<td>6</td>
<td>18</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>49 (99)</td>
</tr>
<tr>
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<td>4</td>
<td>0</td>
<td>4</td>
<td>9</td>
<td>2</td>
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<td>20</td>
<td>4</td>
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<td>4</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>7</td>
<td>13</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CR</td>
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<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>28</td>
<td>6</td>
</tr>
<tr>
<td>IN</td>
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<td>0</td>
<td>0</td>
<td>5</td>
<td>8</td>
<td>27</td>
</tr>
</tbody>
</table>
of agreement between the observed category of entry placement and the
judged category of entry placement is reflected by the frequencies and
percentages in the diagonal cells from upper left to lower right of the
matrix.

The percentages in the diagonal cells range from a high of
eighty-eight percent for the category Things Actions (TA) to a low of
twenty-nine percent for the category Final Outcomes (FO) with a mid­
point of fifty-nine percent shared by the categories of Precipitating
Event (PE) and Impact on Client (IM). Thus, the agreement percentages
reflect much variability among the categories as to their reliability
for judging the classification of task information entries when the
entries are presented out of context.

The largest off-diagonal entries for the Assignment Description
(AD) category are distributed among the categories Precipitating Event
(PE), People Actions (PA), and Methods and Techniques (MT). The
Precipitating Event is very similar to the Assignment Description and
slight differences in wording might well cause confusion between entries
for these categories. The source of confusion between People Actions
and the assignment likely stems from the fact that a relation with a
supervisor or colleague may be described in the Assignment Description.
The basis of confusion with the Methods and Techniques category is not
readily apparent.

The major off-diagonal entries for the Precipitating Event category
are distributed among Methods and Techniques, End Products (EP), and
Assignment Description. The source of confusion with the assignment was
discussed above. An End Product may have been interpreted as the precipitator for the beginning of a task. Again, the source of confusion with Methods and Techniques is not apparent.

The Client Problem (CP) category was interpreted by the judges as that to be achieved, Final Outcome, rather than as the problem to be resolved. Somewhat the same interpretation holds for the confusion with End Products. No source is apparent for Impact on Client (IM).

High agreement was obtained with the Fields of Knowledge (FK) category. However, the wording of the entries using words such as knowledge, etc., probably facilitated the judgments of this category.

The category People Actions was confused with Final Outcomes and Data Actions (DA). The entries confused with Final Outcomes may have been interpreted as the goal to be achieved with or for the person. The Data Actions might well be confused with People Actions if an entry deals with exchanging or obtaining information from a person.

Data Actions were confused with Things Actions (TA). This confusion is likely if an entry is concerned with the manipulation of data.

Things Actions also obtained a high agreement percentage. The entries confused with Data Actions probably described the recording of data.

Methods and Techniques had one of the lowest agreement percentages. The major off-diagonal entries were distributed among the categories of Things Actions, Data Actions, and Fields of Knowledge. Here, typing as a technique, for example, was interpreted as Things Actions or Data Actions. The reference to knowledge employed in
in techniques such as counseling was likely the source of confusion with Fields of Knowledge.

The category Special Skills (SS) was confused with the categories of Fields of Knowledge, Things Actions, and Methods and Techniques. The subtle distinction between applying learned abilities and applying learned knowledge was the source of confusion with Fields of Knowledge. Again, typing or driving as Special Skills were interpreted as Things Actions, and Methods and Techniques.

The source of confusion between End Products and Data Actions was probably caused by a lack of distinction between manipulated data as an End Product and manipulating data as Data Action, e.g., the distinction between completing an application and a completed application.

The category Final Outcomes had the lowest agreement percentage. It was confused with End Products, an intermediate step in goal achievement, and with Assignment Description, the circumstances that cause a task to be initiated. Both categories could likely be confused with the goal to be achieved, Final Outcomes.

The category Criticality of End Product (CR) was confused with Impact on Client (IM). The likely source of confusion here was that the criticality of the end product to the achievement of the final outcome was expressed as a criticalness to the client for resolution of his problem.
Impact on Client was confused with Criticality of End Product, discussed above, and with Final Outcomes. The confusion here probably stemmed from an interpretation of client response to a problem resolved in terms of a problem to be resolved.

The percentage agreement over the matrix, dividing the sum of diagonal cell frequencies by the sum of the judgments in the right most column, is fifty-four percent. It is difficult to interpret this overall percentage of agreement of the individual category agreement percentages as they relate to a standard of reliability. Certainly, the six categories achieving less than fifty percent agreement are classifying below an acceptable standard for such a judgment procedure. But, what minimum standard should be accepted is difficult to determine.
Summary

In this study, a task analysis method for social welfare jobs was developed to fulfill a need by the social welfare industry for tools and techniques to obtain the job information required for manpower planning, organization, and administration. The method developed differed in several important respects from traditional job and task analysis methods. First, the method does not assume the availability of trained task analysts for implementation. It utilizes worker self-reports to obtain task information. Second, the method is designed to capture the essential features of the technology of social welfare work. Finally, the method is designed to be implemented by means of survey methods.

The essential features of the task analysis method are: (1) a task model structured and defined in a manner meaningful to social welfare workers, (2) an adapted work sampling method utilizing a random point-in-time procedure for isolating the tasks to be reported, and (3) procedures for reducing, processing, and analyzing the content of task descriptions using an available EDP information storage and retrieval system.
The task model was used as a foundation for the construction of survey instruction and data collection instruments to be used by worker respondents in the self-reporting of tasks descriptions. Schedules of random points-in-time were generated to be used by each worker to isolate the tasks to be reported. Procedures were developed for data reduction and coding into punched card form. A format was devised for the task description information reflecting each category of task information and the personal characteristics of the worker reporting the task. The format was used for storing and retrieving the information within the EDP information storage and retrieval system.

The task analysis method was tested in a pilot application conducted with the cooperation of a state social welfare agency. Eleven service teams consisting of three or four social welfare workers participated in the pilot application. These teams were visited to orient them to the purposes of the study, to obtain their cooperation, and to provide them with the survey instructions, point-in-time schedules and the data collection instruments.

Twenty-three workers returned 200 complete task descriptions. The hand written task descriptions were edited to reduce verbiage, misspellings, etc., and then coded into punched cards by keypunch operators working directly from the task recording forms. The personal data was also coded to comprise a section of each task description. The task descriptions were then read into the EDP storage and retrieval system and stored in the format developed to form the task information base to be analyzed.
Three types of analyses of data from the task descriptions were conducted. Statistical analyses were carried out using the numeric information reflecting worker ratings on a one-to-five scale of the difficulty of the people actions, data actions, things actions, and total task, and estimates of task duration for each task description.

The computerized procedure for analyzing the content of the task information was illustrated with four example searches of the task information base. Finally, a sample of 130 randomly selected task description entries reflecting thirteen categories of task information were classified into categories by five judges. The judged categories were then compared with the observed categories to check the reliability of the task information categories.

Conclusions and Recommendations

The conclusions drawn concerning the efficacy of the task analysis method, listed in order of occurrence in study conduct, are as follows:

(1) The tryout of the procedures revealed that from fifteen minutes an hour was required to record a task description. Therefore, only a small number of tasks can be practically recorded by a given worker during a survey period of a week.

(2) The random point-in-time procedure was an effective means for isolating tasks to be reported.
(3) The editing of handwritten task descriptions prior to keypunching requires a significant amount of time. However, it appears that the editing can be done effectively by clerical personnel trained to edit.

(4) Coding directly from the edited handwritten forms by keypunch operators can be done with a low error rate, in this case about two percent.

(5) The format developed for the task description was effective for storing and retrieving task information in the available EDP system.

(6) The difficulty ratings reported by workers for people actions and total task differentiated the professional and clerical tasks obtained in the pilot application.

(7) The distribution of task duration estimates reported by workers also differentiated the professional and clerical tasks reported.

(8) The magnitude of the task durations appear to indicate that workers aggregate work units meeting the criteria of the task definition and the task model into larger units which they define as a task.

(9) The computerized procedure for analyzing the content of the task information reflects a poten-
tial for speeding up the selective search and retrieval of such content information.

(10) Six of the thirteen categories for classifying task information yielded agreement percentages below acceptable standards when entries for the categories were judged out of context, indicating poor definition or understanding of these categories.

These are the major conclusions inferred directly from the study results. Several more general conclusions can be drawn, however. The task analysis method as a survey differs considerably from most surveys in terms of the considerable effort and time required of the respondents, the greater time required to edit, code, and reduce the data, and the nonstraightforward procedure, albeit computerized, for analyzing the content of the task information. Further, the efficacy of the method can only be determined if studies in manpower research find the task information obtained by the method useful. Finally, the overall results of the study would appear to warrant the use of the method, with modifications, in a larger survey involving a number of social welfare agencies employing a more diverse group of workers.

The two recommendations for further study follow from the general conclusions. They are:

(1) A small study concerned with the development of specifications for training requirements should be conducted using the computerized content
analysis procedure and the present TAM task information base.

(2) The present survey instruction documents "A Task Description" and "Task Description Recording" should be combined into one document and modified consistent with the study results, i.e., revising category explanations and examples from the TAM information base should be incorporated in the instructions. Then, the entry judging procedure should be repeated to check the effectiveness of the modifications.
APPENDIX A

A TASK DESCRIPTION
A TASK DESCRIPTION

A task description involves the recording of a concise written description of a particular task. The tasks which you are expected to describe are those which you happen to be engaged in at the points-in-time sampled. How to record a task description will be discussed later. Now, what is meant by the term "task" will be discussed.

Definition of a Task

A task is a unit of work, performed by a single person, having an identifiable beginning and end. A task can be looked at as a process in which a worker's actions produces an end product or end result. Viewing tasks in another way, a task is the smallest unit of work activity that results in an end product or end result that can be acted upon by someone else or by the same worker. For our purposes, a task is divided into four parts: (1) beginning state, (2) worker actions combined with (3) technology and (4) end state. This is shown in the figure below.
The beginning state is the start of the task. It can be viewed as the conditions of the work setting at the start of the task. In the beginning state, we are interested in what starts your action, such as an assignment (e.g., orders from a supervisor to carry out a task). Some seemingly different assignments result in similar tasks, so we must find out what exactly is different. One assignment's clearness, urgency, and instructions may differ from others, and it is these points in which we are interested.

In some cases, an assignment may not account for the initiation of a task. Instead, some occurrence or event "kicks-off" your action, which is called a precipitating event. An example is a client calling on the telephone. This may start action on your part, depending on whether or not the event warrants action.

Another important point is that, in some cases, your organization may specify when you are to act. In others, you may be able to "play it by ear". The amount of prescription defined by procedures in your organization is an important part of the beginning state. We would like to know how much discretion you have in the choice of methods, actions, specification of end-products, and goals. Perhaps the organization specifies each, or, on the other hand, it may leave the choice entirely up to you.

Also of interest is the type of client served in a task, and the nature of the client's problem. Type of client can mean just a description such as young, old, male, female, level of education, marital status, etc. Client-problem, e.g. nature of handicap, immediate rehabilitative need, etc., is the reason behind the client's need for service from
your organization. Type of client and client-problem or need in some way predetermine your methods, actions, and goals. It is for this reason that we desire this information.

Another predeterminer of a task is the field of knowledge used by the worker. A field of knowledge is a combination of many factors, such as formal education, job training, experience, interest, specialty, etc. What it means is what knowledge and at what level must you know it in order to serve a client or resolve a problem.

All of the above types of information are necessary for us to understand the situation before the actual task action begins. We can then see what makes seemingly similar tasks different.

Worker actions, the next part of a task, contains all of the mental and physical activities performed by a worker during a task. These activities, mental and physical, are further divided into activities dealing with data or information, activities dealing with things, and activities dealing with people. People activities are the actions dealing with clients, supervisors, peers, etc. These activities all pertain to interpersonal relationships; consequently, the initial information desired is a description of the activities with this person or persons. There is more to it, however, than just a description. To fully understand the action, the nature of the interpersonal relationship must be known. Whether the relationship is personal or impersonal, cooperative or competitive, cordial or hostile, are some descriptors which clarify the nature of the relationship. The objectives of this relationship, such as exchanging information, influencing attitudes, and altering attitudes, also are important.
Data activities are all the activities you perform dealing with information from any media—oral, written, etc. Important aspects of data-oriented activities are the types of data handled, the actions, usually mental, associated with manipulation of these data, and, finally, what you are trying to do with the data. An example would be "you analyze the client's oral description of a problem in order to determine the services required". The nature of the analysis involved would have to be studied to determine the actual or required data manipulations underlying your data activities.

Things activities are all the activities you perform dealing with concrete objects. The physical activities involved in everything from handling forms, using a dictation machine, to driving an automobile is included in this category.

The technology part of a task refers to all methods, techniques, procedures, tools, and equipment available and utilized for a specific task. For tools and equipment, a simple listing, along with a brief explanation of what you do with them, is all that is necessary.

Methods, techniques, and procedures, e.g., operating procedures, applications and forms, particular interview, counseling techniques, and diagnostic tests would have to be described in a way in which we would be able to know and understand not only how they are used but why. Also part of technology are the special skills required for the use of methods, techniques, procedures, tools, and equipment.

The end state is the conditions of the work setting at the completion of a task. In the end state, the end result or end product of a task is present, and a description of it is desired. In some cases,
the end product may be one of many that make up a final outcome, so it is necessary to provide information about how an end product of a task relates to the overall outcome.

Pertinent information needed is the criticality of the task end product, that is, its importance to the final outcome. Perhaps there are tolerance limits of acceptability (i.e., defining substandard end products) to describe these. In some cases, the end product must meet the requirements of certain organizational goals and objectives. Finally, we wish to know the impact of the end result on the client. That is, it may be of great importance or little importance to his well being.

It is assumed that you will now have a good idea of what a task is and what specific information we desire concerning a task. It still would be difficult to record a task description, however, using only the lengthy and unstructured descriptions of the preceding discussion. Therefore, the following minimum task description was developed to give you sufficient structure to enable you to respond more easily and more meaningfully. The recording forms you have been given specify the elements of the minimum task description. These elements are organized as follows:

In response to an assignment, or precipitating event, you deal with type of client and with client-problem or need. Your approach to the problem is determined by field of knowledge with level of knowledge and instructions or defined procedures. In completing the task, you list action verbs in the task relating to things activities, data activities, and people activities in the task by using methods, procedures, techniques, tools,
and equipment which require you to have special skills. As a result of your actions, the final outcome and organizational goals are satisfied by the end-product. The end product has impact on client and is critical to the final outcome.
APPENDIX B

TASK DESCRIPTION RECORDING
TASK DESCRIPTION RECORDING

You have been provided with ten task description recording forms and a schedule of ten points-in-time indicating the hour and minute for identifying each of the tasks to be described. You will notice that there is one point-in-time in the morning and one point-in-time in the afternoon for each of five working days.

How to Identify a Task

Ideally, an alarm clock should be set to the hour and minute indicated for identifying each of the tasks to be described. However, it is sufficient for this study to note the time on your calendar, or elsewhere, to remind yourself of each of the points-in-time. When one of the scheduled hour and minute in the workday occurs, you will be performing some action, e.g., writing, typing, talking, transcribing, reading, walking, dictating, driving, planning, etc. The action may or may not be part of a work-related activity. If it is part of a work-related activity proceed as follows. Write a description of the action under "Worker Actions" on the second page of the task description recording form. The action description should include a verb, the object of the verb, and a phrase describing purpose of action, e.g., providing information to a client about obtaining medical services, typing an authorization to obtain medical services.

Is it an action related to a people activity, a data activity, or a things activity? It could be one, two, or all three. For example,
you might be driving an automobile for purposes of transporting a client to a job interview. At the same time you may be discussing the impending interview with the client. Actually, the discussion may be a form of counseling to assist the client. Certainly if you are driving an automobile at the scheduled point-in-time you will not be able to record your action at that time. However, you should make a mental note of the action(s) being performed at that time so that you may record it (them) later. The same would be true for a situation in which you are interviewing or counseling with a client, consulting with a colleague, etc. When you do record the action description, describe the actions as detailed as possible including the people, data, and things involved.

If the action at the scheduled point-in-time is not part of a work-related activity, e.g., coffee break, casual discussion, etc., proceed as follows. Wait until you begin the first work-related action following the non-work related activity. Then record a description of the first work-related action and proceed as described below.

The action(s) being performed at the scheduled point-in-time may only be one of a number of actions performed in the task being described. Before you are through recording it will be necessary to record all of the actions for the task. However, before you record these other actions, it is best to first define the task beginning state and end state in order to separate this task from other tasks.

**Beginning State**

As you recall from "A Task Description", a task is a unit of work, performed by a single person, having an identifiable beginning and
end. It is the smallest unit of work activity that results in an end product or end result that can be acted upon by someone else or by the same worker. The key criteria for separating this task from others is (1) that it has to have an identifiable beginning (that is, you can pinpoint the time or event a previous task ended and this task began) and (2) that this task results in an end product that can be used or acted upon by someone else (that is, you could supply a colleague with the end product of this task and he/she could begin the next task without assistance). For example, if the preparation of a client for an employment interview can only be done satisfactorily by one person, the beginning of the preparation can be pinpointed, and a colleague can take the end results of the preparation task and be assigned the next task involving the client, then preparation of a client for an employment interview would meet the criteria for a task. Or, another example is the reception by a clerk of a telephone call from a client requesting an appointment with a counselor. The telephone call can be handled by only one person, the beginning can be pinpointed, and the end product, scheduled interview, can be handled by a counselor.

Using these criteria, proceed backward in time from the action recorded at the scheduled point-in-time to the time or event that defines the beginning of the present task. Perhaps this time is best defined by the ending of the previous task. First, determine if this is an assigned task. That is, did you begin this task because of a request from your supervisor, a colleague, or is it prescribed in an operations or procedures manual, directives, etc.? If you determine the task is assigned, record a
short, written description of the assignment details including instructions about actions, end product, methods, etc.

If you determine the task is not assigned, record a short, written description of the precipitating event or circumstances that prompted you to start the task, e.g., a plan requiring issuance of an authorization, a telephone call from a client, etc.

Record a short description of the client involved in this task. Include the characteristics such as sex, age, marital status, educational level, and others you believe important to the performance of this task. Then record a short description of the client-problem or immediate client need that relates to this task. Remember, describe the client-problem or need that is dealt with in this task.

Next, record in a few words the field of knowledge utilized in dealing with the client-problem in this task. For example, in a task you may have to consult with the courts and you would have to have knowledge of the appropriate legal procedures. Or, a typist may have to have a knowledge of medical terminology to complete an application. The field of knowledge in the example would be the laws and legal procedures relating to the client-problem. Then record the level of knowledge required to perform the task, i.e., does the task require theory, practical working knowledge, or just a common layman's knowledge. In the previous example, you would have to have a practical working knowledge. Perhaps more than one field of knowledge applies. Record as many as apply and the level of knowledge required for each.
Worker Actions and Technology

As stated previously, probably more than one action is required to perform a task. Thus far, you have recorded only the action(s) going on at the scheduled point-in-time. You then proceeded backward in time to identify the task beginning state. At this time record a short description of the other actions required to perform this task. Be sure to record the actions for each category: people activities, data activities, and things activities. As you record each action description list the methods, procedures, and techniques and the tools and equipment used or applied in performing the actions. Examples of methods, procedures, and techniques would include specific counseling or interviewing techniques, diagnostic tests, occupational information, typing, transcription, etc. Tools and equipment would include typewriters, dictation and transcribing machines, automobiles, tape recorders, etc. For each of these record descriptions of special skills required to use the methods, techniques, procedures, tools, and equipment.

After you have recorded all the actions involved in performing this task, draw a line under the last action recorded in each of the three columns: people activities, data activities, and things activities. Now, think of the action in each of these three categories that you find most difficult to perform across your total job. Record descriptions of these most difficult actions under the line in each of the three columns. In the three columns entitled "Difficulty" write a "5" opposite these most difficult action descriptions. The "5" indicates most difficult. Now, rate each of the action descriptions above the line in each column
on a 1 to 5 scale from least difficult "1"; some difficulty "2"; average
difficulty "3"; considerable difficulty "4"; to most difficult "5". To
do this, compare each action with the most difficult action listed below
the line. Record the ratings in the appropriate "difficulty" columns
opposite the action descriptions.

End State

Record a description of the end product of this task. As you
recall, the end product to be described is the output of the task that can
be used or acted upon by you or another worker. Describe the end product
so that this relationship is clearly reflected. For example, if you have
determined a client interview to be a task, the end product of the task
may be a written report, or a completed form, or application. A typed
authorization for tools and equipment would be an example of the end
product for a defined clerical task. Describe the end product briefly.

Describe the final outcome to which this task relates. The
final outcome may be an organizational goal or objective defined in an
organization manual or in operating procedures handbook. These would
include desired final outcomes such as placement in a training program,
completion of a client plan, job placement, etc. Record a description
of the final outcome.

How does the end product generated in this task relate to the
final outcome? Is it extremely important in achieving the final outcome,
or is the end product an optional alternative? Describe the criticality
of the end product as it relates to the achievement of the final outcome.
Describe the standards required of the end product. Do operating procedures specify the quality required in the end product? If the end product is a written document, must the document include certain information to be acceptable? Briefly describe these standards if they are specified. Do not include unspecified personal standards unless your colleagues also use the same standards.

Finally, what is the impact of the completion of this task upon the client? Is it significantly related to his/her well being? Or, can the client get along as well without it? Describe the impact upon the client of this specific task only.

**Task Difficulty**

Just as you rated the worker actions for difficulty on a 1 to 5 scale, rate the overall task for difficulty. First, think of the task in your total job that you judge to be the most difficult to perform. Assign this most difficult task a "5". Then compare the task you just described with the most difficult task and assign it a value from 1 to 5 based upon this comparison. Record the difficulty rating of the task described.

**Task Interrelations**

How does the task you described relate to other tasks you perform? Is it one task in a sequence of interrelated tasks? Or, is the task you described a "one shot" activity complete in and of itself? Is the task continuous, i.e., once you start it, you must continue until it
is completed? Or, can you perform part of the task, put it aside, then complete the other part later, i.e., discontinuous? Must you receive the end product of a task performed by another person, e.g., colleague, consultant, etc., before you can begin this task, i.e., this task is dependent upon the performance of a task by someone else? Or, do you provide yourself with all that is needed to perform the task, i.e., it is independent? Record briefly, as discussed above, a description of the relation of this task to other tasks.

**Task Duration**

In the upper right corner of the third page of the form record in hours and minutes an estimate of the time required to perform this task. Below that, record the shortest and longest times this task has taken that you can remember.
APPENDIX C

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**END STATE**

**TASK DURATION**
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**SHORTEST**
- hrs.
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**LONGEST**
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APPENDIX D

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Drawn at random from 8 a.m. to 12 a.m.
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*Drawn at random from 1 p.m. to 4:45 p.m.*
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*Drawn at random from 1 p.m. to 4:45 p.m.*
PERSONAL DATA

1. Name: ____________________________________________________________
   (Last) (First) (Middle Initial)

2. Rehabilitation Service Team Number: ________________________________

3. RST Specialty (Check One):
   General _____ Mentally Ill _____ Welfare _____
   Voc. Educ. _____ Mentally Retarded _____ Deaf _____
   Inner-City _____ Alcoholics _____ Rural _____
   SSDI _____ Corrections _____
   Other (specify) _____________________________________________________

4. RST Address: _______________________________________________________
   No. Street

5. Sex: Male _____ Female _____ 6. Age ______ (years)

7. Position (Check One):
   Counselor Mgr. _____ Counselor ______
   Counselor Aide _____ Clerk Typist ______

8. Education (Check all that apply):
   High School ______
   Business or Technical School _____ Specialty _________________________
   Bachelor's Degree _____ Major Field _________________________________
   Master's Degree _____ Major Field _________________________________
   Doctorate Degree _____ Major Field _________________________________
9. Other relevant training:
   Field or Specialty ________________________________
   Field or Specialty ________________________________
   Field or Specialty ________________________________

10. Years and months of above training: Years _____ Months ______

11. Certification: Do you hold a professional certificate:
   Yes ______ No ______
   If yes, titles of certificate: ____________________________
   ____________________________
   ____________________________

12. Years of professional social welfare and/or vocational rehabilitation experience:
   Full-time ___________________________ years
   Part-time ___________________________ years

13. What field of work do you consider to be your specialty?
    ______________________________________
    ______________________________________
    ______________________________________
    ______________________________________

14. Previous positions with the Bureau of Vocational Rehabilitation:
    ______________________________________
    ______________________________________
    ______________________________________
    ______________________________________
APPENDIX F

DOCUMENTS USED IN JUDGING TASK
ANALYSIS ENTRIES FOR CATEGORY PLACEMENT
JUDGING TASK ANALYSIS ENTRIES
FOR CATEGORY PLACEMENT

You have been given a list of 130 entries drawn at random from 200 recorded task descriptions. Each entry reflects task information from 1 of 13 categories of information contained in a complete task description. You are to read each entry carefully; then you are to indicate which 1 of the 13 categories best classifies the task information contained in the entry. To perform the judging, please proceed as described below.

First, read the paper entitled "A Task Description". This paper presents a definition of a task and an explanation of each of the components of a task. The categories of information for describing each of the task components are discussed. Study the explanations and discussions in this paper until you feel that the distinctions among the categories of task information are clear to you. Please do not consult with others because it is your perception of the categories that is desired in the judging.

Next, read the paper entitled "Task Description Recording". This paper presents the procedures to be used in recording a task description. The categories of task information are again discussed and some examples are included. As you read through the procedures, refer as needed to the three-page task description recording form to clarify the headings and position on the form of each of the categories of task information. When you are satisfied that you understand the procedures, you may then begin judging the list of entries for category placement.

The entries to be judged are descriptions that were recorded by social welfare workers in describing tasks performed on their jobs.
The entries were selected from those recorded in 13 categories on the task description recording form. The categories were as follows:

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The workers may or may not have recorded the entries under the correct categories on the recording form. However, each entry was selected from the category under which it was recorded. Your category placement will be compared with the category under which the entry was recorded.

* * *

STOP AT THIS POINT READ THE TWO PAPERS PROVIDED AND STUDY THE RECORDING FORM!

* * *

Now, read each entry. After reading an entry, select the 1 of the 13 categories cited above that best classifies the information contained in the entry. Then, record the initials of the category selected immediately after the entry. Classify all 130 entries accordingly. Refer to the papers and recording form provided as needed to refresh your memory of explanations and examples.
— • BOOAFHIFI— HNS/PHCr—**-------------------------------

CHECKING FILE AND FELT IT WAS TIME FOR REVIEW OF CLIENT SITUATION.
COUNSELOR WANTED TO REFER PERSON FOR SERVICES OF VR FOR TRAINING.
HANDLING VR-34 FORM, USING TRANSCRIBING MACHINE, USING TYPEWRITER.
SATISFYING.
KNOWLEDGE OF ADDRESSES IN CITY.
EMPLOYMENT AS KITCHEN PORTER UNSUCCESSFUL.
REFERRED TO CLIENT FILE.
KNOWLEDGE OF ROTATING FUND; KNOWLEDGE OF CLIENTS HISTORY.
COUNSELOR FROM EMPLOYMENT SERVICE CALLED TO TELL ME OF JOB OPENING AND
TO ASK THAT I TAKE CLIENT FOR INTERVIEW.
WHILE ON RESTRAINT ORDER PATIENT CAN ONLY LEAVE THE GROUNDS IN THE
CITY.
KNOWLEDGE OF VR RULES FOR FISCAL CONTROL.
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JUST Dictate description of what is being provided in the plan, fill in the plan form.

Training in an area suitable to the client's needs:

Counseling techniques:

Reviewing medical form, running record, last interview, and application:

Client ready for testing evaluation:

Legal a job with unskilled type work:

Potential employer contacted; completed running record:

Final goal is gainful employment:

Great importance to client:

Important to client stability:

Plan for client to enter short welding course:

Job training, medical counseling:

Review school materials, review previous military background:

Counseling, testing:

Regularly scheduled weekly BVR team meeting under guidance of team manager:

Writing list of services requested and information on clients handicap and potential:

BVR procedures for plan of service, authorization:

Use phone:

Schedule appointment:

Assist client to develop better work image:

Work experience, job training:

Inviting follow-up to client; supportive therapy and guidance:

Preparation:

Initial interview assigned by written referral by attending physician:

Assisted meeting, case discussions:

Phone call from client remaining about plan:

Plan for client:

Completing form:

Typing:

Written folder, made and posted label on folder, typed R-1, schedule an
running record, filled out 300, typed card, typed 300A on special type
niter, put on master list, sent 300A to Columbus, covered label with S
Touch Tape:

Typing routine procedure:

Typing evaluation form:

Typing file:

Letters, plans, running records:

Phone call from referee:

Continuation psychotherapy, securing suitable employment:

Providing information about humane, gathering information about client:

Phone call from director of community clinic asking me to give an infor-
mative speech on our bureau:

Letter from Industrial Commission asking me to investigate whether we
could recommend a prosthesis for a mutual client:

Knowledge of BVR procedure for providing diagnostic services; Rogerian
counseling skills:

Present case to my other team members for discussion which would lead
to team decision as to his eligibility for services; deciding next ste
personal cooperative relationship:

Through a cooperative informal meeting the client and his parents learn
ed about the worship and how it may serve to meet the client's needs:

Helped the client sell himself to employer; personal cooperative rela-
tionship in which I provided medical, psycho-social and training infor-
mat
ON THE CLIENT TO THE POTENTIAL EMPLOYER

PLACING THE CASE IN THE STAFFING BASKET FOR WEDNESDAY TEAM STAFF MEETING.

* STAMP HILLING FORM TYPE IN CLIENT NUMBER, CHECK IT AGAINST THE AUTHORIZING "I HAVE IT TO COUNSELOR.

* READING OLD FILES.

* CLIENT SATISFIED.

* MAKE SURE CLIENTS LETTER HAS ITS NAME AND ADDRESS.

* IMPORTANT MEASURE OF CLIENTS READINESS FOR REACHING GOALS.

* NEGOTIATING WITH CLIENT. PROCEDURE FOR OBTAINING TOOLS. ASSURANCE THAT HAS COMmitted TO CLIENT TO OBTAIN TOOLS QUICKLY.

* ESTABLISH CLIENTS FINANCIAL NEED DURING FIRST SIX MONTHS OF TRAINING.

* ACHIEVE TOTAL AMOUNT OF MONEY TO BE EXPENDED.

* CLIENT HAD 90-day service and training with ability to find employment in Feb.

* CLIENT PLEASED WITH EFFORTS OF AGENCY.

* ASSIGNMENT FROM AREA ADMINISTRATOR TO ASSEMBLE SPECIFIED DATA FOR A REPORT NEEDED BY STATE OFFICE AND CLEVELANDS INSTANT PAROLE PROGRAM.

* ASSIGNMENT FROM STATE OFFICE THROUGH AREA ADMINISTRATION TO INVESTIGATE CLAIM OF CLIENT DISCRIMINATION BECAUSE OF CONTROLLED EPILEPSY DISABILITY ON PRESENT JOB OF STOCK JOB FOR FOUR AND ONE-HALF YEARS WROTE TO RESIDENT AND GOVERNOR ASKING FOR HELP.

* COUNSELING SKILLS.

* NEED FOR TRAINING AGENCIES WHERE SHORT-TERM TRAINING CAN BE ARRANGED.

* FAMILIARITY WITH AGENCY ABLE TO SOLVE CLIENTS NEEDS, COUNSELING TECHNIQUES, KNOWLEDGE OF HOW AIDS ON WELFARE.

* CLIENT CALLED IN RESPONSE TO MAINTENANCE CHECK.

* COUNTED APPROXIMATE NUMBER OF WEEKS BEFORE CHECK SHOULD ARRIVE.

* TYPE DRAFTING RECORD, ISSUE GENERAL MEDICAL FORMS FOR COUNSELOR/ AIDE.

* TYING IN.

* INFORMATION GATHERED ON VARIOUS COST FOR COURSES AND BOOKS.

* THE ABILITY LACKING IN EDUCATION HAS NO JOB SKILL. WANTS INFORMATION ON JOBS AND TRAINING PROGRAMS.

* VOCATIONAL INFORMATION, CONSIDERED AVAILABLE IN THE INSTITUTION. KNOWLEDGE OF COUNSELING TECHNIQUES AND REQUIRED VHR FORMS.

* FIRST STEP TOWARD THE GOAL OF ACHIEVEMENT OF DISABILITY AND RETURN TO APPROPRIATE EMPLOYMENT.

* TO SIT IN COMMITTEE MEETING FOR MANAGER SINCE HE IS ON VACATION.

* THAT SOCIAL SUMMARY AND PSYCHOLOGICAL RECORDS ARE REVIEWED DECISION MADE AS TO WHICH TRAINING AREA AN INMATE IS TO GO.

* A LETTER TO ADULT PAROLE AUTHORITY DESCRIBING CLIENTS PARTICIPATION IN VHR AND TO WHOM HE WILL BE PAROLED AND WHY.

* THIRTEEN TIME OF TRANSFER, TIME OF ARRIVAL, WRITE DOCTORS VERBAL STATEMENTS.

* REPORT TO COLLEAGUE REGARDING DOCTORS FINDINGS AND RECOMMENDATIONS.

* CRITICAL TO STARTING JOB.

* ESSENTIAL.

* INTERVIEW WITH CLIENT.

* PSYCHOLOGY, SOCIOLOGY.

* ALL STAFF OF FACILITY INTERACT IN MEETING.

* IMPORTANT.

* OTHERS TYPE OF VOCATION THESE MEN CAN ENTER.

* HELPING VECINH LIVES WORK.

* COMPLETED RECORD ON CLIENT.

* ACCURATE COMPLETE RECORD ON CLIENT AT ALL TIMES.

* REPORTS ARE TO BE MADE ONCE A WEEK FOR "SUPERVISOR" AS "A MATTER OF PROCEDURE.

* NECESSARY.

* STARTING IN UNIVERSITY, NEEDS TO BE IN TRAINING.
12/11/64 A USED PHONE
12/5/64 PL CHECKING FILE AND FILL IT WAS TIME FOR REVIEW OF CLIENT SITUATION
12/5/64 CL COUNSELOR WANTED TO REFER PERSON FOR SERVICES OF BHI FOR TRAINING
12/5/64 CL CLANING VH-34 FORM, USING TRANSCRIBING MACHINE, USING TYPEWRITER
12/12/64 SATISFYING
12/31/64 K KNOWLEDGE OF ADDRESSES IN CITY
12/31/64 E EMPLOYMENT AS KITCHEN PUNCT UNSUCCESSFUL
12/31/64 CHERNCHE TO CLIENT FILE
12/31/64 COUNSELOR FROM EMPLOYMENT SERVICE CALLED TO TELL ME OF JOB OPENING AND
12/31/64 TO ASK THAT I TALEN CLIENT FOR INTERVIEW
12/31/64 WHILE ON REQUEST ORDER PATIENT CAN ONLY LEAVE THE GROUNDS IN THE COM
12/31/64 PART OF STAFF
12/31/64 K KNOWLEDGE OF HOSPITAL RULES, KNOWLEDGE OF JOBS FOR WHICH SHE IS QUALIFI
12/31/64 C KNOWLEDGE OF BHI RULES FOR FISCAL CONTROL
12/31/64 P WHEN CHEMICAL FINISHES AUTHORIZATIONS THEY ARE GIVEN TO THE MANAGER TO
12/31/64 C CHECK AND SIGN
12/31/64 THE LAST STEP IN WORKING WITH A CASE
12/31/64 T TYPING, KNOWLEDGE OF FILL
12/31/64 S TYPING SKILLS
12/31/64 I IMPORTANT TO CLIENTS VOCATIONAL ADJUSTMENT
12/31/64 S TYPING SKILLS
12/31/64 N TO HELP CLIENT IN VOCATIONAL ADJUSTMENT
12/31/64 P TO PROVIDE CLIENT WITH TRAINING IN NEW FIELD AND PERSONAL ADJUSTMENT
12/31/64 S TO HELP CLIENT ADAPT TO DEMANDS OF WORK SITUATION
12/31/64 F COMPLETE CASE RECORD
12/31/64 C COUNSELING
12/31/64 F JOB FOR CLIENT
12/31/64 A MANUING FORMS, RECORDING DATA ON FORMS
12/31/64 K KNOWLEDGE OF FEES
12/31/64 M INDIRECT EFFECT UPON CLIENT
12/31/64 N ASSIGNMENT FROM COUNSELOR TO TYPE APPOINTMENT FOR A GENERAL MEDICAL EXA
12/31/64 N INTELLIGENCE
12/31/64 H MEMORIALIZE THE CLIENT TO BECOME EMPLOYED
12/31/64 N RECEIVED INSTRUCTIONS AND CONTINUOUS CLARIFICATION FROM COUNSELOR
12/31/64 P NECESSARY
12/31/64 C UPON PARTIAL AND LOWER DENTURE
12/31/64 A TYPE REFERRAL FORM, TYPE INITIAL INTERVIEW AND APPOINTMENT LETTERS, FAS-
12/31/64 T IN CASE TOGETHER WITH NAME CARD AND STICKER; CHECK AUDIT FORM
12/31/64 P KNOWLEDGE OF FILL
12/31/64 A COMPLETED APPLICATION-REFERRAL FORM-FINANCIAL STATEMENT AND APPOINTMENT
12/31/64 P FOR MEDICAL EXAMINATION
12/31/64 C WWII PROCEDURES
12/31/64 T KNOWLEDGE OF SPACING REQUIRED FOR CONNECT TYING FOR COMPUTER
12/31/64 C CRITICAL
12/31/64 M MAIL IS READY TO GO
12/31/64 N LINE UP SO RUNNING RECORD LOOKS MEAT
12/31/64 N NECESSARY TO BECOME CLIENT OF BUREAU
12/31/64 P COUNSELING WITH CLIENT TO PROVIDE SUPPORT AND IMPART VOCATIONAL INFORMA
12/31/64 T TIME, COOPERATIVE RELATIONSHIP
12/31/64 P DEALING WITH THE HOSPITAL STAFF IN DISCUSSING CLIENTS HOSPITAL PROGRESS
12/31/64 B AND NEED FOR REHABILITATION IS A COOPERATIVE AND CONDIAL BUT BUSINESS-
12/31/64 L DISCUSSION
12/31/64 W PRINTING MEMORIALIZATION PLAN, ASSIGNMENT COMES FROM BHI MANU
12/31/64 M DICTATE DESCRIPTION OF WHAT IS BEING PROVIDED IN THE PLAN, FILL IN
152114PA THE PLAN FUMS,
152216PA TRAINING IN AN AREA SUITABLE TO THE CLIENTS NEEDS;
151125PS COUNSELING TECHNIQUES.
152111PA REVIEWING MEDICAL FORM-RUNNING RECORD LAST INTERVIEW AND APPLICATION;
152112PA CLIENT READY FOR TESTING EVALUATION;
152116PA NEEDS A JOB WITH UNSKILLED TYPE WORK;
153111PA POTENTIAL EMPLOYER CONTACTED; COMPLETED RUNNING RECORD;
152110PA FINAL GOAL IS MAINLY EMPLOYMENT;
152111PA GREAT IMPORTANCE TO CLIENT;
154121PA IMPORTANT TO CLIENT STABILITY;
15212PE PLAN FOR CLIENT TO ENTER SHORT ABDULATING COURSE;
154210PA JOB TRAINING, MEDICAL, COUNSELING;
152119PA REVIEW SCHOOL MATERIALS, REVIEW PREVIOUS MILITARY BACKGROUND;
152119PA COUNSELING TESTING;
17121OSD HERTLY SCHEDULED WEEKLY BVR TEAM MEETING UNLESS GUIDANCE OF TEAM MANA-
171221OSG OH;
172113PA WRITING LIST OF SERVICES REQUESTED AND INFORMATION ON CLIENTS HANDICAPS;
172114PA AND POTENTIAL;
173111PA TVH PROCEDURES FOR PLAN OF SERVICE AUTHORIZATION;
175215PA USE PHONE;
152121OSZ SCHEDULED APPOINTMENT;
182206PA ASIST CLIENT TO DEVELOP BETTER WORK IMAGE;
182206PA NON EXPERIENCE, JOB TRAINING;
192201OSZ PROVIDING FOLLOW-UP TO CLIENT, SUPPORTIVE THERAPY AND GUIDANCE;
18221OSZ ESSENTIAL;
153111OSZ INITIAL INTERVIEW ASSIGNED BY WRITTEN REFERRAL BY ATTENDING PHYSICIAN;
152214PA SCHEDULED MEETING = CASE DISCUSSIONS;
182201OSZ PHONE CALL FROM CLIENT REMINING ABOUT PLAN;
192116OSZ PLAN FOR CLIENT;
191110OSZ COMPLETING FORM;
191110OSZ TYPING;
151210OSZ PUNCHES FOLDER, MADE AND POSTED LABEL ON FOLDER, TYPED R-1-SCHEDULE AND
191221OSZ RUNNING MED. LUMPS, FILLED OUT 30b, TYPED CARD, TYPED 300a ON SPECIAL TYPEW-
191211OSZ RICH, PUT ON MASTER LIST, SENT 300a TO COLUMBUS, COVERED LABEL WITH SC
192115OSZ TOCH TAPE;
191210OSZ TYPING ROUTINE PROCEDURE;
192115OSZ TYPING EVALUATION FORM;
196211OSZ PAPERS FILED;
195216PS LETTERS, PLANS, RUNNING RECORDS;
20112PS PHONE CALL FROM REFEREE;
201126OSZ CONTINUATION PSYCHOTHERAPY, SECURING SUITABLE EMPLOYMENT;
20112OSZ PROVIDING INFORMATION ABOUT BUREAU, GATHERING INFORMATION ABOUT CLIENT;
20122PS PHONE CALL FROM DIRECTOR OF COMMUNITY CLINIC ASKING ME TO GIVE AN INFORM-
201226PS MAINTAIN SCHEDULE ON OWN BUREAU;
202110PS LETTER FROM INDUSTRIAL COMMISSION ASKING ME TO INVESTIGATE WHETHER WE C;
202110PS YOU RECOMMEND A PROSTHESIS FOR A MUTUAL CLIENT;
202211OSZ NON-EXPERT BVR PROCEDURE FOR PROVIDING DIAGNOSTIC SERVICES, ROGERIAN C;
202211OSZ CONSULTING SKILLS;
202211OSZ PRESENT CASE TO MY OTHER TEAM MEMBERS FOR DISCUSSION WHICH WOULD LEAD TO
203121PS GIVES DECISION AS TO HIS ELIGIBILITY FOR SERVICES, DECIDING NEXT STEP.
203121PA PERSONAL COOPERATIVE RELATIONSHIP;
204121PA THROUGH A COOPERATIVE INFORMAL MEETING THE CLIENT AND HIS PARENTS LEARN
204111PA ABOUT THE HOSPITAL AND HOW IT MAY SERVE TO THE CLIENTS NEEDS;
204211PA HELPED THE CLIENT SELL HIMSELF TO EMPLOYER, PERSONAL COOPERATIVE RELATI
204211PA UNIPLACE WHICH I PROVIDED MEDICAL PSYCHOSOCIAL AND TRAINING INFORMATION
20511/TA PLACING THE CASE IN THE STAFFING BASKET FOR WEDNESDAYS TEAM STAFF MEET-

20511/TA NO:
2211121A Stump KILLING FORMS TYPE IN CLIENT NUMBER, CHECK IT AGAINST THE AUTHO-
2211132A FAITH, GIVE IT TO COUNSELOR;
2211141A DELETING OLD LEO FILES;
2211151A CLIENT SATISFIED;
2211211A MAKE SOME CLIENTS LETTER HAS ITS NAME AND ADDRESS;
2211221A IMPORTANT MEASURING OF CLIENTS' READINESS FOR REACHING GOALS;
2211231A DESCRIBING TO CLIENT PROCEDURE FOR OBTAINING TOOLS; ASSURANCE THAT HAST;
2211241A WILL BE USED IN VIEW OF CLIENTS FINANCIAL NEED;
2211251A ESSENTIAL FOR CLIENT TO OBTAIN TOOLS QUICKLY;
2211261A ESSENTIAL CLIENTS FINANCIAL NEED DURING FIRST SIX MONTHS OF TRAINING;
2211271A CALCULATE TOTAL AMOUNT OF MONEY TO BE EXPENDED;
2211281A CLIENT HAD SVHC SERVICE AND TRAINING WAS UNABLE TO FIND EMPLOYMENT IN FI
2211291A ELD;
2211301A CLIENT PLEASED WITH EFFORT OF AGENCY;
2211311A ASSIGNMENT FROM AREA ADMINISTRATOR TO ASSEMBLE SPECIFIED DATA FOR A RE-
2211321A ORT NEEDED BY STATE OFFICE ON CLEVELANDS INSTANT PAROLE PROGRAM;
2211331A ASSIGNMENT FROM STATE OFFICE THROUGH AREA ADMINISTRATION TO INVESTIGA-
2211341A UNT OF CLIENT OF DISCRIMINATION BECAUSE OF 'CONTROLLED'-EPILEPSY DISAB-
2211351A LITY-UN PRESENT JOB OF STOCKBOY FOR FOUR AND ONE-HALF YEARS WRITE TO P
2211361A RESIDENT AND GOVERNOR ASKING FOR HELP*;
2211371A COUNSELORS KNOWLEDGE OF TRAINING AGENCIES WHERE SHORT-TERM TRADE TRAINING CAN BE O
2211381A STAINED;
2211391A FAMILIARITY WITH AGENCY ABLE TO SOLVE CLIENTS NEEDS; COUNSELING TECHNIQ-
2211401A USES; KNOWLEDGE OF HOW GETS ON SELFARE,
2211411A CLIENT CALLED IN RESPONSE TO MAINTENANCE CHECK;
2211421A COUNTED APPROXIMATE NUMBER OF WEEKS BEFORE CHECK SHOULD ARRIVE;
2211431A TYPE-HURDING RECORD ISSUE GENERAL MEDICAL FORMS FOR COUNSELORS AIDE;
2211441A STAYING;
2211451A INFORMATION GATHERED ON VARIOUS COST FOR COURSES AND HOOKS;
2211461A UNO ON JOBS AND TRAINING PROGRAMS;
2211471A VOCATIONAL INFORMATION HAVING AVAILABLE IN THE INSTITUTION, KNOWLEDGE;
2211481A KNOWLEDGE OF COUNSELING TECHNIQUES AND REQUIRED BV FORMS;
2211491A FIRST STEP TOWARD THE GOAL OF ABBREVIATION OF DISABILITY AND RETURN TO H
2211501A USEFUL EMPLOYMENT;
2211511A HEED TO ALL IN UN COMMITTEE MEETING FOR MANAGER SINCE HE IS ON VACATION;
2211521A INMATE SOCIAL SUMMARIES AND PSYCHOLOGICAL RECORDS ARE REVIEWED, DECISION;
2211531A NUMBER MADE AS TO WHICH TRAINING AREA AN INMATE IS TO GO;
2211541A A CRITIC TO 'ADULT PAROLE AUTHORITY DESCRIBING CLIENTS PARTICIPATION WITH
2211551A HAD TO KNOW ME WILL BE PAROLED AND WHY;
2211561A NOTIFY TIME OF DEPARTMENT RECORD TIME OF ARRIVAL WHITE DOCTORS VERBAL ST
2211571A AT ENLIST;
2211581A REPORT TO COLLEAGUE REGARDING DOCTORS FINDINGS AND RECOMMENDATIONS;
2211591A CRITICAL TO STANTIING JOB;
2211601A ESSENTIAL;
2211611A Interview with CLIENT,
2211621A PSYCHOLOGY, SOCIOLOGY;
2211631A ALL STAFF OF FACILITY INTERACT IN MEETING;
2211641A IMPONANT;
2211651A DETERMINES TYPE OF VOCATION THESE MEN CAN ENTER;
2211661A HELPING DECIDE LIVESreira;
2211671A COMPLETED RECORD ON CLIENT;
2211681A ACCOMPLISH COMPLETE RECORD ON CLIENT AT ALL TIMES;

3511211F HUSTLE HUMORS ARE TO BE MADE ONCE A WEEK FOR SUPERVISOR AS A MATTER OF;
3511221F PHOENIX;
3511231F NECESSARY;
3512201F STARTING IN UNIVERSITY NEEDS TO BE IN TRAINING,
BIBLIOGRAPHY


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