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An Empirical Analysis of Herzberg's Motivator-Hygiene Theory

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I am submitting herewith a thesis written by Bob Vernon Harris entitled "An Empirical Analysis of Herzberg's Motivator-Hygiene Theory." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Industrial and Organizational Psychology.

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407

March 3, 1972

To the Graduate Council:

I am submitting herewith a thesis written by Bob Vernon Harris entitled "Work Motivation: An Empirical Analysis of Herzberg's Motivator-Hygiene Theory." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Industrial Management.

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WORK MOTIVATION: AN EMPIRICAL ANALYSIS OF HERZBERG'S
MOTIVATOR-HYGIENE THEORY

A Thesis
Presented to
the Graduate Council of
The University of Tennessee

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Bob Vernon Harris

March 1972

ABSTRACT

The purpose of this study was to investigate a relatively new and highly controversial theory of work motivation promulgated by Dr. Frederick Herzberg. This theory, called the Motivator-Hygiene or Two-Factor Theory, was based on information obtained using an open-ended, semistructured interview technique. An extensive review of the literature indicated that all supportive studies were based on a similar technique; most studies using other techniques were nonsupporting.

Using experience and information obtained in a pilot study, a 135-item performance specimen checklist was developed, validated, and administered to more than 100 students at a Tennessee vocational-technical training school. The test instrument was found to provide data similar to Herzberg's significant events data while avoiding the limitations and sources of criticism mentioned in the literature.

Using the data obtained from this study and from the pilot study, eight hypotheses based on predictions of the Motivator-Hygiene Theory were tested. In every case, both sets of data failed to support the Motivator-Hygiene Theory. In many cases, the responses were actually opposite to those predicted by Herzberg's theory.

In addition, five possible versions of this theory, explicated and expounded by Nathan King, were tested. None of the five versions were supported by either set of data.

The results of this study indicate that certain job factors (motivators) appear to have greater potential for providing job

satisfaction than do others (hygiènes). This agrees with results of earlier empirical studies reported in the literature.



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CHAPTER I

INTRODUCTION

The publication of The Motivation to Work¹ by Herzberg, Mausner, and Synderman precipitated one of the most widely discussed and hotly debated issues in the field of industrial management and psychology during the past decade. Several dozen reviews and critiques of what has come to be known as the Two-Factor or Motivator-Hygiene Theory of work motivation have already appeared in the literature. Herzberg, the senior author, has fired several additional salvos^{2,3,4} supporting and amplifying the original findings. Furthermore, the theory has been applied to the fields of mental health and psychotherapy by Herzberg and Hamlin.^{5,6} So the controversy intensifies with both pro and con statements from many quarters.

¹Frederick Herzberg, Bernard Mausner and Barbara Bloch Snyderman, The Motivation to Work (New York: John Wiley and Sons, Inc., 1959).

²Frederick Herzberg, "New Approaches in Management Organization and Job Design--I," Industrial Medicine and Surgery, 31:477-481, 1962.

³Frederick Herzberg, "The Motivation-Hygiene Concept and Problems of Manpower," Personnel Administration, 27:3-7, 1964.

⁴Frederick Herzberg, Work and the Nature of Man (Cleveland: World Publishing Co., 1966).

⁵Frederick Herzberg and R. M. Hamlin, "Motivation-Hygiene Concept and Mental Health," Mental Hygiene, 45:394-401, 1961.

⁶Frederick Herzberg and R. M. Hamlin, "The Motivation-Hygiene Concept and Psychotherapy," Mental Hygiene, 47:384-397, 1963.

I. THE PROBLEM

Statement of the Problem

Many of the criticisms of Herzberg's Motivator-Hygiene Theory of work motivation may be distilled down to a common basic residue: the findings are a function of the method used to obtain them. In other words, many have concluded that Herzberg's theory is methodology bound and is therefore invalid. The objective of this study was to evaluate Herzberg's theory by using a different methodology designed to eliminate many of the main points of conflict which have been raised. For example, it was possible to use a slightly modified data-gathering technique which negated some of the criticisms of Herzberg's results while still providing the data necessary to study work motivation. Herzberg's original publication concerning the Two-Factor Theory was also cited for failure to report on the reliability of his data-gathering instrument. A reliability study was included as an integral part of the overall objective of this study.

Importance of the Study

As pointed out by Friedlander,⁷ most instruments developed to measure job attitudes are premised on the inherent assumption that job satisfaction and job dissatisfaction are opposites and can be visualized as existing on a single bipolar continuum. In other words, the more

⁷Frank Friedlander, "Job Characteristics as Satisfiers and Dissatisfiers," Journal of Applied Psychology, 48:388-392, 1964.

satisfied a worker is, the less dissatisfied he is; if we measure his satisfaction with some particular aspect or factor of his job, we have concurrently measured his dissatisfaction with that aspect or factor of his job. Friedlander found that nearly all measuring instruments and the resultant attitude theories are based on this assumption of a bipolar continuum.

Herzberg's theory tends to refute the bipolar continuum assumption, showing instead that the determinants of job satisfaction, referred to as "motivators," are different from the determinants of job dissatisfaction, which are called "hygienes." This leads to the conclusion that job satisfaction and job dissatisfaction are not opposites but that each element of job satisfaction (motivators) and job dissatisfaction (hygienes) exists on an individual unipolar continuum.

If the Motivator-Hygiene Theory can be validated, most of the past findings in the field of work motivation and measurement of attitudes become highly questionable and a significant breakthrough can be claimed. The importance of such a breakthrough can be gauged from the fact that it can potentially affect every operation which purchases potential labor and raw materials to convert into salable goods and/or services for the marketplace. Motivation will determine the amount of potential labor purchased which is actually obtained and this factor will often mean the difference in success and failures for both the individual supplying the potential labor and the endeavor to which it is supplied.

Scope of the Study

A behavior specimen checklist was developed containing 134 items. Each item was either a positive or negative statement based on one of five job factors as outlined by Frederick Herzberg et al.,⁸ and defined later in this chapter. The checklist also contained a rating scale so that any item checked as having been experienced could also be rated as to the degree of satisfaction or dissatisfaction associated with the experience.

The checklist, in the form of a trainee attitude survey, was administered to 132 full-time trainees at a state vocational-technical training school in Tennessee. The completed checklists were then analyzed to determine the frequency of response to each statement and the level of satisfaction or dissatisfaction reported for each item checked.

A follow-up study was made to test the reliability of the checklist. A group of 18 trainees, selected from the original sample group, were asked to complete a scrambled version of the same checklist so that the test-retest reliability of the instrument could be determined.

II. DEFINITIONS OF TERMS USED

Attitude

"An individual's social attitude is an [enduring] syndrome of response consistency with regard to [a set of] social objects."⁹

⁸Herzberg, Mausner, and Synderman, loc. cit.

⁹David T. Campbell, "The Indirect Assessment of Social Attitudes," Psychological Bulletin, 47:15-38, 1964.

Motivation

Motivation is an inner drive, impulse, intention, etc. that causes an individual to act in a certain way, i.e., an incentive or goal.¹⁰

Achievement

Achievement is one of Herzberg's job factors identifying those aspects of work or training that involve some specific success or absence of success (failure). Included are feelings or situations concerning the successful (or unsuccessful) completion of a job, solution to a problem, personal vindication, and seeing the results of one's work.¹¹

Company/School Policy and Administration

Company/school policy and administration is one of Herzberg's job factors which includes those facets of the training situation that involve some overall aspect of the organization. Included are feelings or situations related to the adequacy or inadequacy of the company/school organization and management, organizational goals, policies and organization of the work/training.¹²

Interpersonal Relations

Interpersonal relations is one of Herzberg's job factors which includes those aspects of training that characterize interactions among trainees and between trainee and instructor. Also included are feelings

¹⁰Webster's New World Dictionary (New York: The World Publishing Company, 1960), p. 960.

¹¹Herzberg, Mausner, and Snyderman, loc. cit.

¹²Ibid.

or situations involving instructor willingness to listen to suggestions from trainees, the degree of friendliness characterizing relations with other trainees or instructors, the level of cooperation among trainees, and the participation in a cohesive work group.¹³

Work Itself

The work itself is one of Herzberg's job factors, comprising those feelings engendered by the training material or practices, or the tasks required. Included are feelings or situations relating to the degree of routine and difficulty in training and to opportunities to complete an entire operation or perform one minute aspect of the operation.¹⁴

Working Conditions

Working conditions comprise one of Herzberg's job factors. Included are those physical conditions in which the training is provided, the amount of work required of the trainee, and the facilities available for use in training. Situations and feelings involving temperature, humidity, noise, quality of equipment, physical surroundings, and general environment are also included in this category.¹⁵

III. ORGANIZATION OF THE STUDY

The study shall be presented in the following manner: Chapter I contains a general introduction, a formal statement of the problem attacked, a discussion of the importance and scope of the study, some

¹³Ibid.

¹⁴Ibid.

¹⁵Ibid.

definitions of special terms used in the study, and a brief outline of the organization of the study. Chapter II contains a summary of a literature review of articles concerned with Herzberg's theory. Chapter III outlines the methodology used in developing the measuring instrument used in this study. Chapter IV outlines the methods used in the reliability study, the results of that study, and the test results. Chapter V contains a discussion of the results of the study as well as the conclusions drawn. Chapter VI contains a summary of the complete study.

CHAPTER II

REVIEW OF THE LITERATURE

I. BACKGROUND

A perusal of the literature related to work motivation indicates that, prior to 1959, the prevailing concept of work motivation was relatively static, although not clearly defined. This situation resulted at least partially from the fact that many of the writers helping to shape prevailing attitudes and beliefs on this subject relied more on unsubstantiated ideas than empirical research. The generally-held view of work motivation was based on a single continuum which related job satisfaction and dissatisfaction. These two points were the extremes of the continuum with the midpoint of the continuum representing the neutral condition. A number of factors were believed to operate on this continuum, shifting the attitude of the worker back and forth. A partial list of these factors would include pay, supervision, working conditions, accomplishment, degree of challenge and variety presented by the work, personal relationships with others, etc. Each of these factors exerted some effect on the worker's overall job attitude. For example, low pay would tend to push the worker's job attitude toward the dissatisfaction end of the continuum. At the same time, the effect of exceptionally challenging and interesting work might counterbalance this tendency toward overall job dissatisfaction, leaving the employee somewhere in the neutral range, neither satisfied nor

dissatisfied in his overall attitude. Holding all other factors constant, a significant pay increase in this situation would be expected to drive the worker's overall job attitude well into the satisfied portion of the continuum. Some of the factors were believed to be more heavily weighted than others, but no definite relationships were known. Also, some of the factors appeared to interact, further complicating the calculation of the true magnitude of their effect on worker satisfaction and dissatisfaction. Complicating factors notwithstanding, the single-continuum concept of work motivation was widely accepted.

II. MOTIVATOR-HYGIENE THEORY

Into this environment was introduced a new concept of work motivation which catalyzed an eruption of reactions, continuing vigorously to this date. This new ingredient was a book entitled The Motivation to Work by Herzberg, Mausner, and Snyderman.¹ Actually, this book was the outgrowth of an earlier publication, Job Attitudes: Review of Research and Opinion, by Herzberg, Mausner, Peterson, and Capwell,² which covered more than 2000 books and articles about job attitudes, going back in time to the beginning of the Twentieth Century. This comprehensive review pointed up a need for further work in this field;

¹Frederick Herzberg, Bernard Mausner, and Barbara Bloch Snyderman, The Motivation to Work (New York: John Wiley and Sons, Inc., 1959).

²Frederick Herzberg et al., Job Attitudes: Review of Research and Opinion (Pittsburgh: Psychological Services of Pittsburgh, 1957).

but more importantly, it concluded that the factors which make a worker happy with his job are different from those which make him unhappy with his job. This conclusion contrasted sharply with the commonly held view at that time. Therefore, Herzberg and his coworkers set up a study to evaluate this hypothesis. After several pilot studies, a study design evolved which included the specifying of attitudes by the subjects, identification of factors in job attitudes, and an analysis of the effects of job attitudes. The modus operandus selected by Herzberg was an open-ended semistructured interview. The specifying of attitudes was effected as follows:

The central characteristic of the design was the request made to the subject that he identify periods of time in his own history when his feelings about his job were unquestionably either higher or lower than usual. No attempt was made to measure morale or job attitudes in a more refined way. The advantage of this relatively crude procedure was that it avoided the problems inherent in the weighting of scores, the comparisons of the meaning of a given score from one individual to another, or the evaluation of reliability of measurement. One simple assumption had to be made. This was that people could place their own feelings about their jobs on a continuum, identify the extremes of this continuum, and choose those extreme situations to report to us.³

The factors in job attitudes were identified by an a posteriori content analysis of the stories reported by the subjects to illustrate periods of high or low job morale. The effect of each job attitude reported was determined simply by asking the subject himself what effects resulted from his attitude in each situation or incident reported. Thus, it was possible to analyze each story by a Factor-

³ Herzberg, Mausner, and Snyderman, op. cit., p. 14.

Attitude-Effect (F-A-E) model. The sample population selected for study consisted of 203 engineers and accountants. The reason for selection of these occupational groups was stated as follows:

The second pilot study was restricted to managerial and professional people. On the basis of our experiences in this work, we decided to concentrate in the major sample on engineers and accountants. It was apparent in the results of this second pilot that engineers were able to give exceptionally vivid accounts of their work experiences. Since our study was still in the nature of an exploratory project, it was vital to us that we mine where the metal was richest.

A sample limited to one profession would have yielded results of doubtful generality. To develop findings independent of the peculiar circumstances of the engineer, we needed to study a comparable group. Accountants were chosen because their jobs, like those of engineers, are rich in technique. This richness makes it likely that the accountant, like the engineer, would have much to tell us.⁴

As conceived and developed by Herzberg et al., this study was more exploratory than hypothetico-deductive. However, some hypotheses were developed, the major one being that the factors which lead to positive job attitudes and those which lead to negative job attitudes are different. This led directly to the main conclusions which are summarized as follows:

. . . the three factors of work itself, responsibility, and advancement stand out strongly as the major factors involved in producing high job attitudes. Their role in producing poor job attitudes is by contrast extremely small. Contrariwise, company policy and administration, supervision (both technical and interpersonal relationships), and working conditions represent the major job dissatisfiers with little potency to affect job attitudes in a positive direction.

⁴Ibid., p. 32.

The differences shown indicate another very basic distinction between the factors found in high job attitudes and those found in the stories about low job attitudes. We have previously said that all the motivating factors focused on the job and that the factors that appeared infrequently in the high job-attitude stories could be characterized as describing the job context. It is just these job context factors, company policy and administration, supervision (technical and human relations), and working conditions, that now appear as the job dissatisfiers. We can expand on the previous hypothesis by stating that the job satisfiers deal with the factors involved in doing the job, whereas the job dissatisfiers deal with the factors that define the job context. Poor working conditions, bad company policies and administration, and bad supervision will lead to job dissatisfaction. Good company policies, good administration, good supervision, and good working conditions will not lead to positive job attitudes. In opposition to this, as far as our data has gone, recognition, achievement, interesting work, responsibility, and advancement will lead to positive job attitudes. Their absence will much less frequently lead to job dissatisfaction.⁵

Herzberg called the intrinsic job factors motivators because they all lead to positive job attitudes.⁶ The extrinsic job factors were called hygienes because these factors are quite comparable to those factors which are necessary for the maintenance of good physical and mental health.⁷ Good hygiene must be practiced and used in order to avoid having disease and poor health but it does not, in and of itself, bring good health. Thus, Herzberg's conclusions came to be often referred to as the Motivator-Hygiene Theory. Another label which is also frequently used in reference to these conclusions is the Two-Factor Theory.

⁵Ibid., pp. 81-82.

⁶Ibid., p. 114.

⁷Ibid., p. 113.

Relationship Between Theory Y and Motivator-Hygiene Theory

The Motivator-Hygiene Theory obtained some early acceptance because it seemed to support a newly (at the time) proclaimed concept known as "Theory Y."⁸ "Theory Y" holds that the factors which are intrinsic to the job, such as Herzberg's motivators, are somehow different and more important than those which are extrinsic to the job, such as Herzberg's hygienes, in terms of their effect on motivation of the worker.

III. REVIEW OF STUDIES AND APPLICATIONS

Studies Supportive of Motivator-Hygiene Theory

During the early years of the 1960's, numerous studies were conducted and reported which verified the existence of this motivator-hygiene duality. A large number of these studies were summarized and analyzed in a 1966 publication by Herzberg entitled Work and the Nature of Man.⁹ By way of example, Friedlander (1964) reported the results of a study in which the assumption of the existence of a single bipolar continuum for job satisfaction and dissatisfaction was subjected to quantitative analysis.¹⁰ Friedlander used two questionnaires to measure

⁸Orlando Behling, George Labovitz, and Richard Kosmo, "The Herzberg Controversy: A Critical Reappraisal," Academy of Management Journal, 11:102, 1968:

⁹Frederick Herzberg, Work and the Nature of Man (Cleveland: World Publishing Company, 1966).

¹⁰Frank Friedlander, "Job Characteristics as Satisfiers and Dissatisfiers," Journal of Applied Psychology, 48:388-392, 1964.

the importance to satisfaction and the importance to dissatisfaction of 18 separate job characteristics, or job factors. Herzberg assisted Friedlander in development of the scale used by the 80 subjects to indicate their feelings about the job factors. The subjects were all college students with previous work experience; many shared a dual role as full-time workers and part-time students at the time of the study. Based on this study, Friedlander obtained the following conclusions:

- a. For 12 of the 18 factors, job satisfaction and job dissatisfaction are not complementary;
- b. Two of the factors appeared to substantiate the traditional concept of the bipolar satisfaction-dissatisfaction continuum;
- c. Herzberg's theory that job satisfiers and job dissatisfiers do not exist on the same continuum was supported;
- d. Intrinsic job factors were found to be important in both job satisfaction and job dissatisfaction; extrinsic factors were found to be relatively unimportant as either satisfiers or dissatisfiers.

Of passing interest is the fact that Friedlander and Herzberg were fellow staff members at Western Reserve University (now Case Western Reserve University), where Herzberg now holds the position of Douglas McGregor Distinguished Professor of Industrial Psychology.

After completing graduate work at Western Reserve University, Saleh (1964) published the results of a study which also tended to

support the Motivator-Hygiene Theory.¹¹ Some criticism of the fact that Herzberg's findings were based on interviews with only engineers and accountants had been raised. It was conjectured that these occupational groups might stress the motivator factors more than the hygiene factors as a source of job satisfaction because of the nature of these occupations. Therefore, Saleh selected a sample population of 85 males in the 60-65 age range. All occupied managerial positions with companies having compulsory retirement plans. The semistructured interview technique used in the original study by Herzberg was used to measure job satisfaction and dissatisfaction as the subjects looked back on their middle years. To obtain their view as they looked toward retirement, a forced-choice format "Job Attitude Scale" was developed and administered to this group and to a control group of managers aged 30-55 (N = 39). The following conclusions were reported:

- a. The results of the interview analysis of the preretirees looking back on their middle years support Herzberg's theory;
- b. Similar supportive results were obtained from the younger group of subjects using the "Job Attitude Scale";
- c. Opposite results were obtained from the preretirees looking ahead to retirement, as measured by the "Job Attitude Scale," i.e., the same subjects who had indicated motivators

¹¹Shoukry D. Saleh, "A Study of Attitude Change in the Pre-retirement Period," Journal of Applied Psychology, 48:310-312, 1964.

as a source of job satisfaction during the middle years indicated hygienes as a source of satisfaction in their preretirement years.

Two possible explanations have been advanced for conclusion c. above. Maslow's Need Hierarchy states that the five basic needs of man must be met in strict order, although some overlap may be found. Physiological needs must be satisfied first.¹² These subjects, looking forward to compulsory retirement, may see this as a threat to the satisfaction of their needs for food, shelter and clothing. Thus, the needs underlying the hygiene factors would become more important than the needs underlying the motivating factors, which occur higher in the need hierarchy structure. Another possible explanation is that the pre-retirees, because of their age, no longer have access to the motivating job factors and thus are forced to shift to other goals, such as hygienes. This concept is sometimes referred to as Dissonance Theory.¹³

Another study which was interpreted by the author as being supportive of the Motivator-Hygiene Theory was reported by Halpern (1966). As a result of what he termed misunderstanding of the theory, Halpern conducted a study to relate motivator and hygiene factors to overall job satisfaction. The sample population was composed of 93 male university graduates with a mean age of 32 years. On the average, they had worked at four different jobs over a period of about ten

¹²A. H. Maslow, Motivation and Personality (New York: Harper, 1954).

¹³Saleh, op. cit., p. 312.

years. The subjects completed a mail-out questionnaire which had a 7-point rating scale. The scale represented a range from very dissatisfied (1) to neutral (4) to very satisfied (7). The factors used included four motivators and four hygienes. In order to maintain comparability with Herzberg's earlier work, the subjects were asked to confine their replies to those concerning the best-liked job they had held during their ten years' work experience.

Based on the data obtained, Halpern reached the following conclusions:

- a. The subjects were equally well satisfied with both the motivator and hygiene aspects of their jobs;
- b. Motivators contributed more to overall job satisfaction than did hygienes.

Halpern concluded that these findings support the basic thesis of the Motivator-Hygiene Theory.¹⁴

Another facet of Herzberg's Motivator-Hygiene Theory which Halpern appeared to overlook is that job satisfaction, job dissatisfaction, motivators, and hygienes constitute a double dichotomy. This implies that those factors which determine job satisfaction (motivators) cannot be related to those factors which determine job dissatisfaction (hygienes). Substantial correlations are indicated between motivators and hygienes by the data collected by Halpern in this study. From this

¹⁴Gerald Halpern, "Relative Contributions of Motivator and Hygiene Factors to Overall Job Satisfaction," Journal of Applied Psychology, 50:190-200, 1966.

point of view, Halpern's data could be interpreted as being nonsupportive of the Motivator-Hygiene Theory. This again underscores Halpern's statement that some aspects of this theory tend to be misunderstood. The loose formulation of the Motivator-Hygiene Theory appears to make different interpretations possible.

Several other early studies which seem to support Herzberg's Motivator-Hygiene Theory included studies by Schwartz, Jenusaitis, and Stark (1963)¹⁵ and Myers (1964).¹⁶ These studies used essentially the same methodology employed in Herzberg's studies and reached the same general conclusions as Herzberg, that motivators determine satisfaction and hygienes determine dissatisfaction.

Studies Critical of Motivator-Hygiene Theory

One of the earliest papers critical of Herzberg's findings was presented by Ewen in 1963.¹⁷ Some of the deficiencies of Herzberg's study listed by Ewen include the following:

- a. It is impossible to compare Herzberg's study to other research in this field because of the apparent inconsistencies in factor definitions. For example, he classifies

¹⁵M. M. Schwartz, E. Jenusaitis, and H. Stark, "Motivational Factors Among Supervisors in the Utility Industry," Personnel Psychology, 16:45-53, 1963.

¹⁶M. S. Myers, "Who Are Your Motivated Workers?" Harvard Business Review, 42:73-88, 1964.

¹⁷Robert B. Ewen, "Some Determinants of Job Satisfaction: A Study of the Generality of Herzberg's Theory," Journal of Applied Psychology, 48:161-163, 1964.

supervision as a dissatisfier but supervision is also often a source of recognition and recognition is classified as a satisfier. Salary is considered to be a dissatisfier but salary is also often a form of achievement or recognition and both of these factors are definitely satisfiers.

- b. Herzberg's results are based on a very narrow range of jobs.
- c. In using a semistructured interview only one measure of job attitude could be obtained. The critical incident technique used could allow biased results to creep in. In fact, on close scrutiny it would appear that positive critical events and satisfiers, as defined by Herzberg, are an identity.
- d. No reliability data were presented. No parallel-form or test-retest reliability coefficients were reported as evidence of the consistency of the semistructured interview approach used.
- e. Herzberg included no measure of overall job satisfaction and therefore made unsupported statements about overall job satisfaction and dissatisfaction.

Ewen attempted to determine the generality of the Motivator-Hygiene Theory by measuring the responses of 1021 full-time life insurance agents using a 58-point four-point anonymous attitude scale. By the use of factor analysis, six distinct factors were extracted. Although these factors were not exactly the same as those found by Herzberg, three were classed as hygienes, two were classed as motivators, and the sixth was a general morale and satisfaction criterion. An analysis of

the data produced equivocal results. Part of the results tended to support Herzberg; a larger part seemed to refute Herzberg. Ewen concluded that a more extensive research design is necessary in order to adequately test the theory.

After completing a review and synopsis of 14 replicate studies of Herzberg's work by other authors, Burke (1966) drew the following conclusions from their studies:¹⁸

- a. Motivators are different from, and not merely opposite to, hygienes;
- b. A given factor can cause job satisfaction in one situation and job dissatisfaction in another (may depend on occupation, age, sex, or time-dimension variable);
- c. In some cases, a given factor causes job satisfaction and job dissatisfaction in the same sample;
- d. The distinction between motivators and hygienes rests on the assumption that the two are independent and represent unidimensional attributes.

Burke proposed to subject this assumption that motivators and hygienes represent unidimensional attributes to quantitative analysis. The technique used was determination of rank order preference for motivators and hygienes from a list of five of each. Burke used 187 college students, both male and female, as subjects for the study. He

¹⁸Ronald J. Burke, "Are Herzberg's Motivators and Hygienes Unidimensional?" Journal of Applied Psychology, 50:317-321, 1966.

found that both sexes ranked a significant number of motivators as more important than hygienes with a surprising degree of agreement in ranking between males and females. Application of Coombs' Unfolding Technique in one dimension to each individual's rank order preference led to rejection of the hypothesis of unidimensional attributes. Burke concluded that motivators and hygienes are neither unidimensional nor independent constructs. The distinction between motivators and hygienes was found to be important, however.

Ewen et al. (1966) raised several questions about Herzberg's Motivator-Hygiene Theory, pointing out that this work and all the supportive studies had in common the use of the cognitive recall method.¹⁹ They noted that other findings have indicated that studies relying on retrospective accounts of satisfying events are extremely suspect. It was also pointed out that studies by Friedlander (1963)²⁰ and Graen (1966)²¹ showed that factor analysis did not yield the same set of factors as does the a priori classification system used by Herzberg.

With these and other criticisms of the Motivator-Hygiene Theory as background, Ewen et al. set out to test empirically four hypotheses in which the Motivator-Hygiene Theory and traditional theory predict

¹⁹Robert B. Ewen et al., "An Empirical Test of the Herzberg Two-Factor Theory," Journal of Applied Psychology, 50:544-550, 1966.

²⁰Frank Friedlander, "Underlying Sources of Job Satisfaction," Journal of Applied Psychology, 47:246-250, 1963.

²¹George B. Graen, "Addendum to 'An Empirical Test of the Herzberg Two Factor Theory,'" Journal of Applied Psychology, 50:551-555, 1966.

opposite results. Nearly 800 males, 35 years of age or older, coming from many different companies and with mixed backgrounds, were chosen as subjects. The instruments used in the study included a Job Descriptive Index which measures several aspects of job satisfaction, and the General Motors' Faces Scale to measure overall job satisfaction. The sample population was divided into eight subgroups. Three of the eight groups appear to support the Motivator-Hygiene Theory; four of the groups seem to refute it; the position of the other group was questionable. By assuming that the satisfiers used in the study are more potent factors than the dissatisfiers, Ewen et al. maintain that the contradictory results become explainable. In this light, the results indicate that intrinsic factors are the most important sources of both satisfaction and dissatisfaction with reference to overall job attitude. The authors further conclude that the concept of "satisfiers" and "dissatisfiers" is misleading, maintaining that it would rather be preferable to refer to "intrinsic" and "extrinsic" variables.

In a related study, Graen (1966) performed a two-way analysis of variance on selected a priori contrasts using the data reported by Ewen et al.²² The contrasts were between predictions based on the traditional concept of work motivation and the Two-Factor Theory of work motivation. In every contrast, the Two-Factor Theory was disconfirmed while the traditional theory was confirmed.

²²Ibid.

In addition to the tests for significance, tests for the strength of relationships were also made, using the Omega-squared statistic. The satisfier factor was found to be more potent than the dissatisfier factor on job satisfaction. Graen concluded that a unidimensional theory with some variables acting with more potency than others on overall job satisfaction is indicated. Intrinsic factors were suggested as more important to both satisfaction and dissatisfaction than are extrinsic factors. Finally, the terms "intrinsic" and "extrinsic" were considered more accurate and acceptable than the terms "satisfiers" and "dissatisfiers."

In a third related study, Hulin and Smith (1967) reviewed the findings of Graen²³ and Ewen et al.²⁴ and pointed out a possibly significant error in these studies: both studies appear to assume that satisfaction and dissatisfaction are two poles of a single continuum.²⁵ If satisfaction and dissatisfaction are really qualitatively different, as has been suggested by Herzberg, this error could possibly negate the criticisms of the Motivator-Hygiene Theory leveled by Graen and Ewen et al. To properly test Herzberg's theory, it must be assumed to be correct and satisfaction and dissatisfaction must be measured on different scales.

²³Ibid.

²⁴Ewen et al., loc. cit.

²⁵Charles L. Hulin and Patricia A. Smith, "An Empirical Investigation of Two Implications of the Two-Factor Theory of Job Satisfaction," Journal of Applied Psychology, 51:396-402, 1967.

Toward this end, Hulin and Smith set as an objective the analysis of the contribution of different variables to overall satisfaction and dissatisfaction and an examination of the differences resulting from the presence and absence of different variables. Data were obtained from a job satisfaction survey conducted by an international corporation headquartered in Montreal, Canada. About 670 employees, ranging from janitors to vice presidents, were included in the study. Test instruments used included the Job Descriptive Index,²⁶ measuring satisfaction with five job factors, and three variations of the General Motors' Faces Scale,²⁷ measuring overall job satisfaction. Two of the Faces Scales used were broken at the neutral point, providing scales reading from (1) dissatisfied to neither satisfied nor dissatisfied and (2) satisfied to neither satisfied nor dissatisfied. The other General Motors' Faces Scale used covered the gamut from dissatisfied to satisfied and was identical with the scale used in the studies by Graen and Ewen et al., providing a partial replication of their studies.

The results of these tests show that where the traditional model of work satisfaction and the Motivator-Hygiene Theory make antithetical predictions, there is no support for the predictions made on the basis of the Motivator-Hygiene Theory. Factors considered to be satisfiers appeared to act as both satisfiers and dissatisfiers. The same was true for factors considered to be dissatisfiers. No qualitative difference could be found in satisfiers and dissatisfiers. In support of Graen's

²⁶Ibid., p. 398.

²⁷Ibid., p. 399.

earlier findings, intrinsic aspects of the job did appear to be most important. Hulin and Smith concluded that Herzberg's results are method-bound and pivot on method variance rather than true content or scale variance. The hope was expressed that the Motivator-Hygiene Theory might be quietly interred.

Lindsay, Marks, and Gorlow (1967) expressed concern with the methodological inconsistency of the Motivator-Hygiene Theory and the lack of a formal and logically consistent statement of relations among the variables of interest (motivators and hygienes).²⁸ In particular, they voiced the following criticisms of Herzberg's methodology:

- a. Did not control the number of critical incidents supplied by a given subject, or the number of job factors mentioned with each reported incident;
- b. Reversed the role of dependent (satisfaction and dissatisfaction) and independent (motivators and hygienes) variables by setting the dependent variable constant at either a high or low level and allowing the independent variables to vary as a function of the subject's reply;
- c. Did not consider the relationship of job satisfaction to motivators and hygienes across intermediate levels of job satisfaction and dissatisfaction (no functional relationship specified);

²⁸Carl A. Lindsay, Edmond Marks, and Leon Gorlow, "The Herzberg Theory: A Critique and Reformulation," Journal of Applied Psychology, 51:330-339, 1967.

- d. Made no provision for examination of higher degree effects (interactions) between motivators and hygienes as they relate to satisfaction.

Lindsay, Marks, and Gorlow developed a 3 x 3 x 2 factorial design model of job satisfaction to test several hypotheses. They used a structured questionnaire format to interview 270 male employees of a Pennsylvania aerospace firm. Half of the sample population was comprised of engineers, while the remaining subjects were highly skilled workers. The average age of the sample population was 30 years. The data collected showed that there was no significant difference in the responses of the professionals and the nonprofessionals. Also, motivators were found to account for more than 3.5 times as much variance as did hygienes. The data also showed that the highest level of job satisfaction is obtained when both motivators and hygienes are at their highest levels, and vice versa. After reviewing a number of articles from the literature, both supportive and nonsupportive of Herzberg's work, the authors further concluded the following:

- a. The disjoint relationship between motivators and hygienes predicted by Herzberg was not found;
- b. The level of job satisfaction cannot be calculated from the level of motivators and hygienes present;
- c. Motivators are more important to job satisfaction than are hygienes;
- d. Herzberg's theory of work motivation should be reevaluated.

One of the earliest and most-repeated criticisms of Herzberg's theory is the interdependence between the results obtained and the methodology used. Vroom (1964) was one of the first to state that the use of the nonstructured narrative technique of obtaining data, where the subject selectively recalls very satisfying and very dissatisfying periods in his work life, accounts for the results obtained by Herzberg.²⁹

As stated by Vroom:

It is possible that obtained differences between stated sources of satisfaction and dissatisfaction stem from defensive processes within the individual respondent. Persons may be more likely to attribute the causes of satisfaction to their own achievements and accomplishments on the job. On the other hand, they may be more likely to attribute their dissatisfaction not to personal inadequacies or deficiencies, but to factors in the work environment; i.e., obstacles presented by company policies or supervision.³⁰

Vroom maintained that the use of other methods of data collection is necessary to determine the validity of the Motivator-Hygiene Theory. House and Wigdor (1967) echoed this opinion in their review and criticism of Herzberg's theory of job satisfaction and motivation.³¹ They also cited a faulty research foundation, pointing out that the technique used for coding of job factors required some interpretation by the rater. Another alleged shortcoming is the inadequate operational definitions

²⁹V. H. Vroom, Work and Motivation (New York: Wiley, 1964), p. 129.

³⁰Ibid.

³¹Robert J. House and Lawrence A. Wigdor, "Herzberg's Dual Factor Theory of Job Satisfaction and Motivation: A Review of the Evidence and a Criticism," Personnel Psychology, 20:330-339, 1967.

used to identify satisfiers and dissatisfiers. It was pointed out that no measure of overall satisfaction was included in the study. Other procedural criticisms included the lack of reliability data; lack of control over the length of sampling period for the data; and lack of basis for inferences about relative contributions of various job factors to overall job satisfaction. It was also charged that Herzberg's findings are inconsistent with the bulk of previous evidence concerning the effect of job satisfaction on worker motivation and productivity. Motivation and productivity were felt to depend on as-yet unknown situational variables.

After conducting a review of 31 published studies related to the Two-Factor Theory by authors other than Herzberg, House and Wigdor conducted a secondary analysis of the data presented by Herzberg in Work and the Nature of Man.³² The following conclusions were obtained:

- a. Satisfiers and dissatisfiers are not unidimensional and independent;
- b. Satisfiers are not more forceful motivators than are dissatisfiers.³³

Considering related studies using methods dissimilar to that used by Herzberg, House and Wigdor obtained the following conclusions:

- a. A given factor can be a satisfier for one individual and a dissatisfier for another;

³²Herzberg, loc. cit.

³³House and Wigdor, op. cit., p. 385.

- b. A given factor can cause both satisfaction and dissatisfaction in the same sample;
- c. Intrinsic factors are more important than extrinsic factors to both satisfying and dissatisfying job events;
- d. Herzberg's Motivator-Hygiene Theory is an oversimplification of the relationships between motivation and satisfaction and the sources of job satisfaction and dissatisfaction.³⁴

As a follow-up to his earlier work, Graen (1968) reviewed his earlier findings³⁵ and those of Ewen et al.³⁶ He noted that both of these studies refute the Motivator-Hygiene Theory and that both were based on data obtained from male industrial workers. Therefore, he proposed to test the generality of these findings by applying the same methods to sample populations of male and female office workers. The Job Descriptive Index and the General Motors' Faces Scale were the instruments used to test 167 male and 152 female office workers.³⁷

The results of the studies showed that the findings of the earlier studies on male industrial workers could be reproduced using male and

³⁴Ibid., pp. 386-387.

³⁵Graen, "Addendum to 'An Empirical Test of the Herzberg Two-Factor Theory.'"

³⁶Ewen et al., loc. cit.

³⁷George B. Graen, "Testing Traditional and Two-Factor Hypotheses Concerning Job Satisfaction," Journal of Applied Psychology, 52:366-371, 1968.

female office workers as subjects. The Motivator-Hygiene Theory failed to predict relationships in four out of six cases. In three of these cases the results were actually opposite to the prediction. Overall job satisfaction was found to be essentially linear with respect to motivator and hygiene factors, rather than nonlinear as predicted by the Motivator-Hygiene Theory. The job content variables were found to be more highly related to overall satisfaction-dissatisfaction than were the job context variables. Further, the functioning of the context variables did not appear to depend on the level of satisfaction with the content variables. Although all of the subjects were from the same company, there appeared to be significant differences in response of male and female workers as a function of the individual job factors used in the study.

After noting the volume of debate developing between proponents of Herzberg's duality (Motivator-Hygiene) approach and supporters of the conventional single continuum theories, Kosmo and Behling (1969) attempted to resolve the conflict by translating Herzberg's duality to a single scale by a series of steps logically derived from Herzberg's approach.³⁸ At one point, Herzberg had indicated that such a translation was impossible. However, at another point he indicated a logical basis for connecting these two dimensions. Other writers

³⁸Richard Kosmo and Orlando Behling, "Single Continuum Job Satisfaction Versus Duality: An Empirical Test," Personnel Psychology, 22:327-334, 1969.

supportive of Herzberg's work seemed to agree. Thus, Kosmo and Behling reached the following conclusion:

. . . it is apparent that a scaler neutral point of "neither contented nor discontented" can be set as equivalent to the overall satisfaction of individuals who perceive high levels of hygiene and low levels of motivators in their jobs. Working logically from this point, it is possible to make predictions about the relative level of overall satisfaction associated with various combinations of levels of perceived motivators and hygienes. . . .³⁹

Having offered evidence for the validity of their approach, Kosmo and Behling developed a 10-item scale to measure the perceived levels of motivator and hygiene factors among 84 registered nurses at a state hospital. A concomitant measure of job satisfaction was obtained by adopting a previously developed and validated job satisfaction scale. Six hypotheses based on the Motivator-Hygiene Theory were tested to determine ". . . the compatibility of Herzberg's duality with a logically derived scaler format. . . ." ⁴⁰ A Mann-Whitney U analysis was made on the data collected to evaluate each hypothesis.

The results of this study appear to refute the Motivator-Hygiene Theory. The results lend support to the idea that "good" work itself and "good" environment are associated, and when the work itself is "bad," the inclusion of a "good" environment does not increase job satisfaction to the neutral point. Thus, these data do not support predictions based on the Herzberg theory. They indicate that hygienes

³⁹Ibid., p. 328.

⁴⁰Ibid., p. 329.

can and do have influence above the neutral point while their effect below the neutral point is not significant.

The authors further concluded that the results of their study do not support their hypothesis that the duality-single continuum conflict can be resolved in this manner. This is not to deny that some other successful approach might be found to bridge this gap. The results of this study do make the probability of such a discovery much less, however. Kosmo and Behling voice the opinion that Herzberg's methodology and conventional scaler approaches to work motivation are tapping fundamentally distinct parts of the individual's view of and relations with his world of work.⁴¹

A completely different approach to the question of the validity of Herzberg's Two-Factor Theory has been taken by Nathan King.⁴² Taking note of the controversy which continues to surround Herzberg's conclusions, King maintains that there is no single explicit statement recognizable as the Two-Factor Theory, and this is the reason for the major portion of the controversy. At least five different versions of Herzberg's theory of work motivation have been explicitly or implicitly denoted as the Two-Factor Theory by researchers. King outlines the five different versions of the Two-Factor Theory, citing the source of each, and listing two different types of possible supporting data (critical

⁴¹Ibid., p. 334.

⁴²Nathan King, "Clarification and Evaluation of the Two-Factor Theory of Job Satisfaction," Psychological Bulletin, 74:18-31, 1970.

incident data and correlational data) which could be used to support each version. These are given in Table I.

After a review of more than 40 relevant books and articles, King concluded that there is no supportive data from empirical studies for Theories IV and V and therefore, these versions may be disposed of forthwith. An examination of the detailed statements of these two theories in Table I will show that both are very strong and restrictive theories. Therefore, the lack of supportive data is not greatly surprising.

At first glance, there appears to be supportive data for Theory III. On closer examination, however, it is found that only studies in which the experimenter coded the responses support Theory III. Subject-coded studies and correlational studies do not support Theory III, indicating that the results obtained from the Herzberg-type studies are influenced by experimenter coding biases. Thus, Theory III must be eliminated.

Theories I and II appear to be supported by the available test data but additional test data obtained by a methodology other than Herzberg's is needed. It is possible that experimenter coding biases or defensive subject biases which are inherent in self-report methods may be responsible for the obtained results. Therefore, at the present time Theories I and II would have to be considered indeterminate.

TABLE I

KING'S FIVE VERSIONS OF THE TWO-FACTOR THEORY OF JOB SATISFACTION⁴³

Theory	Supporting Data Required	
	Critical Incident	Correlation
I. All motivators (Ms) combined contribute more to job satisfaction (S) than to job dissatisfaction (D), and all hygienes (Hs) combined contribute more to D than to S.	All Ms combined are mentioned proportionately more often in good critical incidents (Gs) than in bad critical incidents (Bs), and all Hs combined are mentioned proportionately more often in Bs than in Gs.	The multiple correlation (R) between the Ms and S is greater than the R between the Ms and D, and the R between the Hs and D is greater than the R between the Hs and S.
II. All Ms combined contribute more to S than do all Hs combined, and all Hs combined contribute more to D than do all Ms combined.	All Ms combined are mentioned in Gs more frequently than are all Hs combined, and all Hs combined are mentioned in Bs more frequently than are all Ms combined.	The R between the Ms and S is greater than the R between the Hs and S, and the R between the Hs and D is greater than the R between the Ms and D.
III. Each M contributes more to S than to D, and each H contributes more to D than to S.	Each M is mentioned proportionately more often in Gs than in Bs and each H is mentioned proportionately more often in Bs than in Gs.	Each M correlates more with S than with D, and each H correlates more with D than with S.

TABLE I (continued)

Theory	Supporting Data Required	
	Critical Incident	Correlation
IV. Theory III holds, and in addition, each principal M contributes more to S than does any H, and each principal H contributes more to D than does any M.	The data support Theory III, and in addition, each principal M is mentioned in Gs more frequently than is any H, and each principal H is mentioned in Bs more frequently than is any M.	The data support Theory III, and in addition, each principal M correlates with S more than does any H, and each principal H correlates with D more than does any M.
V. Only Ms determine S and only Hs determine D.	Only Ms are mentioned in Gs, and only Hs are mentioned in Bs.	Only Ms correlate with S, and only Hs correlate with D.

⁴³Nathan King, "Clarification and Evaluation of the Two-Factor Theory of Job Satisfaction," Psychological Bulletin, 74:19, 1970.

These conclusions are in harmony with the principle of Multiple Operationalism.⁴⁴ This principle holds that a hypothesis is validated only if it is supported by two or more methods of testing. Using this principle as a criterion, it must be concluded that Theories I, II, and III have not yet been validated. King cites this as an area in which additional research is badly needed. He maintains that his findings and conclusions

. . . indicates a major gap in the relevant empirical studies--namely studies which are relevant to Theories I and II and in which the determinants of satisfaction and dissatisfaction are measured by techniques other than direct self-report.⁴⁵

King also suggests that further studies designed to fill this gap consider homogeneous occupational groups separately, as Theory I and II might be found to hold only for specific occupational groups.

Much of the early data on which Herzberg's findings were based were obtained through Herzberg's work as Research Director of Psychological Service of Pittsburgh. Herzberg's successor in this position, Ray C. Hackman, recently published a book in which he reanalyzes and reinterprets Herzberg's data.⁴⁶ At the same time, he broadened the base of Herzberg's work by using a different data collection method to measure the motivational characteristics of some 800 workers. Using

⁴⁴W. R. Garner, H. W. Hake, and C. W. Eriksen, "Operationism and the Concept of Perception," Psychological Review, 63:149-159, 1956.

⁴⁵King, op. cit., p. 30.

⁴⁶Ray C. Hackman, The Motivated Working Adult (American Management Association: The Book Press, Inc., 1969).

a structured questionnaire, he conducted an attitude survey of workers at all levels in the organization. After scoring the questionnaires for motivators and hygienes, he showed by factor analysis that motivational characteristics are the same for divergent groups of people.

Upon reexamination of Herzberg's data, Hackman proposes a different theory of work motivation than that developed by Herzberg. He agrees with Herzberg that the factors producing satisfaction and dissatisfaction on the job are qualitatively different. However, he differs in the interpretation placed on a worker's feelings in response to conditions and events in job situations that cause feelings of satisfaction and dissatisfaction. He feels that workers reporting dissatisfying episodes are reflecting emotional tension. Therefore, they are not hygiene seekers but emotional responders. On the other hand, workers reporting satisfying episodes are stimulation seekers rather than motivation seekers, as indicated by Herzberg. Money is cited by Hackman as a type of stimulator. It is further theorized that emotional tension produced in a worker by the work environment is mediated by a different system, is disruptive, and interferes with stimulation activity.

Hackman concludes that both Herzberg's interview method of data collection and the structured questionnaire adaptation of it produce reports of the desired kind. The only problem comes in interpreting the results obtained. To aid in properly interpreting results, Hackman developed the Hackman Job Satisfaction Schedule which he validated

and administered to more than 600 workers, male and female, at all levels of the organization.⁴⁷

Counter-Critical Review of Literature

Considering the controversiality of the Motivator-Hygiene Theory of work motivation, it should not be surprising to find that even the critics have their critics. Whitsett and Winslow (1967), students of Herzberg, undertook to counter the numerous critical studies concerning the Motivator-Hygiene Theory.⁴⁸ To illustrate the basic concept underlying the Motivator-Hygiene Theory, they constructed the following model:⁴⁹

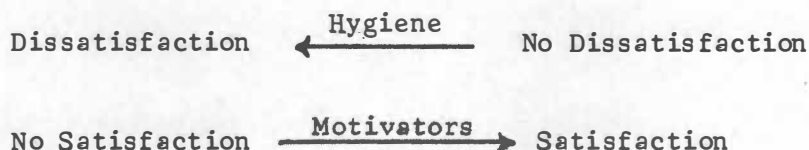


FIGURE 1

MOTIVATOR-HYGIENE ATTITUDE MODEL

This model is based on two basic and different needs of man: (1) the avoidance of pain need; and (2) the growth need. The concept of hygiene is related to the avoidance of pain need. Similarly, the

⁴⁷Ibid.

⁴⁸David A. Whitsett and Erik K. Winslow, "An Analysis of Studies Critical of the Motivator-Hygiene Theory," Personnel Psychology, 20: 391-415, 1967.

⁴⁹Ibid., p. 394.

growth need is related to factors here defined as motivators. As stated by Whitsett and Winslow:

To sum up, because of the independent and distinct characteristics of these two needs, we find two distinct groups of factors contributing to the fulfillment of these needs.⁵⁰

At this point and on at least one other occasion, the authors appear to be considering King's Theory V as the Motivator-Hygiene Theory. However, in their review of published critical studies, they appeared to shift to another of the five versions explicated and evaluated by King.

In reviewing the studies critical of the Motivator-Hygiene Theory, Whitsett and Winslow enumerated three basic kinds of errors which they found prevalent: (1) misinterpretation of theory; (2) methodological weaknesses; and (3) misinterpretation of results. They considered some 14 separate studies, including those discussed earlier in this chapter by Friedlander;⁵¹ Ewen et al.;⁵² Graen;⁵³ Ewen;⁵⁴ and Friedlander.⁵⁵ The conclusions reached by the authors might best be summarized by the following excerpted quote:

⁵⁰ Ibid., p. 394.

⁵¹ Friedlander, "Underlying Sources of Job Satisfaction."

⁵² Ewen et al., loc. cit.

⁵³ Graen, "Addendum to 'An Empirical Test of the Herzberg Two-Factor Theory.'"

⁵⁴ Ewen, loc. cit.

⁵⁵ Friedlander, "Job Characteristics as Satisfiers and Dissatisfiers."

What may we conclude from the results of the studies reviewed here? It would appear, because of the numerous misinterpretations of the M-H theory, the general weaknesses in methods and the frequent misinterpretations of results, that, taken as a group, the studies reviewed offer little empirical evidence for doubting the validity of the theory. We conclude that the theory has clearly retained its utility and viability. In fact, it is interesting to note that the results of some of the most critical studies . . . actually support, in part, the M-H theory. These studies serve to illustrate that findings in the direction of those of the original study (Herzberg, 1959) are obtainable through a variety of methodologies.⁵⁶

Actually, Herzberg's most recent book, Work and the Nature of Man, might be considered a counter-critical review of the literature. By way of example, one of the early criticisms of Herzberg's findings voiced frequently was that the study included only engineers and accountants and was, therefore, not validated for workers in other occupations, as claimed by Herzberg. In reply, Herzberg presented data from studies of 15 different occupational groups, including workers at all levels, female as well as male workers, even including data on a group of foreign engineers.⁵⁷

Industrial Applications of Motivator-Hygiene Theory

The apparent efficacy and persuasiveness of Herzberg's theory of worker motivation is attested to by its adoption industrially. Numerous companies have adopted some form of "job enrichment" programs, but the undisputed leader in this approach to better worker

⁵⁶Whitsett and Winslow, op. cit., pp. 410-411.

⁵⁷Herzberg, loc. cit.

utilization is American Telephone and Telegraph Company (AT&T). AT&T, which is comprised of Bell Laboratories, Western Electric Company, and numerous Bell System companies throughout the United States, has restructured more than 100,000 jobs of Bell System employees, both male and female, with results which are in many cases tremendous improvements.⁵⁸ The basis for this massive job restructuring is a "Work Itself" job enrichment program, which is based on Herzberg's findings concerning worker motivation.

The "Work Itself" program is based on psychological findings of Dr. Frederick Herzberg, Case Western Reserve University Professor of Psychology and Contributing Editor of INDUSTRY WEEK, which determined that a worker must derive satisfaction from the work itself as well as from achievement, recognition, responsibility, advancement, and growth.⁵⁹

Malcolm B. Gillette, Director of the Manpower Utilization Group at AT&T, describes the "Work Itself" program in basic utilitarian terms:

What we are talking about is a method of coping with the workers' revolt against the assembly line approach. A man gets \$10,000 a year to tighten nuts and bolts and is left with no identification with the final product or pride of craftsmanship.⁶⁰

The restructuring approach is relatively simple in concept. For example, the worker who is tightening nuts and bolts is also given the job of assembling the part to be bolted and testing the final assembly. Thus, he is reinstilled with pride of craftsmanship and identification with the final product, which was lost in the assembly

⁵⁸"Ma Bell Motivates," Industry Week, 169:34-37, May 17, 1971.

⁵⁹Ibid., p. 34.

⁶⁰Ibid.

line approach previously used. Different application techniques are needed for applying the "Work Itself" concept to manufacturing operations and service operations. In manufacturing operations, it must usually be tailored to fit the existing physical facilities. However, a new Western Electric Company plant being built in California has been designed to accommodate manufacturing methods built around the "Work Itself" concept.⁶¹

As managers and foremen are most directly affected by adoption of a "Work Itself" approach, it should not be surprising to find some reservation to embracing what has been described as a revolutionary job enrichment program.

Managers are sometimes skeptical . . . but after he understands how restructuring can change things, he is usually a little more willing to try. He is also encouraged to visit other company units for personal investigation . . . but some managers do tend to see the program as a threat to their control. . . . Yet, the approach does not suggest the manager is giving up any control, only letting workers make more routine decisions. For supervisors, the real impact is that they must know the capacities and attitudes of their people. . . . Obviously, the approach is not for everyone, although most of today's younger workers welcome it. In addition, participants must have adequate training before being given the responsibility.⁶²

The original study which culminated in the "Work Itself" job enrichment program was started in 1965 by Dr. Robert N. Ford, Director of Personnel for Manpower Utilization at AT&T. Since that time, more than 100 companies are reported to have contacted AT&T asking for

⁶¹Ibid., p. 35.

⁶²Ibid., p. 36.

explanation and assistance. Partially in response to this high level of interest, Dr. Ford published a book entitled Motivation Through the Work Itself in 1969, wherein he outlined the development of the "Work Itself" concept.⁶³ The problem which originally led them in this direction was that of excessive employee turnover. Ford and his co-workers became convinced that the solution to this problem lay in an adaptation of Herzberg's Motivator-Hygiene Theory. They decided to attempt to improve the work itself through vertical loading of jobs. Their method of attack was to hold the hygienes constant while varying the motivators by vertical loading of jobs.

The surroundings of the task were deliberately held constant while the tasks were improved for a group of women. They were provided greater chance for achievement, for recognition, for advancement, and for psychological challenge and growth.⁶⁴

The sample population for the first study consisted of 120 young women in the Treasury Department of AT&T who handle customer complaints and problems. Based on five criteria established before beginning the study, the results were negative at first but soon improved drastically. Ford summarized the results of this study as follows:

The achieving or experimental group clearly exceeded the controlled and uncommitted groups on a variety of criteria, such as turnover, quality of customer service, productivity, lowered costs, lower absence rates, and source for managerial upgrading. While the controlled and uncommitted groups also

⁶³Robert N. Ford, Motivation Through the Work Itself (New York: American Management Association, 1969).

⁶⁴Ibid., p. 39.

gained moderately on these indexes during the six months of the study, only the experimental group members felt significantly better about the task at which they worked. The upward change in this group is most striking. Not all members of the achieving group were moved upward, and a few did not move very far. There is still room for them to improve and still a challenge for the managers.

This experimental study offers some confirmation for the idea that large gains can result from improvements in the work itself with little out-of-pocket expense, and it suggests a plan for achieving these gains.⁶⁵

This study was later replicated in 18 other situations in ten of the associated Bell companies. The results obtained were reported to be somewhat similar in all cases.

In addition to dedicating the book to Herzberg, Ford devoted considerable space to comments concerning Herzberg and the Motivator-Hygiene Theory. He pointed out that Herzberg's work has proved to be a powerful stimulus to research in the field of motivation and, in fact, was the basis for their studies. He also notes that the results of their studies are in line with Herzberg's predictions. He states that one of the basic criticisms of Herzberg's findings is over-simplification of a very complex situation. Ford maintains that this argument is difficult to follow and that these critics are not producing counter-theories that account for experimental facts better than does Herzberg's theory.⁶⁶

Another frequent criticism enumerated is that hygienes and work motivators are not independent, but that there is an interaction effect.

⁶⁵Ibid., p. 39.

⁶⁶Ibid., pp. 242-246.

Ford generally concedes that this may be true, but he argues that the separation is a "happy one" in that it clarifies thinking and points the way forward.⁶⁷

Ford outlines three stages at which such a theory might be evaluated.

Stage 1: Survey

Stage 2: Experimental--Simulated work groups in which people are divided into controlled versus experimental groups and asked to perform work under various conditions.

Stage 3: Experimental--Real work groups in an ongoing living situation, as reported in his book.⁶⁸

Ford maintains that most of the articles critical of Herzberg's findings are generally based on the first of these three stages. He acknowledges that the criticisms are hard to deny but points out that they do not represent an impressive advance themselves in the understanding of work itself as a motivator. Ford summarizes as follows:

This study supports Herzberg's theory that there are great gains to be realized by giving the employee challenging work assignments and by holding him responsible for performing his job competently and completely. So far as maintenance items are concerned, good work conditions, good company policies, good administrators, and good supervision are necessary and expected by the employees. It is just as necessary that wages and benefit programs be competitive with other industries. In other words, they must be maintained in the "good pay" range in order that we may attract

⁶⁷Ibid., p. 245.

⁶⁸Ibid., pp. 248-249.

and hold the number of qualified employees needed in our business. But these maintenance items alone are not sufficient to assure good production over an extended period of time.

The real motivators of improved performance and job satisfaction are centered in the work itself: the satisfaction of being responsible for the job, the sense of achievement in doing the job, and the recognition and opportunities for advancement inherent in good performance. . . . It may very well be that some jobs cannot be enriched and that some employees cannot be motivated by this approach. For any one of a number of reasons, some employees have reached a point of frustration in their work where they resist accepting additional responsibility. They just want to be told what to do and left alone to do it at their own pace. To quote Dr. Herzberg, "Resurrection is much more difficult than giving birth." Consequently, it may be even more important to guard against future fractionalizing of jobs to the point where all the real challenges and responsibilities are removed.⁶⁹

The results of the Bell studies are impressive. The effect of motivators on job performance is clearly evident. Yet the question has been raised as to the potential efficacy of hygienes in improving the criteria used in the Bell studies. Unfortunately, the design of the studies did not allow for varying of the hygienes while holding motivators constant. Therefore this question must remain unanswered.

IV. DEVELOPMENT AND TESTING OF HYPOTHESES

As indicated by the preceding partial review of literature concerning the Motivator-Hygiene Theory, Herzberg's conclusions have been challenged on numerous grounds. The main purpose of this study was to develop and test a hypothesis which would indicate support or nonsupport

⁶⁹Ibid., p. 255.

for Herzberg's findings, using data obtained by a method designed to avoid as many points of criticism as possible. The development and implementation of such a method is outlined in Chapter III.

In addition to this primary hypothesis, several secondary hypotheses can be derived from Herzberg's statement of the Motivator-Hygiene Theory. These too can be tested using the data obtained in this study. These data can also be used to evaluate hypotheses based on King's five versions of the Motivator-Hygiene Theory (see pages 34-35).

Many of the hypotheses to be tested cannot be understood without reference to the specially constructed test instrument used to obtain the data for this study. Therefore, a detailed statement of each hypothesis to be tested will be postponed until this information has been presented in Chapter III.

CHAPTER III

DEVELOPMENT AND IMPLEMENTATION OF THE TESTING METHODOLOGY

I. DEVELOPMENT

Overview of the Methodology

The main ingredient required in developing the methodology used in this study was the creation of a test instrument yielding a type of critical incident data quite similar to Whitlock's (1963) performance specimens¹ while eliminating many of the controversial features of the Herzbergian methodology. An attendant requirement was the creation of a rating scale by which various degrees of satisfaction and dissatisfaction associated with each performance specimen could be expressed. A criterion for consistency of response was built into the test instrument. Provision was made to obtain data to measure the test-retest reliability of the instrument. Finally, an indicator of overall job satisfaction was included.

Sample Investigated

The subjects for this study included 132 full-time vocational trainees from all of the seven vocational training programs offered at a state-supported vocational-technical training school in Tennessee. About 25 of the 132 subjects were females. The age span of the group

¹G. H. Whitlock, "Application of the Psychophysical Law to Performance Evaluation," Journal of Applied Psychology, 47:15-23, 1963.

was 17 through 42 years of age with an average age of 20 years. About 60% of the group had received a high school diploma; about 20% of this group were veterans attending under the G. I. Bill. Considering service time as previous work experience, about 75% of the subjects had held some full-time job before entering the training program. As an entry prerequisite, each subject was required to score between 80 and 120 on the General Aptitude Test Battery.

The training programs in which the subjects were engaged included the following:

Auto Mechanics	Data Processing
Drafting and Tool Design	Machine Shop
Electronics and Electricity	Welding
Office Occupations and Accounting	

Development of the Test Instrument

Five of Herzberg's job factors² were selected as a basis for the test instrument. Two satisfiers (achievement and the work itself) and three hygienes (interpersonal relations, working conditions, and company policy and administration) were chosen for study. A large number of both positively- and negatively-worded statements were drafted about each job factor, taking care to ascertain the relevance of each statement to the specific conditions of the situation in which the instrument was to be applied. For example, after investigating the working conditions at the school a number of positive and

²See Chapter I, pages 5-6, for a definition of each job factor.

negative statements were drafted concerning each facet of working conditions (noisy, quiet, cold, hot, etc.) which might have occurred. A number of conferences were held with both staff members and students of the school to verify relevance of each statement.

The items developed for this study were based on and similar to an evaluation form developed by Butler and Gordon and used in a pilot study to evaluate the attitudes of hard-core unemployables in a manpower training program.³ The number of statements comprising each positive and negative job factor scale is given in Table II. A copy of the test instrument developed may be found in Appendix A.

Each subject was requested to respond only to those statements referring to a feeling or experience which actually occurred or happened to him/her personally in their work at the school. The subject was requested to indicate the level of satisfaction or dissatisfaction resulting from each of these incidents. Finally, all subjects were asked to indicate their overall satisfaction with their training program.

Criterion for Response Consistency

In order to test for consistency of response by each subject, a consistency scale was built into the test instrument. This scale consists of a number of pairs of diametrically opposite statements.

³Richard P. Butler and Michael E. Gordon, A Study of Trainee Attitudes in a Manpower Training Program (Oak Ridge Associated Universities Special Report II (II) R-8, July, 1970).

TABLE II
COMPOSITION OF JOB FACTOR SCALES

Job Factor	Factor Classification	No. of Positive Statements	No. of Negative Statements
Achievement (A)	Motivator	13	11
Work Itself (W)	Motivator	10	10
Interpersonal Relations (IR)	Hygiene	17	17
Working Conditions (WC)	Hygiene	11	15
Company Policy and Administration (CPA)	Hygiene	11	19
Total		62	72

In order to insure reliable data for this study, each checklist was analyzed to determine the number of pairs of opposite statements responded to by the subject. Those responding to an excessive number of opposite-pair statements were discarded. The discards were determined by constructing a frequency distribution of the number of opposite-pair statements observed in the entire sample. The mean (4.7) and the standard deviation (5.3) of this distribution were calculated. Those checklists of more than the standard deviation above the mean ($4.7 + 5.3 = 10.0$) of opposite-pair statements were discarded. The sets of

opposite-pair statements are listed in Table III. The statements are identified according to their number in the test instrument (see Appendix A).

TABLE III
OPPOSITE-PAIR STATEMENTS COMPRISING CONSISTENCY SCALE

Opposite Pairs			Opposite Pairs		
Statement No.		Statement No.	Statement No.		Statement No.
9	-	124	62	-	72
10	-	133	66	-	132
16	-	61	73	-	108
18	-	63	77	-	82
21	-	86	79	-	113
31	-	96	87	-	102
39	-	84	92	-	107
43	-	58	109	-	116
49	-	94	115	-	134

Development of Rating Scale

The subjects were requested to respond to all statements which they had personally experienced. For those statements to which they responded, they were requested to also indicate their feelings of satisfaction or dissatisfaction engendered by the event. This called for the use of a rating scale. A seven-point rating scale was developed similar to the one used by Kosmo and Behling in an empirical test of the Motivator-Hygiene Theory.⁴ The portion of the scale from

⁴A discussion of this study will be found in Chapter II, pp. 31-32.

one to four represented the dissatisfaction gradient; the portion from four to seven represented gradations of satisfaction ranging from not satisfied to very satisfied. The rating scale used is shown at the top of the first page of the test instrument (see Appendix A). For the convenience of the subjects, a copy of the rating scale was printed at the top of each sheet of the checklist they marked. By using such a scale it was possible to translate feelings of satisfaction and dissatisfaction to a numerical scale, making possible statistical analyses of the information obtained.

Some Significant Features of the Test Instrument

The basic objective of this study was to determine whether Herzberg's findings and conclusions can be replicated using a methodology modified to avoid features criticized in the literature but still producing performance specimen data similar to those used by Herzberg. Some of the criticisms of Herzberg's methodology are enumerated as follows, with a brief notation describing the means used to eliminate or avoid these elements in this study.

1. Semistructured interview technique--Herzberg used a semistructured interview technique of data collection in which no control was exercised on the number of incidents supplied by each subject nor the number of job factors mentioned. This study was conducted using a structured 134-item performance specimen checklist. Thus, it was assured that every subject was exposed to an identical number of

incidents and job factors. The large number of items made it highly probable that most relevant incidents were touched upon.

2. Open-ended format--Herzberg's subjects were allowed to range as far back in their work experience as desired, raising the question of selective recall bias. In this study, all responses were derived from actual events occurring on the present job (training program), a period of less than two years in most cases.
3. No reliability data--Herzberg presented no data to substantiate the reliability of his test instrument. In this study, data were obtained to determine the test-retest reliability of the instrument used. This will be discussed in detail in the following chapter.
4. No measure of overall satisfaction--Herzberg was criticized for drawing conclusions about overall job satisfaction with no data to substantiate them. An additional item was appended to the 134-item checklist to measure the overall satisfaction of each subject with the work situation.
5. Reversed role of variables--In Herzberg's study, the role of the dependent variables (satisfaction and dissatisfaction) and the independent variables (motivators and hygienes) were reversed. In the present study, the independent variables were held constant and the dependent variables were allowed to vary, in accordance with experimental convention.

5. Experimenter coding bias--King (1970) indicated by comparison of subject-coded studies and experimenter-coded studies that much of the data on which the Motivator-Hygiene Theory is based must be considered invalid because of experimenter coding biases.⁵ The present study was designed so that no interpretation or coding of the subjects' replies were necessary and the possibility of such a bias was eliminated.

II. IMPLEMENTATION

Pretesting the Instrument

The performance specimen checklist initially developed was administered to three subjects who were, or recently had been, students in a similar vocational training program. The subjects were given full instructions and timed to determine the approximate length of the checklist in minutes. After completing the checklist, the subjects were questioned about unclear points and each statement on the checklist was reviewed to determine the basis for the subjects' response. The checklist was modified to eliminate all misleading and unclear points which were thus exposed.

Instruction for Using the Instrument

A complete and detailed set of written instructions was provided for the counselling staff at the school, two of whom administered the

⁵Nathan King, "Clarification and Evaluation of the Two-Factor Theory of Job Satisfaction," Psychological Bulletin, 74:27-28, 1970.

checklist. Thus, each group of subjects received the same set of instructions. The instructions took the subjects through the initial five statements on the checklist, explaining response modes and use of the rating scale. A copy of the complete instructions used is given in Appendix B.

Administering the Instrument

The checklist, in the form of a trainee attitude survey, was administered to each group separately over the period of April 27, 1971, to May 5, 1971. For the followup study, the largest of the groups (Office Occupations and Accounting) was called back to take the checklist with the order of items rearranged on June 4, 1971.

III. STATEMENT OF HYPOTHESES TO BE TESTED

Primary Hypothesis

As this study was constructed using both negative and positive statements about both motivators and hygienes, the main hypothesis to be tested can be stated in two parts. First, in order to support Herzberg's findings and conclusions, the mean response (U) of subjects responding to a positive statement should be greater when the statement refers to a motivator (M⁺) than when the statement refers to a hygiene (H⁺). In the second case, the mean response (U) of subjects responding to a negative statement should be greater (i.e., higher number) when the statement refers to a motivator (M⁻) than when the statement refers to a hygiene (H⁻). Both cases must hold in order to be supportive of Herzberg's theory.

The null hypothesis then would state that the mean response (U) to positive statements would be the same for both motivators (M⁺) and hygienes (H⁺). Similarly, the mean response (U) to negative statements would be the same for statements based on both motivators (M⁻) and hygienes (H⁻). These two cases of the null and alternative hypotheses can be stated more simply as follows:

<u>Case 1</u>		<u>Case 2</u>
$H_0 : U_{M^+} = U_{H^+}$	AND	$H_0 : U_{M^-} = U_{H^-}$
$H_a : U_{M^+} > U_{H^+}$		$H_a : U_{M^-} > U_{H^-}$

FIGURE 2

MATHEMATICAL STATEMENT OF PRIMARY HYPOTHESIS

It should be noted that rejection of the null hypotheses will support Herzberg's theory.

Other Hypotheses

In addition to the main hypothesis, several other hypotheses can be derived from Herzberg's statement of the Motivator-Hygiene Theory. He indicates that motivators make essentially no contribution to feelings of dissatisfaction while hygienes make essentially no contribution to satisfaction. In this study, a response of 4.0 indicated no satisfaction and no dissatisfaction. Therefore, it can be hypothesized that the mean response to negative statements about all motivators will not differ significantly from 4.0.

$$H_0 : U_{M^-} = 4.0$$

$$H_a : U_{M^-} \neq 4.0$$

Similarly, it can be hypothesized that the mean response to positive statements about all hygienes will not differ significantly from 4.0.

$$H_0 : U_{H^+} = 4.0$$

$$H_a : U_{H^+} \neq 4.0$$

In both of these cases, acceptance of the null hypothesis will support Herzberg's theory.

To be precise, Herzberg's statements about the effects of motivators and hygienes on satisfaction and dissatisfaction referred to each motivator and each hygiene. Therefore, each of the above hypotheses can be restated for the individual motivators (Achievement and Work Itself) and hygienes (Company/School Policy and Administration, Interpersonal Relations, and Working Conditions) used in this study.

For Motivators:

$$H_0 : U_{A^-} = 4.0$$

AND

$$H_0 : U_{W^-} = 4.0$$

$$H_a : U_{A^-} \neq 4.0$$

$$H_a : U_{W^-} \neq 4.0$$

For Hygienes:

$$H_0 : U_{CPA^+} = 4.0$$

AND

$$H_0 : U_{IR^+} = 4.0$$

AND

$$H_0 : U_{WC^+} = 4.0$$

$$H_a : U_{CPA^+} \neq 4.0$$

$$H_a : U_{IR^+} \neq 4.0$$

$$H_a : U_{WC^+} \neq 4.0$$

Again, the acceptance of the five null hypotheses will support Herzberg's theory.

Hypotheses Based on King's Versions of Herzberg's Theory

In addition to the above stated hypotheses, the data collected in this study can be used to determine support or nonsupport of King's

versions of Herzberg's theory for critical incident data (see Table I, pages 34-35). Only Theories I, II, and III will be considered here.

The research hypothesis for each is listed below.

Theory I

- A. The Response Rate (RR) for all positive motivator (M^+) statements will be significantly higher than the RR for all negative motivator (M^-) statements.

$$H_a : RR_{M^+} > RR_{M^-}$$

- B. The RR for all negative hygiene (H^-) statements will be significantly higher than the RR for all positive hygiene (H^+) statements.

$$H_a : RR_{H^-} > RR_{H^+}$$

Theory II

- A. The RR for all positive motivator (M^+) statements will be significantly higher than the RR for all positive hygiene (H^+) statements.

$$H_a : RR_{M^+} > RR_{H^+}$$

- B. The RR for all negative hygiene (H^-) statements will be significantly higher than the RR for all negative motivator (M^-) statements.

$$H_a : RR_{H^-} > RR_{M^-}$$

Theory III

- A. For each motivator (A, W) the RR will be significantly higher on the positive scale than on the negative scale.

$$H_a : RR_{A^+} > RR_{A^-} \quad \text{AND} \quad RR_{W^+} > RR_{W^-}$$

B. For each hygiene (CPA, IR, WC), the RR will be significantly higher on the negative scale than on the positive scale.

$$H_a : RR_{CPA^-} > RR_{CPA^+}$$

$$\text{and } RR_{IR^-} > RR_{IR^+}$$

$$\text{and } RR_{WC^-} > RR_{WC^+}$$

It should be noted that rejection of the null hypotheses, i.e., acceptance of these research hypotheses, will constitute support for Herzberg's theory.

CHAPTER IV

RESULTS

I. RELIABILITY

As a prelude to the presentation of any results obtained, the reliability of the test instrument must be examined. This was done using three approaches: number of opposite-pair statements occurring; modified Kuder-Richardson reliability for each factor scale; and test-retest reliability for each factor scale.

Opposite-Pair Statements

As an initial check on internal consistency, each subject's responses were scored for the number of opposite-pair statements to which he responded. After determining the distribution of these scores and the standard deviation, all subjects with a greater number of opposite-pair statements than the upper one-sigma limit were discarded. Of the 132 subjects in the original study, 20 were discarded.

Kuder-Richardson Reliability

Generally speaking, the Kuder-Richardson formula is used to statistically determine the internal consistency of a data-collecting instrument allowing only two items of response, such as pass or fail.¹

¹G. A. Ferguson, "A Note on the Kuder-Richardson Formula," Educational and Psychological Measurement, 11:612-615, 1951.

A modified version of this formula has been found useful for providing indices of the internal consistency of response on personality inventories, attitude scales such as those used in this study, and other tests which allow multiple response categories.² Using this modified version, a Kuder-Richardson reliability coefficient was calculated for each scale. Scales are comprised of all the statements of like polarity, either positive or negative, about each individual job factor, such as Achievement (A), Company/School Policy and Administration (CPA), et cetera. The reliability coefficient was based on the total score for each individual on a given scale. The total score for each scale was obtained by summing the responses on the seven-point Rating Scale to all statements comprising the factor scale. The reliability coefficients for each scale are listed in Table IV for the data collected in this study. Also included in Table IV for comparison are similar reliability coefficients calculated for the data collected in the pilot study by Butler and Gordon.³

Test-Retest Reliability

To measure the test-retest reliability of the instrument, 18 subjects were retested using a scrambled version of the checklist. The time interval between tests was about one month. Their responses on

²Ibid., p. 614.

³Richard P. Butler and Michael E. Gordon, A Study of Trainee Attitudes in a Manpower Training Program (Oak Ridge Associated Universities Special Report II (11), R-8, July, 1970).

TABLE IV
 KUDER-RICHARDSON RELIABILITIES FOR EACH SCALE BASED
 ON TOTAL SCORE

Scale	Data from Current Study		Data from Pilot Study	
	r	No. of Items	r	No. of Items
A ⁺	0.74	13	0.45	10
A ⁻	0.64	11	0.56	9
W ⁺	0.77	10	0.79	10
W ⁻	0.67	10	0.72	9
CPA ⁺	0.72	11	0.77	10
CPA ⁻	0.77	19	0.43	10
IR ⁺	0.80	17	0.84	14
IR ⁻	0.75	17	0.62	10
WC ⁺	0.71	11	0.78	9
WC ⁻	0.69	15	0.75	14
Mean	0.73		0.67	
N	112		72	

the retest were compared with their original response, both in terms of response rate and total score for each of the ten job factor scales.

Response rate in this case is defined as the number of subjects responding to each item on a given scale in both the test and retest, divided by the number of subjects involved.

The total score criterion was determined by totaling all the responses, ie., numbers from 1 to 7, on a given scale (for example, A⁺) by each subject during the original test; summing the responses by all subjects for each of the ten scales; and comparing these ten sums with corresponding sums determined from the retest results. Following this procedure resulted in a test-retest correlation coefficient for each of the ten scales.

The test-retest reliability for each scale as measured by both response rate and total score is listed in Table V.

As mentioned previously, 18 subjects were retested. Actually, 19 were retested but one checklist was discarded because of an excessive number of opposite-pair statements. However, in Table V it will be noted that for some scales $N < 18$. This situation occurred because some respondents did not respond to any of the statements comprising those particular scales.

II. DATA OBTAINED

The raw data obtained in this study have been analyzed and summarized in several ways. As the raw data are quite voluminous and of very little value in that form, only data which have been summarized

TABLE V
 TEST-RETEST RELIABILITIES FOR RESPONSE RATE AND TOTAL SCORE
 FOR EACH SCALE

Scale	N	Response Rate r	Total Score r
A ⁺	18	0.18	0.84
A ⁻	14	0.32	0.64
W ⁺	18	0.69	0.77
W ⁻	15	0.57	0.72
CPA ⁺	18	0.37	0.74
CPA ⁻	18	0.14	0.32
IR ⁺	18	0.51	0.74
IR ⁻	15	0.68	0.74
WC ⁺	18	0.77	0.78
WC ⁻	18	0.51	-0.04
Median		0.51	0.74

according to job factor scales and motivator/hygiene factors will be presented here.

Summarized Scale Data

In order to use the data to test the hypotheses derived from Herzberg's theory, it was necessary to organize the total body of data to present response rates and mean responses as a function of the different job factor scales. This was effected by grouping together all statements based on a given job factor (for example, A⁺) and considering these as a single entity. These data are listed in Table VI. Statistics calculated included the response rate, mean satisfaction of all subjects responding to the scale in question, and the standard deviations of both these statistics. In addition, the data collected in the pilot study have been analyzed in exactly the same manner and are also listed for comparison in Table VI.

The data given in Table VI were further consolidated by grouping all the data comprising all the positive motivator scales (A⁺, W⁺); all the data comprising the negative motivator scales (A⁻, W⁻); all the data comprising the positive hygiene scales (CPA⁺, IR⁺, WC⁺); and all the data comprising the negative hygiene scales (CPA⁻, IR⁻, WC⁻). The response rates, mean satisfaction, and standard deviations were calculated for both negative and positive hygienes and motivators. A similar operation was performed on the data obtained in the pilot study. The results are given in Table VII.

TABLE VI
 RESPONSE RATE AND MEAN RESPONSE BY ALL SUBJECTS
 FOR EACH JOB FACTOR SCALE

Scale	Data from Current Study				N
	Response Rate		Mean Satisfaction		
	\bar{X}	σ	\bar{X}	σ	
A ⁺	65	21	5.97	0.58	112
A ⁻	33	23	3.40	1.43	103
W ⁺	74	22	5.94	0.77	112
W ⁻	33	25	3.66	1.51	101
CPA ⁺	60	21	5.47	1.01	112
CPA ⁻	33	20	3.78	1.09	108
IR ⁺	69	20	5.90	0.55	112
IR ⁻	28	20	3.55	1.48	101
WC ⁺	73	20	5.48	0.87	112
WC ⁻	34	20	3.33	1.21	108

Scale	Data from Pilot Study				N
	Response Rate		Mean Satisfaction		
	\bar{X}	σ	\bar{X}	σ	
A ⁺	78	15	5.78	0.50	72
A ⁻	37	22	2.97	1.20	67
W ⁺	75	24	5.84	0.86	72
W ⁻	35	27	2.95	1.38	66
CPA ⁺	71	23	5.73	0.89	71
CPA ⁻	40	22	3.17	1.02	70
IR ⁺	67	25	5.71	0.80	72
IR ⁻	29	24	2.75	1.42	58
WC ⁺	55	29	5.00	1.09	69
WC ⁻	40	21	2.62	1.22	71

TABLE VII

RESPONSE RATE AND MEAN RESPONSE BY ALL SUBJECTS FOR ALL
MOTIVATORS COMBINED AND ALL HYGIENES COMBINED

Scale	Data from Current Study				N
	Response Rate		Mean Satisfaction		
	\bar{X}	σ	\bar{X}	σ	
Motivators +	69	19	5.95	0.62	112
Motivators -	33	22	3.57	1.39	110
Hygienes +	68	18	5.67	0.66	112
Hygienes -	31	19	3.57	1.10	111

Scale	Data from Pilot Study				N
	Response Rate		Mean Satisfaction		
	\bar{X}	σ	\bar{X}	σ	
Motivators +	76	15	5.81	0.57	72
Motivators -	36	21	2.99	1.10	69
Hygienes +	65	22	5.56	0.74	72
Hygienes -	36	18	2.81	0.91	72

Summary Statistics for Overall Satisfaction

In addition to the 134 statements based on the five job factors, another item was appended to the checklist to allow the subjects to indicate their overall satisfaction or dissatisfaction with the training program. They were instructed to use the seven-point rating scale for this purpose, just as they had used it for each of the other 134 items in the checklist. These replies were summarized and are listed in Table VIII.

TABLE VIII

SUMMARY STATISTICS OF OVERALL SATISFACTION OR
DISSATISFACTION FOR ALL SUBJECTS

	Value
Response Rate	73%
Mean Satisfaction	5.51
Standard Deviation	1.40
Test-Retest Reliability Coefficient r	0.86 (N = 12)

III. RESULTS OF TESTING OF HYPOTHESES

With the results listed in the preceding tables in this chapter, it is possible to test the hypotheses which were set up to be answered by this study. These hypotheses are stated in Chapter III, pages 56-60.

Primary Hypothesis

The primary hypothesis can be stated as follows:

$$\begin{array}{ll}
 H_0 : U_{M^+} = U_{H^+} & \text{AND} & H_0 : U_{M^-} = U_{H^-} \\
 H_a : U_{M^+} > U_{H^+} & & H_a : U_{M^-} > U_{H^-}
 \end{array}$$

Using data from this study as listed in Table VII, page 68, it can be seen that $U_{M^+} = 5.95$; $U_{H^+} = 5.67$. A t test was conducted to determine the statistical significance of the difference between the mean of the positive motivators and the mean of the positive hygienes. The obtained t of 6.92 (d.f. = 110) was significant at $\alpha = 0.01$ for a one-tail test.

Similarly, using data from Table VII for the negative motivator and hygiene scales, it can be seen that $U_{M^-} = 3.57$; $U_{H^-} = 3.57$. A similar test to determine the statistical significance of the difference yielded a t of -0.22 (d.f. = 107) which was not significant at $\alpha = 0.10$ for a one-tail test.

As stated earlier, it is necessary that both cases of the alternative hypothesis hold in order to support Herzberg's theory of work motivation. As the negative case does not hold, the results of this study do not support the primary hypothesis.

The data from the pilot study can also be used to evaluate the primary hypothesis.

$$U_{M^+} = 5.81 \qquad U_{H^+} = 5.56$$

Student's $t = 3.58$ (d.f. = 70)

Significant at $\alpha = 0.01$ for a one-tail test.

$$U_{M-} = 2.99$$

$$U_{H-} = 2.81$$

Student's \underline{t} = 1.35 (d.f. = 67)

Not significant at $\alpha = 0.05$; significant at $\alpha = 0.10$

for a one-tail test.

At $\alpha = 0.05$ or less, these data yield the same results as obtained from the data collected in the current study, i.e., they do not support the primary hypothesis.

Other Hypotheses

In a similar manner, the other hypotheses set up in Chapter III can be evaluated using the data presented in Table VII, page 68, when the hypothesis deals with motivators or hygienes combined. When the hypothesis deals with individual motivators or hygienes, the data presented in Table VI, page 67, can be used. In Table IX below, each of the null hypotheses is listed along with the relevant data from Table VI or VII. The results of the Student's \underline{t} test to determine the statistical significance of the difference is also listed, indicating the degrees of freedom and α for each case.

The results given in Table IX indicate a statistically significant difference in every case between the mean response of the subjects in this study and the result predicted by the Motivator-Hygiene Theory, as stated by the null hypothesis.

The hypotheses tested in Table IX can also be tested using the data collected in the pilot student and reported in Tables VI and VII.

TABLE IX
RESULTS OF TESTS OF OTHER HYPOTHESES

Null Hypothesis	Mean Response	Student's Test Statistic			Is Difference Significant?
		t	d.f.	α^*	
$H_0 : U_{M-} = 4.0$	$U_{M-} = 3.57$	-3.30	109	0.01	Yes
$H_0 : U_{H+} = 4.0$	$U_{H+} = 5.67$	27.83	111	0.01	Yes
$H_0 : U_{A-} = 4.0$	$U_{A-} = 3.40$	-4.28	102	0.01	Yes
$H_0 : U_{W-} = 4.0$	$U_{W-} = 3.66$	-2.26	101	0.05	Yes
$H_0 : U_{CPA+} = 4.0$	$U_{CPA+} = 5.47$	16.33	111	0.01	Yes
$H_0 : U_{IR+} = 4.0$	$U_{IR+} = 5.90$	38.00	111	0.01	Yes
$H_0 : U_{WC+} = 4.0$	$U_{WC+} = 5.48$	18.50	111	0.01	Yes

*For two-tail test.

TABLE X
RESULTS OF TESTS OF OTHER HYPOTHESES USING
DATA COLLECTED IN PILOT STUDY

Null Hypothesis	Mean Response	Student's Test Statistic			Is Difference Significant?
		t	d.f.	α^*	
$H_0 : U_{M^-} = 4.0$	$U_{M^-} = 2.99$	-7.76	68	0.01	Yes
$H_0 : U_{H^+} = 4.0$	$U_{H^+} = 5.56$	19.50	71	0.01	Yes
$H_0 : U_{A^-} = 4.0$	$U_{A^-} = 2.97$	-7.35	66	0.01	Yes
$H_0 : U_{W^-} = 4.0$	$U_{W^-} = 2.95$	-6.56	65	0.01	Yes
$H_0 : U_{CPA^+} = 4.0$	$U_{CPA^+} = 5.73$	17.30	70	0.01	Yes
$H_0 : U_{IR^+} = 4.0$	$U_{IR^+} = 5.71$	19.00	71	0.01	Yes
$H_0 : U_{WC^+} = 4.0$	$U_{WC^+} = 5.00$	7.69	68	0.01	Yes

*For two-tail test.

The data collected in the pilot study yielded almost identical results to those results based on data collected in this study. In every case a significant difference was found between the mean response of the subjects and the result predicted by the null hypothesis. Thus, the null hypothesis must be rejected.

Hypotheses Based on King's Versions of Herzberg's Theory

The data collected in this study and presented in Tables VI and VII, pages 67 and 68, were also used to determine support or nonsupport for three of the five versions of Herzberg's theory developed by Nathan King. These versions of the Motivator-Hygiene Theory, referred to as Theories I, II, and III, are outlined in Chapter III (see page 59). These hypotheses were tested by using response rate data, the percentage of the subjects responding in any fashion to a given job factor scale or group of scales, rather than by mean response data, as used to test the primary and other hypotheses.

The results of these tests, given in Tables XI and XII, show that the data obtained in both studies are nonsupportive of either of the three versions of Herzberg's theory as hypothesized here.

TABLE XI

EVALUATION OF KING'S VERSIONS (THEORIES I, II, AND III) OF HERZBERG'S THEORY

Theory	Alternative Hypothesis	Response Rates Compared	Student's Test Statistic			Is Difference Significant?
			t	d.f.	α	
I	$RR_{M^+} > RR_{M^-}$	$M^+ = 69; M^- = 33$	15.71	222	0.01*	Yes
	$RR_{H^-} > RR_{H^+}^a$	$H^- = 31; H^+ = 68$	-17.66	222	0.01**	Yes (Reversed)
II	$RR_{M^+} > RR_{H^+}$	$M^+ = 69; H^+ = 68$	1.42	222	0.05*	No
	$RR_{H^-} > RR_{M^-}^b$	$H^- = 31; M^- = 33$	-1.13	222	0.10**	No
III	$RR_{A^+} > RR_{A^-}$	$A^+ = 65; A^- = 33$	14.61	222	0.01*	Yes
	$RR_{W^+} > RR_{W^-}$	$W^+ = 74; W^- = 33$	12.99	222	0.01*	Yes
	$RR_{CPA^-} > RR_{CPA^+}$	$CPA^- = 33; CPA^+ = 60$	-11.43	222	0.01**	Yes (Reversed)
	$RR_{IR^-} > RR_{IR^+}$	$IR^- = 28; IR^+ = 69$	-16.32	222	0.01**	Yes (Reversed)
	$RR_{WC^-} > RR_{WC^+}$	$WC^- = 34; WC^+ = 73$	-17.35	222	0.01**	Yes (Reversed)

*For one-tail test.

**For two-tail test.

^a $RR_{H^-} \neq RR_{H^+}$ was the alternative hypothesis actually tested because of the observed direction of the means.

^b $RR_{H^-} \neq RR_{M^-}$ was the alternative hypothesis actually tested because of the observed direction of the means.

Must accept null hypothesis against alternative hypothesis.

TABLE XII

EVALUATION OF KING'S VERSIONS (THEORIES I, II, AND III) OF HERZBERG'S THEORY USING PILOT STUDY DATA

Theory	Alternative Hypothesis	Response Rates Compared	Student's Test Statistic			Is Difference Significant?
			t	d.f.	α	
I	$RR_{M^+} > RR_{M^-}$	$M^+ = 76; M^- = 36$	15.70	142	0.01*	Yes
	$RR_{H^-} > RR_{H^+}^a$	$H^- = 36; H^+ = 65$	-10.83	142	0.01**	Yes (Reversed)
II	$RR_{M^+} > RR_{H^+}$	$M^+ = 76; H^+ = 65$	5.80	142	0.01*	Yes
	$RR_{H^-} > RR_{M^-}$	$H^- = 36; M^- = 36$	0.00	142	0.01*	No
III	$RR_{A^+} > RR_{A^-}$	$A^+ = 78; A^- = 37$	14.35	142	0.01*	Yes
	$RR_{W^+} > RR_{W^-}$	$W^+ = 75; W^- = 35$	9.98	142	0.01*	Yes
	$RR_{CPA^-} > RR_{CPA^+}$	$CPA^- = 40; CPA^+ = 41$	-9.93	142	0.01**	Yes (Reversed)
	$RR_{IR^-} > RR_{IR^+}$	$IR^- = 29; IR^+ = 67$	-10.94	142	0.01**	Yes (Reversed)
	$RR_{WC^-} > RR_{WC^+}$	$WC^- = 40; WC^+ = 55$	-4.20	142	0.01**	Yes (Reversed)

*For one-tail test.

**For two-tail test.

^a $RR_{H^-} \neq RR_{H^+}$ was the alternative hypothesis actually tested because of the observed direction of the means.

CHAPTER V

DISCUSSION OF RESULTS AND CONCLUSIONS

I. RELIABILITY CRITERIA

As reported earlier, one of the most frequently-voiced criticisms of Herzberg's findings is that no evidence was presented to support the reliability of the test instrument used. Also, several writers have presented evidence indicating that experimenter coding bias is responsible for some of the results reported by Herzberg. To eliminate such possibilities, this study was designed to avoid any experimenter coding biases and several reliability criteria were included.

Another possible source of bias in Herzberg's results is the limited amount of information obtained from each subject. Using a nonstructured data collecting technique, Herzberg obtained only 2.4 response sequences, on average, from his subjects. In the present study, using a structured approach similar to Herzberg's recall of significant events technique, about 70 responses were obtained from each subject, on average. Thus each subject was exposed to a large and proportionate number of potential responses about five of the job factors found to be very prominent by Herzberg. Any bias of selective recall should be effectively eliminated, making the results obtained in this study a much more sound basis from which to draw conclusions.

Opposite-Pair Statements

The large number of opposite-pair statements scattered throughout the checklist served to identify and weed out those subjects giving a significant number of questionable replies. Reasons for the appearance of these questionable replies probably range from insincerity to lack of comprehension. A study of the raw data indicated that a number of subjects did not completely understand the instructions given. Most of these subjects and all the obviously insincere subjects were eliminated.

Kuder-Richardson Reliability

A modified Kuder-Richardson reliability coefficient was calculated for each scale using data from this study and from the pilot study. Each coefficient is an indicator of the homogeneity of the statements comprising that particular scale. It is a measure of the degree to which all the statements comprising a scale seem to be measuring the same factor.

For the data collected in this study, the reliability values for each scale range only from 0.64 to 0.80 with a mean value of 0.73. This indicates fairly high uniformity in measuring the parameters on which they are based. The high mean correlation for all the scales indicates a fairly high degree of reliability of the test instrument.

In comparison, the r values from the pilot study, while acceptable, have a much wider range and a slightly lower mean value. Apparently, the refinements in the scales and the testing methodology used in this study as compared with the pilot study improved the consistency

of the scales. Examples of these refinements would include the pre-testing of the instrument; amplification of the instructions given; use of sample statements based on each of the job factors (alternating positive and negative factors) rather than biasing the subject with all sample statements based on the positive achievement factor; guarantee of complete anonymity; and other improvements based on the experiences of the pilot study.

Test-Retest Reliability

The main deficiency of the pilot study is a lack of measure of test-retest reliability. In the present study, the test-retest reliability was measured by both response rate data and total score data for each scale. These data indicate satisfactory reliability for most of the test instrument, particularly as measured by total score. The only exception of note is the correlation coefficient for the negative working conditions scale, indicating no relationship between the test and retest results for this particular scale. The only possible explanation is a change in the working conditions over the one-month period between testing and retesting. In any case, there appears to be no relation between the test-retest reliability of a single scale and the outcome of the study, so this becomes a moot question.

II. DISCUSSION OF TEST DATA

Summarized Scale Data

The response rate data presented in Tables VI and VII, pages 67 and 68, indicate the average percentage of the items comprising the

particular scale in question which was responded to by each of the subjects. For example, the response rate for the A⁺ scale (data from current study) was 65%. This means that on the average, each of the 112 subjects (N = 112) marked 65% of all the statements which comprise the A⁺ scale. The standard deviation for the response rate indicates the spread of data points when the data from each individual was summed and averaged. The mean response listed gives the average level of satisfaction or dissatisfaction expressed by the subjects marking A⁺ scale items.

It will be noted that a different N value is sometimes listed for a scale. For example, N = 103 for the A⁻ scale. This means that each of 103 subjects responded to at least one statement which was part of the A⁻ scale.

Several items of interest can be noted from Tables VI and VII, pages 67 and 68. First, the data gathered in the current study and the data from the pilot study are quite similar. Thus the current study provides a replication of the pilot study data. Secondly, the response rate for both motivators and hygienes, considered both individually and collectively, was much greater in each case for the positive scales than for the negative scales. By way of example, we can compare the response rate data for positive and negative scales of a given factor, using data from the current study listed in Table VI.

<u>Polarity</u>	<u>Comparative Response Rates for Each Job Factor, %</u>				
	<u>A</u>	<u>W</u>	<u>CPA</u>	<u>IR</u>	<u>WC</u>
Positive Scale	63	74	60	69	73
Negative Scale	33	33	33	28	34

These data follow a logical pattern and show a strong correlation with the criterion for overall satisfaction as reported in Table VIII, page 69. In other words, subjects who indicate a high level of overall satisfaction would be expected to respond more frequently to the positive than to the negative statements. It is also interesting to note that the data from the pilot study follow exactly the same pattern.

A third item of interest in Tables VI and VII, pages 67 and 68, is the pattern formed by the mean response data. Based on the Motivator-Hygiene Theory, it would be expected that the mean response to the positive motivator scales would fall in the five-to-seven range, while the negative motivators would fall in the range from four to five. Conversely, for negative hygiene scales the response should be in the one-to-three range; for positive hygiene scales the response should be from three to four. For the motivator scales, the results are fairly close to the prediction, although the negative motivator scales are slightly lower than predicted. The big surprise is the response to the hygiene scales. They do not drop to the low mean responses, as predicted, but appear to be quite homogeneous with the motivator scales. In fact, it is impossible to differentiate the job factors labeled motivators from those called hygienes, based on the

mean response data. This is true for the data collected in this study as well as the pilot study data.

Concerning the mean response data, it is also noted that the standard deviation of the mean is significantly smaller in each case for the positive scale than for the corresponding negative scale. With slightly more subjects responding to the positive scales and more than double the response rate on the positive scales versus the negative scales, a sizeable difference in the number of data points exists.

Summary Statistics for Overall Satisfaction

The mean satisfaction indicates a high level of overall satisfaction with the training programs. The correlation between this statistic and the high response rates on the positive job factor scales has already been pointed out and discussed in an earlier section of this chapter.

As the majority of subjects responded to this particular item and as their feelings about overall satisfaction and dissatisfaction would not be expected to change drastically over a short period of time, this item was selected as the best single individual item by which the test-retest reliability of the instrument could be measured. A correlation coefficient of 0.86 was determined which, considering the small sample size, indicates very good reliability of the test instrument.

III. DISCUSSION OF TESTING OF HYPOTHESES

Primary Hypothesis

The primary hypothesis states the main question which this study was designed to answer. If both alternative hypotheses are supported by these data, then Herzberg's Motivator-Hygiene Theory will have been supported by data similar to Herzberg's which was developed using a method designed to eliminate the criticisms of his method. Unfortunately, the negative case alternative hypothesis cannot be accepted, even when $\alpha = 0.10$. Somewhat similar results were obtained by testing these hypotheses with the pilot study data. The negative case alternative hypothesis was rejected at $\alpha = 0.05$, although it could no longer be rejected at $\alpha = 0.10$.

As the primary hypothesis is probably the weakest statement of the Motivator-Hygiene Theory which could be drafted, the fact that the data reported in this study will not support it is a serious blow to the credibility of the Motivator-Hygiene Theory.

It will be noted that the primary hypothesis was tested to determine the significance of the difference in the mean responses using a one-tail test. The Motivator-Hygiene Theory provides the rationale for this decision when it states that a given statistic will be greater than some other comparative statistic.

Other Hypotheses

In his statement of the Motivator-Hygiene Theory, Herzberg stated that the absence of motivators would not contribute significantly to

dissatisfaction and the presence of hygiene factors would not contribute significantly to job satisfaction. The results of tests of hypotheses based on this statement are listed in Table IX, page 72. As no job satisfaction and no job dissatisfaction both correspond to a rating of four on the rating scales used, null hypotheses can be set up stating that the mean response to all negative motivator statements combined and all positive hygiene statements combined will equal four on the rating scale. Similarly, and again based on Herzberg's theory hypotheses can be set up for each negative motivator and each positive hygiene, again equating them to a scale rating of four.

These hypotheses have been tested using the data obtained in this study and also the pilot study data. The results are listed in Tables IX and X, pages 72 and 73. In every case the mean response is significantly different from that predicted by Herzberg, as stated in the null hypothesis. In every case except one, the difference is significant at $\alpha = 0.01$; in that case $\alpha = 0.05$. It is interesting to note that the hypothesis which comes closest to meeting Herzberg's prediction is based on a single job factor, the work itself. It will be remembered that this particular factor is the basis for the massive restructuring of jobs at AT&T, as discussed in Ford's Motivation Through the Work Itself.¹

As was true for the primary hypothesis, these hypotheses were tested by calculating a Student's t. However, as the hypotheses

¹This book is discussed in Chapter II, pages 43-46.

tested were set up on an equality basis and the mean response could differ on either the higher or lower side, it was necessary to use a two-tail test rather than the one-trail test used previously. In summary, once again both the data collected in this study and the pilot study data have disconfirmed the predictions of the Motivator-Hygiene Theory.

Hypotheses Based on King's Versions of Herzberg's Theory

The results of the testing of King's versions of the Motivator-Hygiene or Two-Factor Theory are presented in Table XI, page 75 (using data from this study) and Table XII, page 76 (using data from the pilot study). The evaluation of King's Theories I, II, and III yields almost identical results when using the data from the pilot study as when using the data obtained in this study.

To be supportive of Theory I, both alternative hypotheses must be acceptable. The hypothesis concerning response to hygienes is not only unacceptable but the results are actually opposite to what is predicted by this version of the Motivator-Hygiene Theory. Therefore Theory I is not supported by either the data obtained in this study or the data obtained in the pilot study.

A slightly similar situation holds for Theory II. One of the two hypotheses is supported; the other is not. Therefore, Theory II is not supported.

Theory III states that for each motivator, the response rate will be significantly higher on the positive scale than on the negative scale

while the reverse will be true for each hygiene. The results presented in Tables XI and XII, pages 75 and 76, show that Theory III is supported for each motivator. However, the response to the hygiene statements is exactly opposite in every case to the predicted response. Therefore, Theory III is disconfirmed also. It would appear that neither the data collected in this study nor the data collected in the pilot study will support any of King's proposed versions of Herzberg's Motivator-Hygiene Theory.

IV. CONCLUSIONS

1. The reliability of the test instrument was adequately established using several criteria.

2. After testing a number of hypotheses, it can be concluded that neither the results of this study nor the results of the pilot study support Herzberg's Motivator-Hygiene Theory.

3. Herzberg states that motivators and hygienes are basically different. This statement does not appear to be warranted based on the results of the two studies given. Both in terms of response rate and mean satisfaction, motivators and hygienes appear to produce quite similar responses.

4. Herzberg states that the absence of motivators (negative motivators) will not contribute significantly to dissatisfaction; and the presence of hygiene factors (positive hygienes) will not contribute significantly to satisfaction. Both statements were proven to be untrue, particularly in the case of the positive hygiene factors.

5. Because of the lack of a comprehensive and detailed statement of the Motivator-Hygiene Theory, several different interpretations are possible. King outlined five possible versions of the theory. None of the five were supported when tested using data from both the current study and the pilot study.

6. Based on both the response rate and mean response data presented, negative motivators and negative hygienes appear to have equal potency for producing dissatisfaction. However, the average level of satisfaction derived from positive motivators is significantly higher than that derived from positive hygienes. This conclusion appears to support one of the conclusions reached in earlier empirical studies by George Graen (1966) and Hulin and Smith (1967),² i.e., that certain job factors (motivators) appear to have a greater potential for providing job satisfaction than other job factors (hygienes).

This conclusion might also be viewed as compatible with the results obtained from the "Work Itself" job enrichment program instituted by AT&T.³ This program is based almost entirely on a single motivator, work itself.

²These studies are reviewed in Chapter II, pages 22-25.

³The results obtained from this program are presented and discussed in Chapter II, pages 41-46.

CHAPTER VI

SUMMARY

Taking note of the controversiality of the subject, a lengthy literature review was conducted concerning a theory of work motivation proposed by Frederick Herzberg. This theory, called the Motivator-Hygiene Theory or the Two-Factor Theory, was based on data collected using a semistructured interview technique. All supportive studies were based on a similar technique; most studies using other methods of evaluating Herzberg's findings were nonsupporting. The objective of this study was to design and administer a test instrument providing data similar to Herzberg's significant events data but without the limitations and sources of criticisms which had been pointed out in the literature.

Using information obtained in a pilot study, a 135-item performance specimen checklist was developed based on five of Herzberg's most prominent job factors, two of which are motivators (achievement and work itself). The remaining three job factors (company policy and administration, working conditions, and interpersonal relations) are classed as hygiene factors. Both negative and positive scales were developed for each of the five job factors.

The checklist was administered to more than 100 students at a Tennessee vocational-technical training school. Each subject was asked to respond only to items which had actually occurred to him in the

training program. In responding, he indicated the level of satisfaction or dissatisfaction engendered by the event by using a seven-point rating scale (1 = Very Dissatisfied . . . ; 4 = Not Dissatisfied and Not Satisfied . . . ; 7 = Very Satisfied). Using the data thus generated, it was possible to test Herzberg's theory several ways, using both rate of response and mean satisfaction data.

The reliability of the test instrument was investigated by several means. A modified Kuder-Richardson reliability coefficient was calculated for each of the ten scales, indicating that each scale was fairly homogeneous. The mean coefficients based on total scale scores are 0.73 (this study) and 0.67 (pilot study). The test-retest reliability was measured in this study using both response rate and total score for each scale. The median coefficients were found to be 0.51 and 0.74, respectively. Test-retest reliability was not measured in the pilot study.

The results obtained in both the present study and the pilot study are almost identical. They do not support the Motivator-Hygiene Theory. In fact, they tend to refute Herzberg's basic thesis that motivators and hygienes are different and not merely opposites. They also tend to refute his statement that the absence of motivators will not contribute significantly to dissatisfaction and the presence of hygiene factors will not contribute significantly to job satisfaction.

The five possible versions of Herzberg's theory explicated and expounded by King were tested using both sets of data. None of the five versions were supported by either of the sets of data.

The results of this study indicate that certain job factors (motivators) appear to have greater potential for providing job satisfaction than other job factors (hygienes). This finding is in agreement with results of earlier empirical studies reported in the literature.

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LIST OF REFERENCES

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APPENDICES



APPENDIX A

Training Program: _____

ID No. _____

TRAINEE ATTITUDE SURVEY-A

Instructions

1. For each item in the following list that you have personally felt or experienced during your training here, mark the answer space by placing a number in it.
2. The number used to mark the item should be selected from the numbers on the Rating Scale below.
3. The number selected should tell how you felt about that particular item at the time it happened or occurred to you.
4. Leave the answer space empty for each item that you did not personally feel or experience.

RATING SCALE

1	2	3	4	5	6	7
Very Dissatisfied	Dissatisfied	Slightly Dissatisfied	Not Satisfied and Not Dissatisfied	Slightly Satisfied	Satisfied	Very Satisfied

Did This Actually Happen or Occur to You?

If so, how did you feel?

1. Felt that you had really accomplished something when you learned your application for enrollment at the school had been accepted. _____
2. Arrived late for class once because of a traffic problem around the school. _____
3. Got the feeling that the school required too many forms and paperwork when you registered. _____
4. Met someone at school (either staff or fellow student) whom you disliked. _____

If so,
how did
you feel?

Did This Actually Happen or Occur to You?

5. Met someone at school (either staff or fellow student) whom you disliked. _____
6. Felt that there were too many students in a class with you, preventing you from receiving the best training possible. _____
7. An instructor did not seem to care whether you understood an assignment or not. _____
8. Felt that an instructor was unfair by grading too "rough." _____
9. Got the feeling that too few tests were given. _____
10. Got the feeling that the general requirements of the school (no more than three absences, no leaving school grounds, replacing of damaged tools) were too restrictive and unfair. _____
11. Got the feeling that something you said or did in class seemed to help other trainees. _____
12. An instructor was changed in the middle of one of your courses. _____
13. Had the opportunity to do some creative work of your own choosing. _____
14. A tool or machine used in your training was in poor condition. _____
15. Got the feeling that you were a member of a team of workers. _____
16. Did not get to see the results of your work. _____
17. Got the feeling that the school's regulations allowing only three unexcused absences per quarter helped you to get used to the requirements of a job in business or industry. _____
18. Received training that did not seem to be useful for the job you are training for. _____

Did This Actually Happen or Occur to You?If so,
how did
you feel?

19. A tool or machine was found in good condition when you needed it. _____
20. Another trainee gave you a hard time. _____
21. Got the feeling that your counseling sessions will make it possible for you to make a good impression on a job interview. _____
22. One part of your course work got too far ahead of another so that it was difficult to fit the material together. _____
23. Got the feeling that the training material covered was challenging and interesting. _____
24. Needed more time to spend on lab or shop work. _____
25. Your instructor passed a special tip along to you. _____
26. Failed a test in class. _____
27. Could see the way class work and lab work fitted together. _____
28. Were required to study a subject in your training program that you had already learned to dislike in your earlier schooling. _____
29. Found enough time to study. _____
30. An instructor lost his temper with you. _____
31. Got the feeling that your course work made it easier for you to talk with your supervisor. _____
32. Got the feeling that your entire training program was too long and drawn out. _____
33. Felt more like studying now than in high school because you seemed to be learning something valuable. _____
34. Needed more time to spend in study. _____
35. Got to know a number of people, either trainees or staff. _____

- | <u>Did This Actually Happen or Occur to You?</u> | <u>If so,
how did
you feel?</u> |
|--|---|
| 36. Failed to do a job in shop correctly. | _____ |
| 37. Saw the value in being able to end your training program any time you feel ready to begin work. | _____ |
| 38. The training got really boring one or more days. | _____ |
| 39. Got the feeling that safety measures were good. | _____ |
| 40. An instructor did not seem to care about your personal or family problems. | _____ |
| 41. Looking back on what you had already learned made you want to go on with your training. | _____ |
| 42. Got the feeling that there ought to be more discipline to eliminate the fooling around. | _____ |
| 43. The training never became a dull routine but had a good variety of things. | _____ |
| 44. Study or shop work was disturbed or interrupted by a trainee or member of the staff. | _____ |
| 45. Got the feeling that other trainees wanted you to do well. | _____ |
| 46. Got the feeling that something you said or did in class failed to help the other trainees as you meant it to do. | _____ |
| 47. Got the feeling that you were very fortunate to have the chance to watch an expert or skilled tradesman (your instructor) doing the kind of work for which you were being trained. | _____ |
| 48. Did not get a chance to finish something you started. | _____ |
| 49. The food in the concession stand is usually good. | _____ |
| 50. Another trainee told you not to "goof off" or loaf. | _____ |
| 51. Solved or worked out a shop or classroom problem by yourself. | _____ |
| 52. Scheduling caused you to be in the wrong place and miss something you should have been present for. | _____ |

If so,
how did
you feel?

Did This Actually Happen or Occur to You?

53. A topic in related subjects made you use your mind. _____
54. An instructor presented new material too slowly. _____
55. Received help in your studies from another trainee. _____
56. Got the feeling one or more times that you had accomplished very little by the end of a week. _____
57. Got the feeling that the discipline was good for you. _____
58. The training became a dull routine after a while. _____
59. A teacher adjusted his teaching rate to suit the class. _____
60. Another trainee appeared to be disinterested in his classes or work. _____
61. Were able to see and/or touch the results of your work. _____
62. Got the feeling that the time spent in related instructions should be reduced so that more time would be available for shop work. _____
63. Considered the training to be good preparation for the job you are training for. _____
64. An instructor presented new material too quickly. _____
65. Enjoyed a "bull session" with one or more other trainees during lunch break. _____
66. Got the feeling that your training here was not preparing you adequately for work in business and industry. _____
- .. Remember: Read each statement carefully. Reply only to those that you specifically remember happening to you personally!
67. Saw the importance in starting work on something easy and moving on to harder jobs. _____
68. Some of the material you were given to learn was much too difficult and should not be in your training program. _____
69. Got the "feel" of working in industry or business. _____

Did This Actually Happen or Occur to You?If so,
how did
you feel?

70. Got the feeling that an instructor really did not want to help you. _____
71. Proved that you were right about some part of your work in a discussion with another trainee. _____
72. Got the feeling that the time spent in shop work should be reduced so that more time could be used for related instructions. _____
73. Got the feeling that your training was useful. _____
74. The lab or shop was too noisy one or more days. _____
75. A counselor or instructor tried to "speak your language" when discussing things with you. _____
76. You were unable to understand or learn some part of your training _____
77. Got the feeling that you were being trained by a first-class organization. _____
78. Some of the material you were given to learn was much too easy. _____
79. Got the feeling that this school is a pleasant place to work and learn. _____
80. A member of the staff treated you like a child, not an adult. _____
81. Passed a test in class. _____
82. Got the feeling that you were being trained by a second-class organization. _____
83. Had the chance to do an interesting job from beginning to end. _____
84. Got the feeling that safety measures were not stressed enough. _____
85. A member of the staff was understanding. _____

If so,
how did
you feel?

Did This Actually Happen or Occur to You?

86. Got the feeling that your counseling sessions will not help you to make a good impression in a job interview. _____
87. Got the feeling that you agreed with the goals of the training program. _____
88. Seemed to spend too much time learning unimportant material. _____
89. A classroom or classroom area was well equipped and designed for teaching. _____
90. Experienced a situation in which there appeared to be a lack of communication. _____
91. Found a better way to do your job than the way you were taught. _____
92. Got the feeling that the help offered by the school toward finding you a job was not very good. _____
93. Got the feeling that the work gave you the chance to grow as a person. _____
94. The food in the concession stand is usually stale (or out). _____
95. Got the feeling that an instructor really wanted to help you. _____
96. Got the feeling that your course work did not make it easier to talk with your supervisor. _____
97. Found that projects and assignments were usually set up and ready for you to begin work on. _____
98. Had to do a certain job over and over again. _____
99. On at least one occasion, books and materials were readily available when you needed them. _____
100. Failed to receive the cooperation of one or more trainees on a project. _____

If so,
how did
you feel?

Did This Actually Happen or Occur to You?

101. Felt that you had a better understanding of some particular part of your training than did most of the other trainees. _____
102. Got the feeling that you did not agree with the general purpose of the school's training program. _____
103. Got the feeling that your training would give you the chance to work at something you had always wanted to do. _____
104. Got the feeling that there was too much work to do and too much material to learn. _____
105. A member of the staff made you feel that you could help yourself. _____
106. Thought that most of the other trainees could do some job better than you could. _____
107. Got the feeling that the help offered by the school toward finding you a job was good. _____
108. Got the feeling that your training was a waste of time. _____
109. Thought that the bathroom or wash-up facilities were good. _____
110. Got the feeling that an instructor did not respect you as a person. _____
111. Finished a difficult assignment, problem or project. _____
112. Experienced slow periods in the training during which there was little or no work to do because projects and assignments had not been adequately prepared by the instructor. _____
113. Got the feeling that this school is an unpleasant place to work and learn. _____
114. A classroom was too noisy one or more days. _____
115. There was a shortage of tools or materials one or more days. _____
116. Thought that the bathroom or wash-up facilities were poor. _____

If so,
how did
you feel?

Did This Actually Happen or Occur to You?

117. An instructor listened to a suggestion you had about how a course could be improved. _____
118. Was able to offer or provide help to another trainee. _____
119. Cooperated with one or more trainees on a project. _____
120. Discussed your course work with another trainee. _____
121. Developed great respect for some member of the staff. _____
122. Felt that you learned a great deal from the mood, manner, dress, and conduct of an instructor. _____
123. Failed to solve some shop or classroom problem by yourself. _____
124. Got the feeling that too many tests were given. _____
125. An instructor graded too "easy" and allowed you to get by without learning as much as you should have learned. _____
126. Saw a situation in which an instructor seemed to be showing favoritism toward another trainee. _____
127. An instructor would allow you to do a certain thing and then later arbitrarily refuse to allow you to do the same thing. _____
128. Got the feeling that the concession stand area was too small. _____
129. You were held up in an area of your training longer than was needed. _____
130. Felt that the school was being overly restrictive in requiring drink bottles to not be removed from the concession stand. _____
131. Got the feeling that an instructor did not know his subject well. _____
132. Got the feeling that your training here was preparing you adequately for work in business and industry. _____

If so,
how did
you feel?

Did This Actually Happen or Occur to You?

133. Got the feeling that the general requirements of the school (no more than 3 absences, no leaving school grounds, replacing of damaged tools) were not too restrictive and not unfair.

134. There was never a shortage of tools or materials.

Rate your general satisfaction with your training program (use 1 through 7 Rating Scale).



APPENDIX B

INSTRUCTIONS FOR TRAINEE ATTITUDE SURVEY

Today, we have a different kind of activity which I think you will enjoy. Normally, a student or trainee is in the position of listening and observing while the instructor does all the talking. For a change, we would like to reverse the process and let you, the trainee, do the talking while we listen. The reason you normally listen to the instructor is because he has some information which you would like to get. In this case, you have some information which he and those who direct the entire training program would like to have. Specifically, we would like to know what your feelings and your attitudes are about the training you are receiving. You have before you a copy of a questionnaire which was developed under the direction of a member of the faculty at The University of Tennessee in order to survey your attitudes about your training program. The Director and staff of the school strongly feel that the opinions of trainees are valuable sources of information about the strengths and weaknesses of the training program. To make the training more effective and more enjoyable we need first-hand information about it and only you can provide this information.

Before going into specific details about this survey, let me say a few things about the way in which your answers will be handled. First, the value of this survey does not depend on knowing who in particular filled out a given questionnaire. Therefore, we do not ask that you

write your name on your questionnaire. You will remain completely anonymous. In this way, we hope that you will be assured that the answers you give will not be used in any way to evaluate you personally. Therefore, please feel free to be completely frank and honest.

The second thing I would like to make clear is that this is not a psychological test. The checklist is not designed to measure your personality, your ability, or anything of that sort. There is no such thing as a "right" or "wrong" answer to the statements on it. Rather, the questionnaire is simply a means of systematically collecting information about your training program as viewed through the eyes of the person being trained--you. I hope this is perfectly clear. Are there any questions?

Here are your instructions for answering the questionnaire. Please follow the instructions very carefully and closely. In the top left-hand corner of the first and fourth pages, print clearly the name of the training area in which you are enrolled. For example, this might be data processing, welding, or accounting. Now, in the top right-hand corner of the first and fourth pages you will notice a blank for I.D. number. Some of you may be selected to participate in a follow-up survey similar to this one. In order to be able to put the two parts of your survey together, some identifying number is needed. Therefore, if you will write the last four digits of your driver's license number in the blanks for I.D. number, both parts of your survey can be put together. This procedure has been carefully chosen so that you will remain anonymous. No one connected with this survey knows your driver's

license number. I will pause while you check your driver's license number and then write the last four digits of this number in the blank for I.D. number.* [Note to Instructor: Anyone not having a driver's license can use the last four digits of the social security number and still remain anonymous.] These are the only items of information needed on your questionnaire other than your answers. Are there any questions to this point?

Now looking at your questionnaire, you may have already noticed that each page contains a number of statements which describe experiences you might have had during your training program. I would like for you to indicate which of these experiences actually happened to you and also how you felt in each case when the experience occurred. As an example, let's look at statement No. 1 together. This statement says, "Felt that you had really accomplished something when you learned your application for enrollment at the school had been accepted." If you actually had a feeling of accomplishment when you learned you had been accepted for enrollment at the school, please mark this statement. I will tell you exactly how to mark the answer in just a minute. If you did not have this feeling, do not make any mark at all in the answer blank for this question. Instead, leave this statement and go on to the next statement. Only mark an answer to a statement if it describes something that really happened to you personally or if it describes a

*Exception--Students in auto mechanics should leave this blank empty if their driver's license numbers are on file at the school.

feeling that you actually got at some time during your training. If you never got the feeling described in the statement or never found yourself in a situation like the one described, skip the statement and go on to the next statement. Are there any questions?

Before we talk about actually marking your answers, there is one other thing that I should point out. It is highly unlikely that any one trainee has experienced all or even a large part of the situations and feelings described in the questionnaire. So remember, just mark the statements which apply to you.

Now, here is how you should mark your answers to the statements which apply to you. At the top of the questionnaire you will note a Rating Scale. You should use the numbers from this scale to indicate how you felt when something happened or occurred to you. The number from this scale which expresses your feeling at that time should be written into the answer blank for that particular statement. Let's look closely at the scale for a minute. [Note to Instructor: Draw a large Rating Scale on the board at the front of the class.] Notice that there are both words and numbers along the scale. The low numbers on the scale (POINT) are used to represent feelings of dissatisfaction. The high numbers (POINT) are used to represent feelings of satisfaction. The numbers in the middle of the scale (POINT) are used to represent neutral feelings; in other words, neither satisfaction nor dissatisfaction.

Each time you answer a statement that describes a situation or feeling which you have actually experienced in your training program,

you should choose the number from the scale which describes what your feeling was when the situation occurred. If the situation you experienced was personally satisfying, you should mark your answer by selecting a high number from the scale, and writing it in the space provided. If the experience you had was dissatisfying when it occurred, you should mark your answer by selecting a low number from the scale. If the experience did not make you feel either satisfied or dissatisfied you should mark your answer by selecting a number from the neutral or middle portion of the scale. Are there any questions at this point about the way to use the Rating Scale to describe your feelings?

It is not necessary to study the statements at length. Read each statement once or until you completely understand it and then reply based on what you remember immediately. Be sure to note exactly what the statement says and reply only to that particular statement as it applies to you individually. You may find that some of the statements are about things which were satisfying to many of the other trainees but were dissatisfying to you personally. Or, the opposite might be true. But remember to reply to each statement for you and you alone.

Please try to use all seven of the numbers on the Rating Scale in marking the statements which apply to you. In other words, try to show a difference among your positive, neutral, and negative feelings by using all the numbers on the scale. Don't simply mark all your positive feelings seven and all your negative feelings one. Instead, indicate the degree or intensity of your feelings by selecting the appropriate number from the Rating Scale. Now, to be sure we all

understand the method for marking our answers, let's answer the first five statements together to make sure there are no questions about the instructions.

[Note to Instructor: Read each of the first five statements aloud for the class. After reading each statement, instruct the class as follows: "For those who actually got this feeling, select a number from the Rating Scale to describe how you felt when the situation occurred. Mark this number in the answer blank for this statement. For those of you who never actually got this feeling, and some of you probably did not, do not mark an answer, but leave the answer blank empty for this statement." You may want to give several examples, as you read through the statements, explaining how you selected the number from the Rating Scale and what it means to you.]

After you have read all the statements on the questionnaire and answered all those that apply to you, you will find that the last item on the last page is a special question which we would like everyone of you to answer. We would like you to rate your general level of satisfaction with the entire training program which you are in. In other words, we would like you to indicate your feelings of satisfaction or dissatisfaction toward the training program as a whole. You should use the seven-point Rating Scale which you have been using to answer all the other questions. It should be used the same way as it was used above to describe your feelings about specific experiences you had in the program. If you have found the training program here generally dissatisfying, use a number from the lower end of the scale. If you

have found the program generally satisfying, use a number from the upper end of the scale. If the program has been neither satisfying nor dissatisfying, use a number from the middle of the scale. Notice that this statement is different from all the other statements in that it calls for an over-all rating and should be answered by everyone. All the other statements are about single specific incidents and should only be answered by those who saw or felt the incidents described.

Before we begin marking our questionnaire, are there any questions at all about what we are doing or how we are trying to do it?

If there are no other questions, you may begin now. You may work at your own pace until you have completed the entire list. Turn it in to me as you finish.

VITA

Bob Vernon Harris was born in Morganton, North Carolina, on November 15, 1935. He attended elementary schools in that city and was graduated from Morganton High School in 1954. The following September he entered Lees-McRae College where he was a student for one and one-half years, after which he was employed by Allied Chemical Corporation (Barrett Division) in Philadelphia, Pennsylvania. In June, 1967, he resumed his studies at North Carolina State College, from which he received the degree of Bachelor of Science in Chemical Engineering in June, 1960. Upon graduation he was employed by Tennessee Eastman Company, moving to the Plastics Division of Eastman Chemical Products, Inc., in 1963. He entered The University of Tennessee Graduate School at the Kingsport University Center in March, 1967, and received the Master of Science degree in Industrial Management in March, 1972.

He is a member of the American Institute of Chemical Engineers, American Society for Testing and Materials, and The Society of the Plastics Industry.

He is married to the former Betty Lee Marshall of Linville, North Carolina and is the father of two daughters.