HERZBERG'S TWO-FACTOR MOTIVATION THEORY APPLIED TO A COLLEGE UNDERGRADUATE STUDENT POPULATION

A Dissertation

by

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ABSTRACT

Herzberg's Two-Factor Motivation Theory Applied to a College Undergraduate Student Population. (May 1971)

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This study applied the Herzberg motivation/hygiene theory to college undergraduates. Students were asked to recall events in the college classroom during which they felt exceptionally good or exceptionally bad. One hundred ninety-four events were obtained. Students were asked to relate the event that led to their good or bad feelings, how it made them feel, and its subsequent effects. Statements were analyzed using content analysis.

The Herzberg theory indicated that man has two separate sets of needs. One set of factors (hygiene) was based upon the need to minimize uncertainties in the environment. The second (motivation) was based on the need for self-actualization. Self-actualizing activities included elements related to accomplishment and growth.

This study showed that the motivating factors were

achievement, competency of the professor, recognition, and responsibility. Demotivating factors were professor incompetence, failure, class policies which fostered minimal student participation, and unfriendliness of professor. One motivator category--achievement--and one hygiene category--professor competence--worked as both satisfiers and dissatisfiers.

The null hypothesis was rejected. There was a similarity between the motivation/hygiene theory of job motivation and the results of this research.

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CHAPTER I

INTRODUCTION

Approximately one hundred years have passed since the tentative beginnings of a psychology of motivation were formulated. Since that time scientific researchers have investigated numerous avenues of approach to the understanding of motivation, discarded some theories and pursued others. Upon one point there was widespread agreement--no single, simple theory of human motivation appeared to be adequate. Three major theories in psychology emerged as representative of the efforts to deal with the complex questions of motivation. These approaches were the stimulus-response theory, the theory of unconscious motivation, and the cognitive theory. The theories were not mutually exclusive. In some ways they were not very far apart but their central emphasis did vary.

Psychological Theories

Behavior theory emphasized stimulus-response

The citations on the following pages follow the style of the Journal of Educational Research.

relationships and learning (habit formation) in accounting for behavior. The motivational aspects were not uniformly stated by all behaviorists. B. F. Skinner (2:113ff), a representative of this theoretical bent, indicated that man behaved because of the consequences which followed similar behavior in the past. The behavior approach could sidestep the individual's own awareness of his motives by inferring motives from overt behavior.

The Freudian concept (17:149ff) of unconscious motives and their derivatives called attention to the powerful role of the subconscious mind. The central element of this theory was that society forced the individual to suppress many of his aggressive and sexual motives. Suppressed motives then found indirect, symbolic, or disguised expression. A wide range of ego defense mechanisms supported the psychological system through which the person transformed his motives in order to make them superficially more acceptable to himself and others.

It would not be correct to conclude that all motives could be inferred from observing action or from

interpreting behavior in the light of unconscious impulses. Many aspects of motivation were represented in awareness. The cognitive theory of motivation presumed purposeful behavior (2). This theory postulated that a person could make clear plans, would be guided by his expectations and knowledge of risks, knew what he was doing, and moved steadfastly toward his goals. Individual goal-setting was considered to be modified by subgoals such as seeking prestige or self-protection. Studies of aspiration and achievement motivation were theoretically grounded in cognitive theory.

Management Theories

In business management the behavioral science approach focused much effort upon determining motivation or willingness of man to work productively. Even very early theorists--Adam Smith (14:28) and Frederick W. Taylor (34:414)--addressed themselves to the motivation question. Adam Smith indicated that man's choices would be guided by economic self-interest while Taylor dramatized man as a machine fueled by monetary motivation. Another, somewhat later, concept (31) invoked the

principle that environmental factors such as light, heat, sound, and humidity were the prime conditions affecting individual productivity. It was assumed that bringing environmental conditions into harmony with the human organism would result in greater productive effort. The environmental approach held that changes in output could be obtained by making changes in working conditions. A series of experiments by Elton Mayo conducted at the Hawthorne Works of the Western Electric Company began with this premise in a study of the effect of lighting on worker output. The results of the study, however, led the researchers to expound a new set of determinants for industrial worker productivity. The researchers concluded that productivity was largely dependent upon nonenvironmental factors and tentatively suggested personal and social relationships in the work group as variables exerting the greatest effect on output. The Hawthorne findings formed the basis for a personnel-oriented approach. Later studies yielded the finding that social interaction patterns both between work groups and within work groups shaped the ultimate output. The views of Mayo and hundreds of managers,

researchers, and theorists since the original study in 1933 were expanded into what came to be called the school of human relations. A logical extension of this orientation was that organizations could be thought of as systems of human relations--social systems--rather than purely as related functions or jobs. Business organizations were viewed as cooperative systems having their own subcultures. Methodologically, the approach was that of the anthropologist in observing objectively the actual behavior of people at work and analyzing the data without introducing assumptions that did not arise from these data. George Homans (19) developed one conceptual scheme for analyzing organizational behavior in terms of a social system. In the theoretical framework of Homans, activities, interactions, and sentiments ultimately produced real or emergent behavior which determined the organization's productivity and growth, the development of the participants, and their satisfaction or morale.

In a subvariety of the social systems view, a group of contemporary theorists saw man as a rational problem-solver and decision-maker--a view very close to motivation in cognitive psychological theory. Man, in the

opinion of these theorists, played several roles, and he balanced these roles when he made decisions. At the base of the decision-making process was man's hedonistic attempt to minimize pain and maximize pleasure. The decision man made in any situation would be the one he thought would benefit him most; it was the result of the balance of forces acting on him in a given situation. Thus, in order to understand motivation, man should be considered in the context of his total environment.

This brief historical summary of some theories of motivation in learning theory from psychology and in organization management shows the varied nature and scope of the writings. Management theory contained other major schools of thought; e.g., the operational school which studied the process of management and established guides for the manager, and the mathematical school which studied management activities in the framework of mathematical models. However, the human relations school, social systems view, and decision theory school placed motivation in a more central location. A general definition of motivation which could possibly be accepted by both psychologists and management theorists was one

developed by Atkinson and Feather (1). They defined a motive as (1:12f): "disposition to strive for a certain kind of satisfaction."

It was apparent that management theorists borrowed heavily from the behavioral sciences for their formulations. Most industry researchers guided their studies as scientific disciplines based on experimentation and systematic empirical data. As a result, the behavioral sciences could be enlarged and enriched by these contributions. But the cycle was often incomplete. Important theoretical contributions from management theorists often lacked testing in organizations other than business ones. The behavioral scientist was frequently more interested in enlarging knowledge within his field than in applying it to other areas. Lazarfeld (21) wrote of the ideological bias against business held by most sociologists. Educators utilized many theoretical orientations from psychology and sociology but could be similarly accused of largely ignoring potentially fertile theory formulations from industry.

This study took an industry developed theory of motivation--Herzberg's two-factor motivation theory--and

applied it to a college undergraduate population. The basic rationale assumed that the classroom experiences of an undergraduate constitute his major "job," and thus should be a significant element for motivation of students.

CHAPTER II

THEORETICAL FRAMEWORK

Two contemporary theoretical developments which gave rise to studies of human motivation on the job were those of Abraham H. Maslow and Frederick Herzberg. The Herzberg two-factor motivation theory was strongly grounded in need gratification theory as developed by Maslow (25, 26, 27).

The Hierarchy of Needs Theory

Maslow theorized a hierarchy of needs. From a physiological base, the ascending needs were safety, belongingness or love, esteem, and self-actualization. These basic needs were related to each other in a hierarchy of prepotency such that gratification of one need and its consequent removal from the center of the stage brought about and/or made possible the emergence of another "higher" need. The internal conditions of wanting and desiring continued to be present, but at a higher level. Maslow defined motivation in the subjective sense in terms of desire, want, yearning, wish, or lack. He

felt that no good behavioral definition of motivation had been found. He indicated, however, that social scientists ought to continue to seek objective correlates or indicators of subjective states. He stated that needs which were essentially deficits in the human organism must be filled for the sake of health. Additionally, the deficit needs identified by Maslow required external fulfillment by people other than the subject. The needs for safety, belongingness, love, and respect can generally be satisfied only by other people, engendering a condition of considerable dependence on the environment. Maslow believed that the process of satisfying deficiencies avoided illness; it did not create positive health. He made a strong distinction between deficit needs and growth needs. He contended that deficit needs were shared by all members of the human species, but the highest need--self-actualization--was idiosyncratic since every person was, at this level, different from every other person. The species-wide needs, which included safety, love, and status would ordinarily be fairly well satisfied before real individuality could develop fully. When basic species-wide needs were satiated, each person

proceeded to develop in his own unique style. Development then became determined from within rather than from without.

Deficit Needs

Maslow made a distinction between deficiency and growth motivation but the differences were not perfectly described. For example, not all physiological needs were deficits; Maslow did not consider sex, elimination, sleep, and rest to be deficit needs. Apparently, not all basic needs were deficits, but needs whose frustration was pathogenic were considered deficits. Maslow considered neurosis to be a deficiency disease that came about from being deprived of certain satisfactions. He acknowledged the presence of complex determinants in neurosis but felt that most neuroses involved ungratified wishes for safety, belongingness, identification, close love relationships, respect, and prestige.

Growth Motivation

A very different kind of motivation--growth motivation--was also described by Maslow. From his study of

psychologically healthy individuals he found that these people had sufficiently gratified their basic needs for safety, belongingness, love, respect, and self-esteem. Accordingly, they were primarily motivated by a trend toward self-actualization. This trend was defined as an ongoing actualization of potentials, capacities, and talents; as fulfillment of mission; as a fuller knowledge and acceptance of the individual's own intrinsic nature; or as an unceasing trend toward unity and integration within the person. Maslow emphasized that self-actualization was not a static end-product but a dynamic process. Growth was seen as a progressive gratification of basic needs. Growth was also seen in the form of specific motivation over and above basic needs, e.g., talents, creative tendencies, or capacities. Basic needs passed into self-actualization and were a necessary prerequisite. In many aspects the existence of the individual was lived out differently when the person was deficiency-need-gratification bent and when he was growth-motivated or self-actualizing. Maslow compiled a list of characteristics describing growth motivated people (27:23f). These were:

1. Superior perception of reality
2. Increased acceptance of self, of others and of nature
3. Increased spontaneity
4. Increased problem-centering
5. Increased detachment and desire for privacy
6. Increased autonomy, and resistance to enculturation
7. Greater freshness of appreciation, and richness of emotional reaction
8. Higher frequency of peak experiences
9. Increased identification with the human species
10. Changed (the clinician would say, improved) interpersonal relations
11. More democratic character structure
12. Greatly increased creativeness
13. Certain changes in the value system

Maslow contradicted practically all historical and contemporary theories of motivation which regarded needs or motivating states in general as annoying, unpleasant, or undesirable. This widespread attitude was assumed in descriptions of motivation as the reduction of need, tension, drive, or anxiety. He felt that one could

accept one's needs and welcome them to consciousness if past experience with them had been rewarding and if present and future gratification could be reasonably counted upon. According to Maslow, this was especially seen in self-actualization motivation. Cutting across the multitude of idiosyncratic motives in self-actualization was the general characteristic that impulses were desired and welcomed, were pleasant and enjoyable, and that the person wanted more of them rather than less. Ordinarily, the talented person would enjoy expanding his talents. Growth motivation tended to be long-term in character. Growth of the personality, increases in wisdom, self-actualization, and planning of one's life were indicated to be long-term directional tendencies. Thus, growth was seen as a continued, upward development wherein the more one gets, the more one wants. While deficit motives called for the reduction of tension and restoration of equilibrium, growth motives maintained pleasurable tension in the interest of distant and often unattainable goals. In the latter case, activity could be enjoyed intrinsically, for its own sake, as well as having functional worth because it was instrumental

in bringing about a desired gratification in the future.

Maslow pictured the individual as the receptacle for two sets of forces--one force dictated that the individual would cling to safety and defensiveness out of fear, hang onto the past, tend to regress backward; the other force would impel the person toward full functioning of all capacities, toward wholeness and uniqueness of self. The fixative and regressive power of ungratified deficiency-needs was seen as opposed to forward growth. Once again, the functions of psychological defense against threat, pain, loss, and fear were seen as inhibiting growth. Of the relationship between safety and growth Maslow wrote (27:46): "Apparently growth forward customarily takes place in little steps, and each step forward is made possible by the feeling of being safe, of operating out into the unknown from a safe home port, of daring because retreat is possible." Assured safety permitted higher needs and impulses to emerge and to grow. When safety became endangered, however, regression to the more basic security occurred. In the choice between giving up safety or giving up growth, safety would

usually win. One could not be pushed ahead because ungratified safety needs would remain underground, calling for satisfaction.

Maslow considered the theory of need gratification to be the most important single principle underlying all healthy human development. The single principle which bound together the multiplicity of human motives was the tendency for a new and higher need to emerge as the lower need was sufficiently gratified.

The Two-Factor Motivation Theory

In 1959, Frederick Herzberg wrote The Motivation to Work (16) in which he developed the two-factor motivation theory. Using Maslow's theory as a base, Herzberg applied it to a study of job motivation. The data included a study of specific attitudes in the job situation, the factors associated with these attitudes, and the effects of job attitudes on work performance. He drew his theory from an examination of events in the lives of accountants and engineers. The findings suggested that the factors involved in producing job satisfaction (and motivation) were separate and distinct from the factors

leading to job dissatisfaction. Typically, satisfaction and dissatisfaction were thought of as opposites, i.e., what is not satisfying must be dissatisfying. Herzberg contended that these two feelings were not the opposite of each other. Rather, the opposite of job satisfaction was not job dissatisfaction, but no job satisfaction, and vice versa.

Herzberg related job satisfaction/dissatisfaction to need gratification theory. He felt that two different needs of man were involved in the question. One set of needs could be thought of as stemming from man's built-in drive to avoid pain from the environment, plus all the learned drives which became conditioned to the basic biological drives. The other set of needs related to a unique human characteristic--the ability to achieve--and through achievement, to experience psychological growth. Tasks that induced growth provided the stimuli for growth needs. In the industrial setting, these were seen to be the job content. The stimuli inducing pain avoidance behavior were found in the job environment or job context.

Herzberg found the growth or motivator factors

intrinsic to the job to be achievement, recognition for achievement, responsibility, the work itself, growth, and advancement. The dissatisfaction avoidance or hygiene factors which were extrinsic to the job included company policy and administration, supervision, working conditions, salary, status, interpersonal relations, and security. The use of the term "hygiene" factors was in analogy with the medical use of the term as preventative and environmental.

After determining the actual objective events reported by the respondents, Herzberg asked respondents to interpret the events. The analysis of these data suggested that the hygiene incidents led to job dissatisfaction because of a need to avoid unpleasantness while the motivator events led to job satisfaction because of a need for growth or self-actualization. At the psychological level, Herzberg's study of job attitudes reflected a two dimensional need structure, i.e., one need system for avoidance and a parallel need system for personal growth.

At the heart of Herzberg's theory was the question, "What do people want from their jobs?" Herzberg found

that when people reported happy incidents they most frequently described factors relating to their tasks, to events that indicated to them that they were successful in the performance of their work. Conversely, when unhappy episodes were reported, they tended to be associated with the conditions surrounding the job, not the task itself. These latter events suggested to the respondent that the context in which he performed his work was unfair or disorganized, and represented an unhealthy psychological work environment. The hygiene factors operated as a kind of "par," that is, when factors such as supervision, interpersonal relations, physical working conditions, salary, job security, and company policies deteriorated to a level below that which the employee considered acceptable, then job dissatisfaction ensued. According to Herzberg, the reverse did not hold true, however. When the job context (hygiene) factors could be characterized as optimal, diasatisfaction did not occur, but neither was there any appreciable gain in positive attitude.

The factors leading to positive job attitudes did so because they satisfied the person's need for self-

actualization in his work. This presumed, of course, the prior satisfaction of the more basic needs--physiological and safety.

Although man tended to actualize his potential in every area of life, his job had to be considered one of the most important areas. Herzberg emphasized the point that both hygiene and motivation factors met the needs of employees. However, it was primarily the motivator factors that served to bring about the kind of job satisfaction and improvement in performance that industry was seeking from its work force. An additional implication concerned the wants of employees and related back to the basic question. In one group of respondents, job wants revolved around the need to develop in one's occupation as a source of personal growth. In the second group job wants were associated with fair treatment in compensation, supervision, and working conditions. Herzberg's data showed that the fulfillment of the needs of the second group did not motivate the individual to high levels of job satisfaction and to extra performance on the job. Herzberg limited his original research to a study of motivation in professional occupations.

Review of the Literature

The statement of the Herzberg two-factor theory had an impact in research efforts dealing with motivation. A number of follow-up studies were conducted, some of which upheld and some of which rejected the theory. A varied terminology was used by different authors who wrote on the subject. One factor, called the hygiene factor by Herzberg, was called the extrinsic factor, the maintenance factor, the dissatisfiers, and the job context factor by other writers. The other factor was called the motivator factor, the intrinsic factor, the satisfiers, and the job content factor by the researchers interested in motivation.

Non-Supportive Studies

Several authors used Herzberg's theoretical development in studies which were generally non-supportive of the two-factor theory. Ewen (7) found that some factors on a 58-item attitude scale acted in a direction opposite to that which Herzberg's theory would predict, while others acted both as satisfiers and dissatisfiers.

Friedlander (10) found job content items to be

important for both satisfaction and dissatisfaction while job context elements were relatively unimportant as either satisfiers or dissatisfiers. Bloom and Barry (3) performed a factor analysis of responses from Negro blue-collar workers on a work attitude survey. Their forty item questionnaire contained twenty items relating to job content and twenty items dealing with context factors. Each of these forty items was ranked on a five point Likert-type scale. Context factors dealt with company policy and administration, working conditions, and supplemental benefits. The results of their study showed a mingling of both content and context items.

Dunnette, Campbell, and Hakel (6) found that context and content factors could serve both as dissatisfiers and satisfiers. Hulin and Smith (20) found much the same results. They interpreted their data as giving no evidence that satisfaction and dissatisfaction were qualitatively different.

Levine and Weitz (23) did a factor analysis on a 78-item questionnaire administered to graduate students in two universities. They interpreted their results as not supporting the two-factor theory. They found that

content items were not more important to satisfaction than context items.

Partially Supportive Studies

Another set of research studies was considered to be partially supportive of Herzberg's two-factor motivation theory. Saleh (32) discovered that while workers approaching retirement chose job context items as sources of their present satisfaction, looking backward over their careers they related content items to satisfaction and context items to dissatisfaction. Friedlander (9) found context elements to be the prime cause of satisfaction for blue-collar workers while content items were the prime cause of satisfaction for white-collar workers.

In a six year study at Texas Instruments, Incorporated, Myers (29) found that his data fell into a content-context dichotomy. One content item, achievement, was related both to job satisfaction and dissatisfaction.

Centers and Bugental (5) found in a study similar to Friedlander's that different occupational levels valued content and context elements differently. They found

that white-collar workers named content items as satisfiers while blue-collar workers named context items.

Hinrichs and Mischkind (18) in a study of 613 technicians found content items to be equally split as positive and negative sources for persons of low overall job satisfaction. For persons with high overall job satisfaction, they found content elements to be a source of positive satisfaction. Additionally, context items were found to be a significant source of positive feelings for respondents of low overall job satisfaction and a significant source of negative feelings for persons whose overall job satisfaction was high.

Lahiri and Srivastva (22) studied middle managers in India. Their data showed that both content and context items were related to both satisfaction and dissatisfaction. However, job context items acted most frequently as dissatisfiers and content elements more often acted as satisfiers.

Wolf (39) sampled a group of regular employees and a group of temporary student workers. Regular employees cited content elements as the most liked aspects of their job and associated these items with increased job

satisfaction. Context elements were associated with both satisfaction and dissatisfaction. The temporary student workers related content items as much to job dissatisfaction as to satisfaction. Both groups cited context elements as being important with regard to satisfaction or dissatisfaction with the company.

Supporting Studies

A final group of studies may be cited as having results that were generally supportive of the two-factor theory. Schwartz, Jenusaitis, and Stark (33), using supervisors in the utility industry as a sample, obtained results in line with Herzberg's theory. One content item, achievement, acted as a dissatisfier, however.

Friedlander and Walton (11) found from their data that reasons for staying with an organization (primarily content items) were different from reasons for which one might leave an organization. The latter were primarily context elements.

Halpern's (13) results strongly supported Herzberg's theory. He found that content elements contributed significantly more to overall job satisfaction than did

context items. Weissenberg and Gruenfeld's (35) analysis showed that content elements accounted for more variance in overall job satisfaction than did context items. Additionally, they found that satisfaction with content, but not with context, elements correlated with job involvement. Employees were motivated to work effectively when they had a job which allowed a feeling of achievement, responsibility, growth, advancement, and recognition.

Olsen (30) applied the Herzberg theory to a government organization that was very stable with respect to growth possibilities. The respondents had been in their present jobs an average of 9.4 years and promotional opportunities were almost non-existent. The data showed that the growth factor behaved as a demotivator and not as a motivator.

Whitsett and Winslow (36) made an extensive review of the literature in 1967. They dismissed several studies that were critical of the two-factor theory on the basis of frequent misinterpretations of results and general weakness in methods. They concluded (36:411): "that the theory has clearly retained its utility and viability."

CHAPTER III

PROCEDURE

The descriptive nature of this research required that undergraduate students identify periods of time in their personal history when feelings about a college classroom experience were unquestionably either higher or lower than usual. The sample population of students consisted of ninety-seven individuals each of whom reported both a good and a bad college classroom experience.

The Pre-Test

An adaptation of the original Herzberg questionnaire (16:141f) was developed for use with college undergraduates. The questionnaire was pre-tested for feasibility and clarity. An analysis of the pre-test instrument resulted in some slight modification of the questionnaire. It was of central importance for the researcher to be able to develop a coherent picture of the factors responsible for student attitudes from respondents' reports of exceptionally good and bad classroom experiences. The

pre-test indicated that the stories were vivid and appeared to give analyzable data. Although the pre-test was given to only twelve people, it could be seen that such factors as the characteristics of supervision, the impact of accomplishments, and the role of recognition were expressed.

The pre-test also showed that students would not inevitably report a single "critical incident" type episode. This was contrary to the researcher's expectation at that point. Although several respondents did report critical incidents, i.e., specific, anecdotal events in which a certain experience was identified as the focal point of exceptional feelings for a short period of time, in half the cases there was little resemblance to a critical incident. Clearly, these were accounts of longer periods of time during which the overall feeling about the classroom situation was unusually good or bad.

Collection of Data

The revised questionnaire (Appendix A) was given to ninety-seven undergraduate students in classes in the

Colleges of Business, Geosciences, and Education at Texas A&M University in October, 1970. Classes were selected which did not restrict enrollment to a particular major. Students were asked to participate in a study of college student motivation by responding to two questionnaires, one dealing with a time when the student felt especially good about a college classroom experience, another when the student felt especially bad about a college classroom experience. These recalled incidents could be ones from any college the student might have attended. The student was instructed that his name was not required on the questionnaire. In general, students appeared to be willing and eager to participate in the study.

Relationship of the Questionnaire Design to Theory

An important characteristic of the design was the request that the student identify periods of time in his own history when his feelings about classroom experience were undoubtedly either higher or lower than usual. The study assumed that in a classroom the student was "on the job." This was analogous to Herzberg's original

research design in asking middle management people to recall times when feelings about the job were higher or lower than usual.

The motivation/hygiene theory was adopted to measure student attitudes which led to satisfaction or dissatisfaction. The theory was based on the concept that man has two sets of needs. The first was the need to grow within himself, his need for self-actualization on the job. Elements of this set included achievement of a task, recognition for accomplishment, an awareness of responsibility, and growth through advancement. The second set involved the need to avoid uncertainty and hazards in the environment. Elements of this set included conditions which were peripheral to the job task itself: school policy and administration, supervision, working conditions, and interpersonal relationships. The two-factor theory (motivation/hygiene) hypothesized that job satisfaction and job dissatisfaction were not opposites. Job satisfaction was determined by the individual's attempt to actualize himself through his work. The feelings a person had toward his work were based on the first set of needs.

An individual's job dissatisfaction was determined by his feelings concerning the conditions surrounding his performance of the task. These conditions served to meet the person's need to avoid unpleasant occurrences, but did not lead to satisfaction. Instead, they only prevented dissatisfaction.

The questionnaire requested that respondents remember a period in the classroom during which their feelings were unusually positive or negative. They were asked to recall the specific event, how they felt, why they felt that way, and what effects resulted. These events were to be recorded in the student's own words. They were asked to make a judgment on the intensity of the event on a 21-point scale. They were asked what grade they received in the course from which the event came.

Content Analysis

Obviously, data consisting of respondent's reports on events in their past are highly qualitative. Herzberg (16) applied the procedure of content analysis to his data and the same method was used for this study. Content analysis was first developed in the fields of

public opinion and political science. Through this technique, qualitative material was broken down by the assignment of individual ideas or thought units to categories. By the development of definitive criteria, these categories could be made sufficiently objective to insure their reliability. The frequency of occurrence of individual categories provided a quantitative measure. Herzberg used content analysis to isolate the ingredients in the reported incidents. Thus, different stories could be compared on the same variables. He found sixteen factors which he called "first-level" factors. A first level factor was defined (16:44) as "an objective element of the situation in which the respondent finds a source for his good or bad feelings about the job." The sixteen first-level factors were:

1. recognition
2. achievement
3. possibility of growth
4. advancement
5. salary
6. interpersonal relations--superior
7. interpersonal relations--subordinate
8. interpersonal relations--peers
9. supervision--technical
10. responsibility
11. company policy and administration
12. working conditions
13. work itself

14. factors in personal life
15. status
16. job security.

Adapting the Herzberg scheme to the student population under study, nine categories were developed. These were: recognition, achievement, class advancement, responsibility, peer relations, professor competence, friendliness of professor, school or class policies, and non-academic social conditions. Each of these first-level categories is defined in the next chapter.

Second-level factors were seen in the subject's answer to the question: "What did these events mean to you? That is, how did this incident make you feel?" (Question 4, Appendix A). Essentially, the respondent had to look at himself and try to figure out what in his own need system led to his attitude at the time of the events being described. Second-level factors were the reasons given by the student for his good or bad feelings. Some second-level categories were the same as first-level categories. Herzberg (16:50) identified eleven second-level factors:

1. feelings of recognition
2. feelings of achievement

3. feelings of possible growth, blocks to growth, first-level factors perceived as evidence of actual growth
4. feelings of responsibility, lack of responsibility, or diminished responsibility
5. group feelings, feelings of belonging or isolation, sociotechnical or purely social
6. feelings of interest or lack of interest in the performance of the job
7. feelings of increased or decreased status
8. feelings of increased or decreased security
9. feelings of fairness or unfairness
10. feelings of pride or of inadequacy or guilt
11. feelings about salary.

The application of the present study to a student population required the following categories for second-level factors; achievement, recognition, growth, interest, fairness, group feelings, pride, security, professor like/dislike.

The analyses of effects were generally specified in concrete terms. The data for this classification were elicited by Questions 5, 6, and 7 (Appendix A). Herzberg found five categories delimiting the effects of high and low feelings: an effect upon performance, turnover, mental health effects, effects on interpersonal relationships, and attitudinal effects (16:51ff). The present study expanded the responses into eight categories including five performance effects, two mental/emotional

effects, and a "no effect" category. The categories were: no effect, change in major, improved/lowered grade, regular/irregular class attendance, greater involvement/withdrawal, greater study effort, increased/decreased confidence, and positive/negative emotional effects.

The actual process of content analysis required examination of each response to ascertain which factor was being described. It was necessary to have more than one judge evaluate the data in order to verify the motivator or demotivator at work. Two independent judges evaluated the data and a third judge checked the judgments and either concurred with the determinations or served as a final arbiter. The first two judges gave differing judgments on 4.6% of the incidents. These differences were resolved by the third judge. There were three groups of categories: first-level factors, second-level factors, and effects. The categorical scheme followed the one developed in the original Herzberg study (16) with the modifications noted. Although each category included within itself many sub-categories, the data fell into nine first-level factors, nine

second-level factors, and eight categories of effects.

Factors-Attitudes-Effects

In summary, the basic research approach was idiographic or individual as contrasted to the statistical. Herzberg rejected the statistical approach for his original study because he felt that an attempt should be made to see, individual by individual, how certain kinds of factors lead to high or low morale and the consequences of the morale state. The most straightforward way of accomplishing this was to ask an individual to give an account of a period of high or low morale. An analysis of the accounts should reveal what goes on during these times that led to higher or lower morale and subsequent reactions of the respondent. Thus, a complex consisting of factors (objective occurrences), attitudes (feelings), and effects (subsequent reactions) was seen. The factors-attitudes-effects complex was studied as a unit. Herzberg selected this method after noting that a major failing of much previous work in job attitudes had been its fragmentary nature. Most studies which examined

factors affecting a worker's attitude toward his job rarely investigated the effects of these attitudes. The present study also treated the factors-attitudes-effects complex as a unitary system.

CHAPTER IV

ANALYSIS OF DATA

The ninety-seven undergraduate students reported one hundred ninety-four events, all of which were judged to be analyzable. The one hundred ninety-four responses, divided evenly into motivating and demotivating incidents, were then further categorized as to the factors involved.

Definition of Terms

In order to proceed with the analysis of the data it was necessary to define certain critical terms. These were defined as follows:

First-level factors. The first level factor was defined as the objective, specific event which led to the good or bad feeling, for example, an "A" on a difficult examination.

Second-level factors. These were the subjective reasons given by the student for his good or bad feelings. They could be used as a basis for inferences about the

drives or needs which were met or which failed to be met by the events described. For example, one student responded: "It [the event] made me feel as though the way had been cleared for me to continue my education."

Effects. This category included a description of the behavior following the event as well as some indication of mental or emotional changes.

Motivator was defined as a response which dealt with self-actualization. Hygiene factors were defined as occurrences which surrounded the schoolwork.

First-Level Categories

Nine first-level categories were developed as a part of the study. These evolved from descriptions of classroom incidents given by students.

Achievement. Incidents involving some specifically mentioned success such as satisfactory completion of a job, solutions to problems, vindication, and seeing the results of one's labors were coded here. Also included were failure and the absence of achievement, for example, a lower grade than the respondent felt he earned. Some

additional specific responses were: successful completion of a "hard" course, or a high grade in a course.

Recognition. This category involved some act of notice, praise, or award addressed to, or concerning the student, such as attainment of "Distinguished Student" status. It also included negative recognition: acts of criticism or blame and occasions when the student received no recognition when he thought it due him. The source of the recognition could be from anyone--the student's professor or peers, or from outside the school environment.

Responsibility. This included those responses in which the person reported that he gained satisfaction from being given responsibility for his own work or for the work of others. It also included episodes when the student felt he was not being given adequate responsibility. In others, the student took the responsibility for decisions affecting his major, his course work, or the future direction of his life, and incidents in which the student acknowledged the opportunity for responsible action, but did not take such action.

Class advancement. This included statements in which the respondent indicated specific movement from one class status to another for example, from junior to senior. The opposite of advancement included failure to advance a class. This category differed from achievement in that advancement focused on a hierarchical change in school, while achievement referred to a specific classroom success or failure.

The last four categories, achievement, recognition, responsibility, and class advancement, have been defined as "motivators" or "content" factors. Responses dealing with events peripheral to the student's work were placed in the following "hygiene" or "context" categories.

School or class policies. Here are included those occasions in which the adequacy or inadequacy of school organization, class size, or teaching aids were central. This category also included responses regarding the structure of a class, cheating incidents and associated grievance procedures, and lack of time for taking examinations.

Professor competence. Responses placed in this category were based on events in which there was a direct confrontation between the student and a professor. It included responses which dealt with the willingness or unwillingness of a professor to teach, ability to teach, the communications skills used, willingness to help counsel the scholastically troubled student, method of controlling a class, apparent preparation or lack of preparation for class, and fairness of testing or grading.

Friendliness of professor. A response placed in this category was one based on the friendliness of a professor either inside or outside the classroom. For example, negative responses included statements relating marked anger, sarcastic retorts, or prejudice, while positive response included a professor's willingness to talk about non-academic topics, or to meet students outside of class socially.

Peer relations. These were stories in which there was a major emphasis upon the characteristics of the interaction between the respondent and his peers.

Non-academic social conditions. In this category were statements in which the respondent reported conditions in the larger society as central to his satisfaction or dissatisfaction.

Second-Level Categories

The second-level categories were all derived from the respondent's feelings about the specific classroom incident he reported in the first level. Categories already defined will simply be listed. New categories will be defined.

Achievement.

Interest. This included statements that the event was important because the student felt it worthwhile, because interest in the subject had been increased, or the topic was relevant to now and the future. It also included statements of lessened interest and diminished participation.

Security. This dealt with statements concerning a student's security in his student status, i.e., statements

expressing fear about "flunking out," or returning after having failed, or pressure being applied from some source. The category also included statements that the student "felt good" or "felt happy" about the incident.

Professor like/dislike. Statements in which a personal like or dislike for a professor was expressed were classified here. The statements varied in intensity from an eager acceptance and appreciation to a statement of hate.

Recognition.

Pride. Statements of self-esteem and the opposite indicating guilt, loss of pride, or embarrassment were coded here.

Growth. Feelings of a newly acquired dynamic maturity, responsibility, and a sense of direction and advancement were noted under growth. It also included its opposite, a giving up of effort, and ceasing to strive actively. General, non-specific-type statements were coded as growth. For example: "It [the event]

caused me to be more motivated in other courses and in self-improvement in general."

Group feeling. This referred to feelings of belongingness or isolation.

Fairness. This group noted specifically the feelings of fairness or unfairness caused by the first-level event.

Definition of Effects

Eight categories of effects were analyzed from the students' responses. The first five included performance or behavioral effects.

Greater study effort. This category included statements that the positive or negative event resulted in greater study effort or independent study.

Changed major. The student indicated that the event prompted a change in major course of study.

Regular/irregular class attendance. These were

statements which showed a change in the class attendance patterns of the student.

Improved/lowered grade. The grade the student received had been affected by the incident.

Involvement/withdrawal. The student had reacted by greater class involvement and out-of-class participation in the subject. The opposite was seen in various forms of withdrawal such as a report of minimal effort, giving up entirely, the work becoming more difficult, or future avoidance of a professor. These responses indicated changes in the quality of student work. The following were "mental/emotional" effects:

Increased/decreased confidence. This category included statements that the student reacted after the incident with a greater or lesser confidence in himself than before. Reports of self-doubt were coded here. It was also used when a student did not note a specific behavioral act but indicated that a pervasive effect on behavior had occurred.

Positive/negative emotional effects. This category

was used when the student indicated a relief from tension or a manifestation of an anxiety state as the result of the reported event. Examples were seen in statements of nervousness, worry, depression, anger, frustration, or conversely, pleasure, excitement, optimism.

A "no effects" category concluded the definitions.

Results of the Study

The results of the study are contained in three sections. The first presents the findings from the analysis of first-level factors. The Herzberg hypothesis was tested by a chi-square test of significance. The second describes the analysis of second-level factors. The third describes the effects of the episode upon the student.

First-Level Factors

One of the major tasks in the study was to investigate whether different kinds of factors were responsible for bringing about job satisfaction and dissatisfaction (in this case, of students in the classroom). The main questions which emerged were: What were the objective

first-level factors that occurred during the periods when students were experiencing highly favorable attitudes? Were they different from the factors that students experienced during times of low job attitudes? Table I shows the overall distribution of each factor for both motivational and demotivational experiences.

TABLE I

DISTRIBUTION OF THE FIRST-LEVEL FACTORS OF MOTIVATIONAL AND DEMOTIVATIONAL EXPERIENCES

Categories	Motivational Experiences		Demotivational Experiences	
	Number	Percent	Number	Percent
"Motivator"				
Achievement	40	41.2	26	26.7
Recognition	15	15.5	3	3.1
Responsibility	8	8.3	2	2.1
Class Advancement	2	2.1	0	0
"Hygiene"				
Professor Competence	23	23.5	48	49.5
School or Class Policies	4	4.2	11	11.5
Friendliness of Professor	2	2.1	6	6.2
Non-academic Social Conditions	2	2.1	1	1.0
Peer Relations	1	1.0	0	0
TOTALS	97	100.0	97	100.1

Reports of motivating experiences. The most frequent of the ninety-seven responses was achievement, occurring in 41.2 percent of the cases. Most of the favorable responses indicated that the student had attained an "A" grade either on an examination or in a course. The following was a typical example of a response coded as achievement.

> I was in an English ____ course and final exams were here. I had a C going into the final. The whole semester all my friends kept telling me that I had one of the toughest profs in the English department, and he was really that! After the final, I went to see what my grade was. To my surprise, I had made an A, and there were only two A's in the class of approximately twenty-eight students.

Professor competence emerged as the next most frequent response, occurring in 23.5 percent of the cases. The occurrence of professor competence along with school or class policy (4.2%) cast doubt on the idea that "motivators" would be the highest ranking categories among favorable episodes, as predicted by the Herzberg theory. The following story was coded as professor competence.

> This is a _____ class and the teacher is a woman. She gives notes, but stimulates her lecture with examples and encourages questions from the class.

> I rarely cut this class, and could not fall asleep in it if I wanted to. I've never really enjoyed a class as much, or found the material as interesting, and found the teacher to be as stimulating and knowledgeable of the material as I have in this class.

Recognition was the next most frequent, occurring in 15.5 percent of the cases. The following example illustrated recognition.

> In the _____ we were assigned a bulletin board project. I did one and was complimented by the prof and several students. It made me feel pretty good since I had worked about three hours setting it up.

Responsibility occurred in 8.3 percent of the cases. An example of a story coded as responsibility:

> Enrolled in an English class to study _____. Had a small class that was very excited about the subject and actively participated in discussions. Each were given topics by the professor to cover and discuss individually with the class. Got into many meaningful, rather deep discussions with various class members and the instructor.

The remaining categories accounted for small percentage totals. Cases of class advancement accounted for 2.1 percent, and the following was typical: "I was on scho-pro after my first semester and I didn't know if I wanted to stay in school or not. By making good grades in my classes the second semester I was able to stay."

Friendliness of professor occurred 2.1 percent of the time and was seen in the following brief statement. "Professor made it an interesting course by smiling and cracking jokes once in a while." Non-academic social conditions were selected 2.1 percent of the time. This category is illustrated by the following story.

> After a trip to a mental retardation school, we discussed some of the attitudes we had about the trip. It wasn't until that day that I realized some of the atrocities of life. It gave me an exceptional insight which I will cherish all my life.

Only one student mentioned peer relations as a motivating experience. He said, perhaps predictably: "I became acquainted with this pretty co-ed who sat next to me."

The "motivator" factors--achievement, recognition, responsibility, and class advancement--were mentioned by 65 students (67%) in recalling good classroom incidents. Thirty-two people (33%) listed "demotivators" in recalling good classroom incidents, and by far the largest number, twenty-three, recalled professor competence as a factor in their good experience.

Reports of demotivating experiences. The most frequently reported demotivational experience was professor competence, occurring in 49.5 percent of the cases (Table I). In view of the fact that the research design and the questionnaire focused the student's attention upon recalling a classroom experience, this high frequency was not surprising. However, professor competence would have to be considered a potent motivating force, and the lack of it an even more potent demotivating force for students in this study. The following incident was coded in the category of professor competence.

> The teacher was about 65 or 70 years old. He taught in a monotone type of voice that made his class very dull. It was very hard to listen to him. The thing that I hated about it, was that he would deliberately find a person who was having trouble hearing or understanding something and call on them. It seemed like he enjoyed doing this because he always managed to embarrass someone and he never called on anyone who knew the answer or would volunteer.

The next most frequently reported response was negative achievement (failure) mentioned in 26.7 percent of the stories. The frequent occurrence of achievement cast doubt on the idea that "demotivators" will be almost exclusively named in unfavorable episodes as predicted

by the Herzberg theory. Since many students leave school because of low grades, negative achievement was a high frequency category and grades remained a major concern. Most of the students who related negative achievement-type stories stated a desire to remain in school. Concern with scholastic abilities was very much evident in the responses of these undergraduates. A typical example of negative achievement was the following brief statement. "I received a quiz back and I made the lowest grade in the class." Failure was associated with feelings of embarrassment and guilt and with a variety of apparent rationalizations. In almost every case failure was an important unfavorable event.

With the exception of the frequent occurrence of negative achievement as a "bad" experience, the demotivating experiences were fairly well distributed in accordance with the motivation-hygiene theory. School or class policies accounted for 12 percent of the responses. In this category several wrote of cheating incidents and the aftermath of cheating. Class size was also a consideration, as illustrated by the following. "I was a member of a freshman chemistry _____ class. It

included approximately 200 students in my section alone. I felt like a number--a bystander. One small object in a large group. Lectures were bad--professors unconcerned."

Friendliness of professor was mentioned by 6 percent of the students. They recalled incidents in which the professor essentially closed the door on effective communication. Some reflected elements of rejection and hostility as illustrated by the following. "I went to see a prof about some homework problems and he was very sarcastic about it, implying I had not put effort in them when in fact I had."

Three students wrote of incidents classified as recognition. Negative recognition involved criticism or blame as illustrated by the following story.

> I had written an English paper (300 words); the teacher chose my paper to criticize and pretty well chew to bits. Even though he didn't say whose paper it was, I knew whose it was. Although it was necessary for him to criticize several papers to show the class how we weren't supposed to write, I thought he went to the extreme in his criticism. He didn't criticize anyone else's paper like he did mine.

Only two respondents related events that were coded as responsibility. Negative responsibility reflected

a deeply rooted personal lack as illustrated by the following incident.

> I'm frustrated. I have a mental block about the taking of a quiz. No matter how hard or how light I study for an exam, I blank out during the test. I've taken oral exams and achieved A's consistently. Any type of quiz, communication seems to be the problem. I can not say what I would like to say, in the way I would like to say it.

A single student recalled an event which was coded as non-academic social conditions. The following quote illustrated this category.

> While making a staff study I proposed a plan for providing women's housing on campus by conversion of Dorm _____ into a women's dorm and relocating the men residents in that dorm. The prof refused to accept it because he said it was a stupid idea, was irrational, and would not work at A&M. He also said some things to make me feel he was personally opposed to women's housing and just plain "Old Army." He also at that time showed extreme favoritism to corps members and a football player.

In summary, "hygiene" factors accounted for 68.2 percent of the demotivating experiences as contrasted with 31.8 percent occurrence of "motivator" categories. Neither class advancement (a "motivator") nor peer relations (a "demotivator") appeared as a demotivating first-level factor.

Long-Range vs. Short Range Incidents

Respondents were asked whether the incident they recalled was long range in nature (defined as an event lasting two months or more) or a short range, single episode event. Of the ninety-seven "good" classroom events, thirty-five were short range in nature and sixty-two were long range. This would seem to indicate that a single incident had less impact--at least was reported less frequently--than the cumulative effect of long range episodes. Perhaps this was partly due to the fact that college students experience course work in semester units of time, thus more readily recalling time spent with a particular professor in a specific course as a single unit. However, in most cases the good feeling about being a student in the college classroom stemmed from factors that lasted over a period of time rather than factors which were temporary in nature. Good feelings arising from a single brief episode might be considered to be a kind of partial reinforcer as the student was progressing and growing. Almost all such stories centered around either achievement or recognition for some accomplishment. In the responses to the

"bad" classroom events, forty-five were short range, single episode incidents and fifty-two were long range.

Test of the Hypothesis

The Herzberg hypothesis stated that a basic difference exists between "motivators" and "demotivators." These factors are not on a continuum, but are separate. Some factors (motivators) affected job attitudes only in a positive direction. Conversely, some (demotivators) affected job attitudes only in a negative direction. The following model illustrates the Herzberg theory.

Model of the Herzberg Theory

Motivators, Job Content, or Satisfiers	par	Demotivators, Job Context, Hygiene or Maintenance Factors, or Dissatisfiers
1. achievement		1. professor competence
2. recognition		2. school or class policies
3. responsibility		3. friendliness or professor
4. advancement		4. peer relations
		5. non-academic social conditions

The null hypothesis states that no differences exist

between the factors. A chi-square test of significance was made in order to compare expected frequencies with observed frequencies. The computation for the chi-square test can be found in Appendix B. The null hypothesis was rejected. The χ^2 value of 24.18 is significant at the 0.01 level.

Second-Level Factors

Second-level factors were derived from students recalling what the objective incident meant to them and why it made them feel good or bad. An analysis of these factors should provide some insight into how students' attitudes were affected by specific classroom events.

Favorable classroom experiences. Table II, page 59, contains the data relating to second-level factors. In the area of "good" classroom experiences, achievement was mentioned 28.9 percent of the time. Achievement was a motivational experience apparently because of achievement itself. For example, one student wrote (at the first-level): "I though I had a C in a course and ended up with a B." His second-level response was: "It made

me feel great. I posted my first 3,000." Both first and second-level responses were coded as achievement. An emphasis on grades was unmistakable but accomplishment in conjunction with an acceptable grade was important. For example, one student wrote that the event, "Helped me to realize that hard work can pay off, and it gave me a feeling of accomplishment."

TABLE II

DISTRIBUTION OF FAVORABLE AND UNFAVORABLE FEELINGS AS SECOND-LEVEL FACTORS

Categories	Favorable Feelings		Unfavorable Feelings	
	Number	Percent	Number	Percent
Achievement	28	28.9	13	13.4
Interest	25	25.8	16	16.5
Security	10	10.4	8	8.2
Professor Like/Dislike	8	8.2	17	17.5
Recognition	8	8.2	0	0
Pride	8	8.2	14	14.5
Growth	9	9.3	8	8.2
Group Feeling	1	1.0	3	3.1
Fairness	0	0	18	18.6
TOTALS	97	100.0	97	100.0

The category of interest received 25.8 percent of the responses. In almost all cases, a student used the

words "enjoyment" or "interest" in the description of feelings. For example: "It made me enjoy the course more and I got more out of it. Made the lectures more interesting." Or, from another student: "I enjoyed the course and learned some economics for a change."

At the second level security emerged as a new factor. It basically concerned the student's feelings of being able to maintain his status, or if he was having difficulty doing so, of having something to fall back on. In the positive sequences it re-affirmed in the student's mind his right to be a college student. For example: "These events really broke the ice for me as far as being accepted. Up until this time I had felt somewhat inferior in doing college work." Another wrote of a junior college experience: "These events meant a lot to me--they gave me the confidence that I needed to know that I had something that I could turn to if I were unable to get four years of college."

The category of professor like/dislike drew 8.2 percent of the responses in recalling "good" classroom events. Students who liked a professor tended to go to some length in describing what they felt about the

teacher, his methods, and his class. Although a few replies were brief, "It made me glad that this prof was teaching this course," (as one student wrote) most were considerably longer. For example:

> This event meant better communications between the professor and the students. This activity made me feel closer to the professor than in any other college course. This initiated a method whereby the students could discuss various topics with the professor informally, such as school policies and current events.

A feeling of recognition also drew 8.2 percent of the responses. Typically: "This meant that it really boosted my ego about this class. It gave me a 'pat-on-the-back' more or less. It was my incentive to try harder and I went on to make an A in the class." Another: "The incident made me feel very satisfied with myself because I felt that my intelligence had been recognized and it gave me a feeling of prestige in the class."

A feeling of pride accounted for 8.2 percent of the responses to "good" classroom incidents. These responses nearly always used the words "pride" or "proud." For example: "This incident made me feel very proud of myself. It made me feel I could make the grades that are

required of college students." Another: "This made me proud of my work and more willing to try harder to improve."

Growth accounted for 9.3 percent if the responses. This category was similar to pride and recognition but required a lesser degree of specificity than in the latter two categories. For example: "It [the event] caused me to be more motivated in other courses and in self-improvement in general." Another student said: "It made me feel like I knew where I was going and what I would do with myself." A third wrote: "They made me feel good because I utilized something that I learned and it will be retained for life."

There was only a single example of an event coded as group feeling. This student wrote: "It made me feel as if I was a 'part' of the class--not just a listener and note taker. I could air my ideas frequently even though they conflicted sometimes with those of the professor."

There were no responses emphasizing fairness as a feeling after a favorable classroom event. Unfairness,

however, emerged as a major emotional response in reporting unfavorable classroom events.

Unfavorable classroom experiences. In the area of "bad" classroom experiences, five of the nine categories clustered tightly within a range of five percent. Fairness (18.6%), professor dislike (17.5%), interest (16.5%), loss of pride (14.5%), and negative achievement (13.4%) accounted for 80.5 percent of the second-level responses arising from unfavorable classroom experiences. Table II, page 59, contains these figures.

A feeling that the student had been treated unfairly was a common occurrence. Almost always the feeling was related to examinations and grades. One student wrote:

> I felt the test was more designed to see how many people could flunk it rather than to tell what you learned. Over 40 percent of the class flunked. I was very mad and felt that all the time I'd spent in class and studying was simply wasted. If I hadn't gone to class and studied I could have gotten the same grade. What's the difference between F and a zero? Not much!

Another respondent wrote: "It made me feel terrible. Especially since I felt I was ready for the test and was crossed up." These responses reflected the student's relative powerlessness to significantly alter the

situation. The frustration which resulted from this seemed to culminate in a feeling of unfairness.

A feeling of dislike for a professor was almost as frequent an occurrence as an emphasis on unfairness. Statements varied in intensity from mild dislike to strong statements of hate. Something of the varying degrees of intensity can be discerned in the following quotes from the questionnaires: "This event causes me to think less of the teacher." "I was disenchanted with the teacher and his profession. I felt he was merely occupying space." "Caused bad feelings toward the prof because he said he didn't care how the grades turned out." "I felt it was awful that a university would hire such a person. I felt I had paid money to take a course and I wanted something out of the course." "It made me hate the class and prof. I have no respect for him at all." "I felt hostile toward the prof the rest of the semester and when I had him later for another course the feeling was still the same." "The incident made me hate that prof!"

Lessened or diminished interest was another major factor. A student remarked: "Since his statement, my

grades have leveled off and are not increasing. I've lost all interest in the course and I don't care whether I fail or not." "I was completely bored, not challenged in the least--taught as if I were a child," wrote another. Others said: "It made me feel pretty bad as a student. I really started to question my ability to learn. I didn't have any interest in the course at all." "Frustrated. The course could be very interesting with the right profs and attitudes." Another brief but vivid statement read: "Lousy--and also disinterested in the course."

Students also reacted with embarrassment, wounded pride, and self-doubt to "bad" classroom incidents. The following were coded as pride. "It made me feel anger and embarrassment," one student wrote. He continued: "The classroom situation was strange. I knew none of the other students and felt like a real dummy." Another student wrote: "I felt very humiliated--embarrassed--even though I knew no one else knew it was my paper."

Negative achievement remained as much a factor at the second-level as it was a major first-level incident.

For example, "These events were very disappointing. I would study very hard for these quizzes and still make a low grade." "I dropped from A to B. Very unhappy with the prof's idea of his being tough." "I am still getting repercussions about my mid-semester grade. I felt totally dejected about doing so poorly on a test which I had prepared fairly well for. As a consequence, I had a short period in which I did not want to even think about physics, but later was more determined to do well in the course."

Stories related to security accounted for eight percent of the negative responses. An example of security was the following: "This scared me to death of college. I felt lost and just wandered about in a daze. Felt like quitting college at that time. Might have done it if roommate hadn't talked me into just riding with it and not worrying about the large class size." Another: "This depressed me very much and made me wonder if all of my college courses would be like this and made me worry about flunking out of school."

The category of growth as a negative factor included stories in which the student felt he had been irresponsible

and/or had given up trying to achieve. For example: "After the first two quizzes I saw no hope so I finally gave up. This defeatist attitude made me feel very bad." And, "I was getting to wonder whether I was stupid and dumb or not. After the second quiz I just gave up in the course." Negative growth accounted for eight percent of the responses.

Group feelings accounted for another five percent. The stories told of individuals who wanted to "belong," but felt they did not. For example: "I was disheartened. I didn't feel like I was really a part of a learning experience." A girl wrote: "I can't see any difference in girls and guys seeking an education. Everyone is entitled to get the best education he or she can. I want to make the most of the years I spend here. When cutting remarks are made it makes me feel like I don't belong to the school; that I don't have the same right as everyone else to the same education."

Discussion of Effects

Students tended to recall a multiplicity of effects arising from the incidents. Table III shows the

distribution of effects. The total number of favorable and unfavorable effects was greater than ninety-seven, since an attempt was made to categorize all effects mentioned by the student.

TABLE III

DISTRIBUTION OF EFFECTS FROM MOTIVATING AND DEMOTIVATING CLASSROOM EXPERIENCES

Categories	Favorable Events		Unfavorable Events	
	Number	Percent	Number	Percent
Involvement/Withdrawal	26	21.2	31	26.2
Increased/Decreased Confidence	20	16.4	9	7.2
Improved/Lowered Grade	20	16.4	6	5.1
Positive/Negative Emotional Effects	7	5.7	28	23.7
Regular/Irregular Attendance	2	1.6	2	1.7
Greater Study Effort	24	19.8	14	11.9
Changed Major	4	3.3	14	11.9
No Effect	19	15.6	14	11.9
TOTALS	122	100.0	118	100.0

Favorable effects. The most frequently mentioned effect following a "good" classroom event was greater involvement from the student, reported by 21.2 percent of the respondents. This involvement took the form of

heightened class participation, greater concentration in class, appreciation for innovative teaching or class methods, and quickened interest in the subject. Students wrote: "Became extremely interested in the class and the concern for the class being a success under this type of policy." "My mind is in the classroom instead of outside. I care about the future and I want to learn more." "I even enjoyed doing his homework and outside assignments." "Motivated to learn and understand, not memorize."

Greater study effort was reported by 19.8 percent of the respondents. Occasionally (3.3 percent of the time) students felt greater study effort to be the result of changing majors. "My new major was interesting," wrote one. He continued, "I enjoyed it more and studied harder." Usually, however, greater study effort was related to deepening maturity, self-insight, and a sense of being rewarded for effort. A student wrote: "From then on I realized that I could make good grades if I just studied long enough and hard enough." Another responded: "I found that what I thought was a difficult course not to be so hard after all and therefore tried

to do better after that." Still another reported: "I had studied for many hours and I felt rewarded for my efforts, so I continued to study and learn the material for the additional quizzes and it paid off."

Improved grade and increased confidence were each reported by 16.4 percent of the students. The former related directly back to the previously expressed need to achieve. Statements of improved marks nearly always gave the letter or numerical grade. "Well, I made an 88 on that first quiz," one student wrote in recalling the effect of an exceptionally good classroom incident. Increased confidence appeared to meet a deeply felt deficit need in some students. One student wrote: "After passing the second quiz and the rest of the others, I felt I could do as good in all my courses, and you know what? I did." After a student became a Distinguished Student he wrote: "It caused me to strive to make better grades since I found out I could."

A number of students, 15.6 percent, recalled no effect at all following the favorable classroom event. This number was a bit deceptive, however, since it included five students who reported that their performance

was affected "a little" by the incident, or who simply answered "yes" and did not elaborate.

A few students, 5.7 percent, emphasized a positive emotional effect following the incident. One young man wrote: "This course gave me an optimistic view toward my last year in school." Another said: "It made me feel that there is some hope for my major [course of study]."

Only four students, 3.3 percent, changed their majors as a result of a good classroom experience. This was an interesting finding in view of the fact that fourteen students reported a change in major as a result of a bad classroom experience. Two students reported changed, more regular classroom attendance patterns as a result of good classroom experiences.

Unfavorable effects. The largest number of effects from an unfavorable classroom incident was some form of withdrawal recalled by thirty-one students (26.2%). Sometimes withdrawal would be followed by changing majors. For example, one student wrote: "I put out just enough to get by." But in his next statement he added: "I

changed my major." Also seen was the withdrawal pattern followed by greater study effort. For instance: "At first I didn't care if I kept up with the assignments or not. Then I decided the only way I was going to learn anything was on my own." The bulk of the withdrawal statements, however, gave little hint of a functional solution to the dilemma. Students reported that they started to sleep in class or became apathetic. One wrote: "I still had a lazy attitude, not caring what happened. I continued to barely keep up and glide with a C average." Another stated: "I felt it was useless to study for his 'chicken' quizzes and wound up with a C in his course, which I felt was much too low." Still another reported: "I didn't try after the first quiz. It just wasn't worth the effort." Several statements of withdrawal centered on future avoidance plans: "I was careful not to get this prof again," wrote one respondent. "I will not tolerate another course under him," stated another.

The next most frequently mentioned category was negative emotional effects which occurred 23.7 percent of the time in this study. This category covered less

specific, rather pervasive reactions and changes. For example: "Lowered my motivation in general." "I became conscious of what could happen to me whenever I take any quiz and the thought haunted me." "I distrust all economics profs." "I was very resentful all of the six weeks of the summer semester." "I became depressed toward school as a whole and as a result, my other grades dropped also."

Greater study effort was reported by fourteen students (11.9%). This was the most intriguing and the most unexpected finding. But perhaps the roots of this effect lay both in avoidance and in pride as seen by the following responses. "I studied harder to try to show him up and not to have to go by his office again," wrote one. "I decided to show that so and so that I could and would do better." "I learned not to trust profs, but to do the best you can yourself. This is bad I know, but," he continued, "my grades turned out better the next semester."

Fourteen students, 11.9 percent, out of the ninety-seven in the study, believed that they changed their major as a result of the unpleasant classroom event.

Many of these indicated that they had been overwhelmed by the event and that changing majors was necessary in order to stay in college. Some suggested that a change in major altered their feeling about themselves. These students reported that the change helped them in terms of increasing their interest and avoidance of stress connected with a difficult subject. Freshman and sophomore level mathematics, science, and economics courses were most frequently mentioned as the ones causing students to change majors.

Fourteen students reported that the unpleasant classroom event had no effect upon their performance or their mental attitude at all. However, this category included four students who did not give enough information to classify a performance or mental effect.

Nine students, 7.6 percent, related incidents which indicated that the student experienced decreased confidence as a result. For example: "I personally couldn't accept the fact that I had flunked. I was very unsure of myself and to some extent believed it didn't really matter what one did in the way of studying for the teacher controlled everything which was done." Another

wrote: "I was worried about my only F. It was very discouraging. I thought maybe I wasn't cut out for school and I just hated the subject more." "I became self-conscious of myself," another wrote, "and it affected all my subjects. Every time I studied for a quiz I didn't study as hard or as long."

Six students (5.1%) reported a lowered grade as a result of the bad classroom event. This reflected a fairly consistent emphasis upon grades as a measure of achievement. A student said: "I would put in hours of studying for quizzes after receiving low grades on quizzes and still make low grades. I would get confused on certain principles during the quiz. My course grade got lower after each exam." Another wrote: "I became depressed towards school as a whole and as a result, my other grades dropped also. I flunked out that first semester and had to go to a junior college." A student with a classification of junior wrote: "My poor grades were reinforced with more poor grades and I didn't care about studying. I flunked out. I never did like my major and still don't. It is only a means toward an end."

Two students, 1.7 percent, recalled a change in their class attendance patterns after the bad classroom incident. "I began to despise the course and did not attend regularly," wrote one student. He also reported that he failed the course, which was taught by closed circuit television. The second student in this category disliked a weekly discussion group so much that she stopped going.

CHAPTER V

SUMMARY AND CONCLUSIONS

Herzberg developed a theory of job motivation based on Abraham Maslow's hierarchy of needs. Several research efforts based upon Herzberg's theoretical framework resulted in conflicting findings. However, there were other indications that the theory was applicable to a variety of situations in addition to industry.

Motivation/hygiene studies analyzed from one to three aspects of worker motivation. First, research was done in which workers were asked what specific occurrences on the job made them feel especially good or especially bad (first-level factors). Second, other studies continued past the first level to ask the worker why these events made him feel the way he did (second-level factors). Third, a few studies continued the investigation to ask the individual what effect these events had had on him. In the original Herzberg study all three steps were taken.

The present study included the consideration of first-level factors, second-level factors, and effects.

The study applied the Herzberg theory to a population of college undergraduate students. The research design interpreted the theory narrowly in assuming that in the classroom, students were "on the job." In an earlier work, Linehan (24) analyzed first and second-level factors for a population of both graduate and undergraduate students. He structured his study broadly, however, asking students to recall a time when they felt exceptionally good or exceptionally bad about being a student at Texas A&M University. The Linehan research indicated that the theory might have applicability to a study of the student in the classroom.

For the present study, a pre-test questionnaire was designed and given to twelve students. Modifications were made and it was administered to ninety-seven undergraduates at Texas A&M University in October, 1970. The questionnaire did not restrict the students to recalling only classroom events which had occurred at Texas A&M University. Rather, they were asked to recall classroom events from any college they might have attended, which made them feel exceptionally good or exceptionally bad. Two independent judges categorized the responses using

content analysis. A third judge decided the category classification in cases of disagreement between the first two judges. Nine first-level categories--achievement, recognition, responsibility, class advancement, professor competence, school or class policies, friendliness of professor, non-academic social conditions, and peer relations--were developed. Nine second-level categories--achievement, interest, security, professor like/dislike, recognition pride, growth, group feeling, fairness--were coded. Eight classes of effects--involvement/withdrawal, increased/decreased confidence, improved/lowered grade, positive/negative emotional effects, regular/irregular class attendance, greater study effort, changed major, no effect--were found.

The motivation/hygiene theory was an attempt to measure worker attitudes which led to satisfaction or dissatisfaction. It was based on the concept that man possesses two sets of needs.

The hygiene part of the theory was related to safety and to the need to avoid hazards or uncertainty in the environment. Elements of this set of needs included conditions which were peripheral to the job task, i.e.,

company policy and administration, supervision, working conditions, interpersonal relationships, and personal life. This set of needs provided safety for the individual and functioned as an essential base for the emergence of higher needs.

The motivation part of the theory was related to the need to grow within oneself. In Maslow's terms, this was the need for self-actualization on the job. Elements of this set included successful achievement of a task, recognition for accomplishment, increased responsibility, and growth through advancement. Through these elements an individual might be motivated to highly productive levels.

The motivation/hygiene theory indicated that job satisfaction and job dissatisfaction were not opposites, but were separate conditions. Factors which affected job attitudes positively led to job satisfaction, but the absence of these factors did not lead necessarily to an appreciable amount of job dissatisfaction. Conversely, the absence of hygiene factors led to dissatisfaction, but the presence of hygiene factors did not necessarily lead to job satisfaction. The logical

extension of the idea implied that job satisfaction was determined by the individual's attempt to actualize himself through his work. The feelings a person had toward the content of his job were based on the motivation needs previously described. These elements were called "motivators." An individual oriented toward these elements would be a "motivation seeker" and his dominant orientation toward his job would be determined by needs related to achievement, growth, advancement, responsibility, and earned recognition. It would follow that such people were motivated primarily by the nature of the task and might have a relatively high tolerance for poor environmental conditions. They tended to express great satisfaction from accomplishment and possessed positive feelings toward work. They appeared to be relatively self-sufficient, more inner-directed. They needed to strive for quality. Two-thirds of the students in this study indicated that they were motivated in the classroom by tasks which allowed a feeling of achievement, advancement, responsibility, and recognition. This majority group could be called motivation seekers and would be those whose behavior was aimed toward growth and

self-actualization. Their periods of high levels of satisfaction usually led to improved performance.

According to the theory, job dissatisfaction was then determined by a person's feelings concerning the conditions surrounding his doing of the job (the job context). These conditions served to meet the individual's need to avoid unpleasant or threatening environments. However, these elements did not lead to satisfaction, but could only prevent dissatisfaction. The hygiene factors served the individual as he tried to avoid or remove hazards in the environment. An individual oriented toward these elements would be a "maintenance seeker." His dominant orientation toward his job would be determined by his need to minimize uncertainties. One-third of the students in this study indicated that they were motivated in the classroom by professor competence, the structure of the class, social conditions, or peer relations. This minority group could be called maintenance seekers. Their primary motivation tended to be avoidance of threatening elements in the classroom, of maintaining an atmosphere of safety, and predictable surroundings. In contrast to motivation

seekers, these individuals appeared to be motivated primarily by the nature of their environment; their orientation indicated some avoidance of motivation opportunities. They sometimes expressed cynicism regarding values concerned with work and accomplishment. The quality of work seemed less important to maintenance seekers than to motivation seekers.

Although an orientation toward motivation or maintenance might be developed over a period of years and could be a fairly stable personality orientation, it seemed reasonable to assume that this stance could be influenced. Maintenance seekers in an environment of achievement, responsibility, growth, and recognition might tend to acquire the values of motivation seekers if they could also be convinced that their safety was not at stake. One could assume that a classroom environment rich in opportunities for satisfying motivation needs (and sufficiently non-threatening) led to motivation-seeking habits. Conversely, a situation sparse in motivation opportunities encouraged preoccupation with maintenance factors. "

It might not be unrealistic to assume that

perceptive teachers could provide satisfaction for both motivation seekers and maintenance seekers. Theoretically, a student would be rewarded by the satisfaction of his dominant drive, whether it is motivation-seeking or maintenance-seeking. The student would additionally benefit in that he would receive permission to continue his education following the successful completion of each task. Adequate performance at each course level not only gave a student reassurance, but it stabilized his student position before the next cycle imposed fresh demands upon him.

An important finding from the study was that achievement emerged as the most frequent objective first-level event and as a major feeling at the second-level. The college student's purpose, while admittedly having many individual facets, had usually been assumed to be to gain knowledge and, having done so, to graduate. One could speculate that some individuals had other goals, e.g., seeking a mate, staying out of the army, getting away from home in a socially approved manner, or obtaining an R.O.T.C. contract. However, in this study, as a student perceived himself in the classroom, his

achievement there (usually measured by grades) emerged as his major concern. This study underscored the fact that in order to maintain his interim status and to reach his goal of graduation, a student must achieve. Grades dictated his fate and grades were assigned by professors.

Students perceived that achievement stemmed from an act of the student, whereas feelings of failure (negative achievement) tended to arise from two sources. First, failure was seen as originating from external forces, a kind of "Who-could-succeed-when-they're-against-you" attitude. Second, failure was seen as originating internally from acknowledged personal failure to do what was required. The impact of successful performance in the classroom was very much in evidence for students in this study. Achievement was found to be a satisfier; failure to achieve was a dissatisfier. Thus, the findings of the present study were in line with those found by Scott Myers (29), who found achievement working both as a satisfier and as a dissatisfier with employees at Texas Instruments, Inc. He concluded that what motivated employees to work effectively was a challenging job which allowed a feeling of achievement, growth,

responsibility, advancement, enjoyment of the work itself, and earned recognition. People became dissatisfied when opportunities for meaningful achievement were eliminated. They became sensitized to their environment and began to find fault. The present study found the same to be true of a college student population.

Recognition which had been earned appeared to be a symbol of justice, an act of approval which confirmed a successful accomplishment by a student. Recognition confirmed individual worth. Unearned recognition in the form of friendliness and reassurance was not a substitute for earned recognition, but served as a hygiene factor. A feeling of recognition (second-level) could come from several sources--from a written comment on an examination, from spoken words of praise, or from a new, more mature assignment that set one apart as being unusually capable.

The Herzberg two-factor theory appeared to be correct in this study when it indicated that content (motivator) elements were more powerful determinants of student satisfaction than were context (hygiene) elements, in spite of the fact that both content and context

elements could be related to either satisfaction or dissatisfaction in the classroom. Context elements--especially lack of professor competence--were the source of intensely strong negative feelings.

Professor competence emerged as a potent motivator. Students were stimulated and excited by good teaching. They expressed appreciation, gratitude, and something akin to wonder, in recalling incidents which they remembered as examples of outstanding teacher competence. But lack of professor competence was twice as potent as a demotivator. Half of the respondents saw some form of professor incompetence as an exceptionally bad classroom event. Expectations concerning the optimum relationship between a student and his professors were much in evidence. Students expected a professor to be able to field unanticipated questions in class. They expected professors to teach with enthusiasm, to project information, not as automatons, but on a human basis, and to structure class policies openly and fairly from the beginning of the semester. Admittedly, most students were probably not good judges of how thoroughly a professor knew his subject. But students tended to be extremely

quick to spot the impatient, the inept, the uncaring professor. The professor-student relationship was such that most students expected assistance from these teachers. They did not question the superordinate/subordinate relationship. Students did not expect status equal to that of a professor; they expected to respect a professor. A not uncommon remark of contempt after a bad classroom incident was one which read: "I could no longer respect him after that happened."

Students tended to expect professor competence to be exhibited on two planes--one which might be called an informational plane and another which might be called an affective plane. A certain modicum of information exchange was a requirement to ward off boredom. But students perceived a professor's affective capacities in the ease with which he conducted class, the approachability he exhibited, the openness with which he extended a bit of his personality into his teaching.

Although students expressed varying degrees of discontent over specific grading practices, the policy of grading as a measurement system was largely unquestionned. More discontent was expressed over the lack of clear-cut

criteria for grading. Occasionally, there were expressions of bewilderment over just what it took to get a B or a C. The extremes of grading, A or F, seemed clear-cut by comparison. Many of the statements of unfairness related to ambiguously stated, or largely unstated, grading policies by professors.

Not a single student mentioned that he had been motivated to greater performance because he had a professor who had written a book or who was famous for his research work. Equally important, these activities did not appear as demotivating elements to undergraduae students. Students appeared to evaluate professors on the basis of three interlocking questions: (1) Does he (the professor) consider himself adequate? (2) Can he teach? (3) Does he know I'm there? Professor inadequacy almost inevitably resulted in unpleasant, fearful, boring, or unpredictable events. An evaluation of the ability to teach related more specifically to communications skills, but also to the depth and breadth of knowledge possessed by a professor. The third question took in all of the implications of reassurance, accomplishment, and recognition in need fulfillment.

In the college environment, an important motivational category could be satisfied by competent professors. Ideally, competent professors should be able to provide some incentive for achievement to their students. They should provide recognition when it is due. Competent professors should provide students with interest in the subject and be consistent and fair in testing and grading. In the affective plane, students looked for a less formal classroom atmosphere, approachability, and a non-threatening environment.

Alternative explanations to motivation and maintenance-seekers have been expressed by Hackman (12), an associate of Frederick Herzberg. Hackman found those individuals expressing job dissatisfaction not to be maintenance (hygiene) seekers, but stimulation seekers. He further argued that there were three categories of people who could be positively motivated. He labeled them accomplishment seekers, responsibility seekers, and security seekers or instrumentalists.

The present study found some indication that maintenance seekers may certainly contain a sub-category of people who would be stimulation seekers. Boredom was a

frequently expressed emotion and the effects following boredom tended to be some form of withdrawal. The hygiene factors were essentially unrelated to job motivation of the person in that an individual cannot increase the level of gratification of his needs through task-oriented behavior. For example, usually a student could do nothing to significantly change a class dominated by an incompetent or immature professor. Because of the vast power differential between professor and student, and because of the expectations surrounding each role, a student would be essentially powerless. He could withdraw, endure, or avoid some aspects, but probably he could not functionally improve the situation.

There was some indication that a sub-category of accomplishment seekers could be described in positively motivated people. The present study found students centered on achievement and failure. Challenge was important but it had to stop short of frustration. It had to be an attainable challenge. Motivation was affected by the possibility of attainment of the desired end.

The findings of the study were that the factors which motivated the student were primarily achievement,

competency of the professor, recognition, and responsibility. Factors which demotivated the student were professor incompetence, failure, school or class policies which fostered minimal student participation, and unfriendliness of professor. One motivator category--achievement--worked as both a satisfier and a dissatisfier. One hygiene category--professor competence--worked as both a satisfier and a dissatisfier.

The null hypothesis was rejected. There was a similarity between the motivation/hygiene theory of job motivation and the results of this research. It was not a direct relationship but it was based upon the same principles. In motivation categories a significantly larger number of motivational experiences than demotivational experiences was reported by a ratio of 2 to 1. In hygiene categories, which represent conditions surrounding the task performance, a significantly larger number of demotivational experiences than motivational experiences was reported--again by a margin of 2 to 1. This research, then, appeared to be at least partially supportive of the Herzberg theory.

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APPENDIX A

Questionnaire 1:

Instructions: Think of a time when you felt exceptionally good about a college classroom experience. You may relate an incident that happened here, or at any other college you may have attended. This can be a long-range incident lasting two months or more; or it can be a short-range, single episode type of situation.

1. How long ago did this happen?
2. Would you identify it as long-range or short-range?
3. Please describe what happened.
4. What did these events mean to you? That is, how did this incident make you feel?
5. Did these feelings affect the way you performed as a student? Can you give a specific example of the way in which your performance was affected?
6. Did the consequences of what happened at this time affect your school career? How?
7. Did what happened change the way you felt about your major? How?
8. How seriously were your feelings about being a student affected by what happened? Pick a spot on the line below to indicate how strong you think the feelings were. Circle that position on the line.

Least									Average									Greatest
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Note: 1 should be used for a sequence that hardly affected your feelings at all; 21 should be used for a sequence that affected your feelings as seriously as the most important events in your student experience.

9. What grade did you make in the course?

10. What is your present classification? What was your classification when the incident occurred?

11. Male? Female?

Questionnaire 2:

Questionnaire 2 was identical to Questionnaire 1 in every way except the respondent was asked to think of a time when he felt exceptionally bad about a college classroom experience.

APPENDIX B

A chi square test of significance for comparison of factors with responses in a 2 x 2 contingency table was used.

Responses	Factors: "Motivators" Observed	"Motivators" Expected	"Hygiene" Observed	"Hygiene" Expected	
Motivating Responses	65	(48.5)	32	(48.5)	97
Demotivating Responses	31	(48.5)	66	(48.5)	97
	96		98		194

$$\chi^2 = \frac{(f_o - f_e)^2}{f_e}$$

$$\chi^2 = 5.95 + 6.31 + 5.61 + 6.31$$

$$\chi^2 = 24.18$$

From the table of chi square values, $\chi^2_{.05} = 3.841$ and $\chi^2_{.01} = 6.634$. Therefore, the value of 24.18 is significant to the .01 level of confidence. The null hypothesis is rejected.