THE RELATIONSHIP OF EDUCATIONAL EXPERIENCE TO
JOB PERFORMANCE AND JOB SATISFACTION
OF SALES MEN

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The purpose of this study was to determine the extent of the relationship between four measures of educational experience, a measure of job performance, and six dimensions of job satisfaction for a population engaged in outside sales.

The population for this study was 423 salesmen of a large international business forms firm. Each salesman was asked to respond to the Job Descriptive Index, an instrument for measuring job satisfaction in five dimensions. A sixth dimension was added by summing the scores of the original five. The measure of performance was the number of sales points earned by each salesman during the year.

The educational variables were educational level attained, major field of study, grades, and extra-curricular activities. Education level was stratified by high school; one, two, three and four years of college; and college post-graduate. Major field of study was stratified as unknown,
general business, accounting, management, marketing, liberal arts, natural science, social science, and professional or vocational. All of the above data was as of the time of hire.

The study considered six questions. The first was the relationship of each of the educational variables to each of the performance and satisfaction variables. The second was based on response or non-response to the satisfaction questionnaire. The third was based on a division of the population into three groups according to tenure. The fourth was based on the problem of turnover. The fifth was an attempt to see if the educational variables would be of any significance in predicting the performance and satisfaction criteria. The sixth was a test of the validity of study results by randomly dividing the population into two samples and testing for homogeneity of regression.

No education variable correlated significantly with satisfaction or performance. Education level had a negative relationship to all dimensions of satisfaction and to performance, and people with higher grades were more dissatisfied with promotion.
Non-respondents were higher on the performance criterion, but not at the established level of confidence.

In the tenure stratification, the younger group was lowest in performance, highest in satisfaction with promotion, supervision and overall satisfaction, lowest in the number of extracurricular activities, and had majored predominantly in non-business fields.

The middle tenure group had the lowest academic level, lowest grades and highest performance by a significant margin.

The older tenure group had the highest academic level, highest grades; significantly lower satisfaction with promotion, supervision and overall satisfaction, and had majored predominantly in business subjects.

The terminators had a slightly higher education level and had engaged in a significantly greater number of activities in school. They also showed a significantly poorer performance level, and significantly less satisfaction with the work, the pay, and supervision.

Except for satisfaction with coworkers, education variables could predict satisfaction at a low but significant level. They could not predict performance.
It is concluded that information concerning education experience is of little practical value in selection of this kind of salesman, that education achievement is not a prerequisite for success or satisfaction in this field, and that subgrouping in a population of this size adds to the knowledge gained from the analysis.
THE RELATIONSHIP OF EDUCATIONAL EXPERIENCE TO
JOB PERFORMANCE AND JOB SATISFACTION
OF SALESMEN

DISSERTATION

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CHAPTER I

INTRODUCTION

The question of how much a formal educational experience contributes to the performance and satisfaction of people in their jobs is being asked with increasing frequency by persons who have the responsibility for making judgments about who should be hired, and who should be promoted.

There is little argument about the value of a substantial educational experience in providing a fuller and richer life for each individual in our society. But making judgments on the effect of education regarding the performance and satisfaction of individuals in a specific work setting appears to be another matter entirely.

It is important that there be no qualification criteria used in the personnel selection process which cannot be reasonably shown to be related directly to performance. Otherwise, the employer leaves himself open to charges of discrimination under current federal law. The Supreme Court has recently ruled that the only acceptable discrimination in hiring is discrimination based on the ability to perform on the job. No other form
of discrimination is acceptable, and the burden of proof is on the employer to prove that his criteria are non-discriminatory except in the ability to perform.

It would seem logical that the effect of educational experience would be specific to a given occupation. Some occupations, such as medicine, require a great amount of formal schooling. Others require very little. In between these two extremes is a vast area for which the question posed above must be answered in terms of a specific occupation.

Statement of the Problem

The problem of this study was the relationship of educational experience to job performance and job satisfaction of salesmen of business forms.

Purpose of the Study

The purpose of the study was to determine the extent of the relationships between four measures of educational experience, a measure of job performance, and six dimensions of job satisfaction.

Questions to be Considered

To accomplish the purposes of the study, the following specific questions were considered.
A. What is the relationship between each of four educational variables, consisting of
1. Educational level attained,
2. Major field of study,
3. Grade average, and
4. Extracurricular activities;
and each of seven satisfaction and performance variables, consisting of
1. Satisfaction with the work itself,
2. Satisfaction with pay,
3. Satisfaction with promotion possibilities,
4. Satisfaction with supervisors,
5. Satisfaction with coworkers,
6. Overall satisfaction, and
7. Job performance?

B. Satisfaction questionnaires were sent to each individual in the study population. Some individuals did not return their questionnaire. Are there significant differences between the respondents and non-respondents as regards
1. Educational level,
2. Major field of study,
3. Grades,
4. Extracurricular activities,
5. Performance.
C. Are there significant differences between the young
tenure group (1 year), the middle tenure group (2-5 years),
and the old tenure group (over 5 years), as regards

1. Educational level,
2. Major field of study,
3. Grades,
4. Extracurricular activities,
5. Satisfaction with the work,
6. Satisfaction with pay,
7. Satisfaction with promotion possibilities,
8. Satisfaction with supervision,
9. Satisfaction with coworkers,
10. Overall satisfaction,

D. Are there significant differences between those of
the study population who terminated between the beginning
and the ending of the study, and those who did not, in terms
of

1. Educational level,
2. Major field of study,
3. Grades,
4. Extracurricular activities,
5. Satisfaction with the work,
6. Satisfaction with pay,
7. Satisfaction with promotion possibilities,
8. Satisfaction with supervision,
9. Satisfaction with coworkers,
10. Overall satisfaction,

E. Is it possible to form a regression equation from among the educational variables which will predict performance and satisfaction at a significant level?

F. Will the results obtained in questions B, C, D, and E be valid for each of two groups into which the study population has been randomly divided?

Background and Significance of the Study

Many employers require a degree as a condition of employment, without knowing whether or not the degree makes any significant difference in performance on the job. Statistics have been quoted which show that people with higher levels of education earn more money in their lifetime than those with less education (4). Also, the social desirability and social ranking of occupations correlate highly with the amount of education required. Therefore, the cause-and-effect relationship between education and success has been generally thought to be pronounced. Nonetheless, the actual relationship between the two still needs to be proven (19).
The significance of the present study is related to the question of whether or not educational experience affects the job performance and satisfaction of outside salesmen, and whether or not knowledge of these effects can be used to predict performance and/or satisfaction in this group.

This would seem to be an important question for those charged with the responsibility for personnel selection. It would also seem to be important for those who have the responsibility for deciding what should be taught in our schools and how it should relate to general and specific life experience. The question would seem to have substantial implications for formulating courses of study at all educational levels.

From the personnel selection point of view, Dunnette (6) has stated the problem in these words:

Wise personnel decisions demand evidence about the individuality of people, the special requirements of jobs and the interactions between the two--systematic procedures for gathering evidence about people, jobs, job behaviors and for estimating relationships should be used for making informed decisions about people in our society--a step toward assuring that the right people move into the right jobs at the right time and under the right circumstances.

In evaluating the degree of success in selection, job performance would seem to be a basic criterion, even though it is sometimes difficult to define and measure. In this
study, the criterion of performance is a direct measurement of the amount of business each salesman generates for the company, expressed in terms of sales points for the fiscal year. These points are based on a sales quota for each salesman, which is the company's best estimate as to the amount of business which he should be reasonably expected to produce during the quota period. Actual sales in relation to the assigned quota are a basic measure of performance in this company.

To do the best possible job of pre-evaluation of personnel and prediction of job success it is necessary to know the requirements of the job in terms of as many measurable variables as possible, and to be able to measure to some extent how well a potential candidate fits these parameters. Although this concept seems simple, there are often complex problems involved. With salesmen, one of the specific problems has been that the generic term "salesman" is not descriptive of a homogeneous group. There are many kinds of salesmen, all of which have a different blend of skill and personality. Guion (10) and Husband (17) have commented extensively on these differences. Dunnette and Kirchner (7) recognized this and developed a checklist to obtain clusters of activity patterns to help in differentiating between kinds of salesmen for study purposes. This
present study is concerned with only one kind of salesman.

There have been a number of studies looking at the relationship between education and performance or success. The results have been largely negative. Austin (1), reviewing the research on the selection of sales personnel, found no evidence that education beyond a minimum level was a factor in successful selling. Hoyt (15) reviewed the research on the relationship of college grades with adult accomplishment and found little if any correlation, regardless of the criterion used for success. Calhoun and Redely (5) found conflicting results in studies using grade point average as a predictor. They also found the major field of study was not related to success, but that extracurricular activities correlated at a low, but positive level. Baehr and Williams (2) found school achievement to relate at a low but positive level with two out of five criteria for success in selling.

Job satisfaction as a criterion is also a well-established concept. As early as 1931, Fisher and Hanna (8) recognized the relationship between satisfaction and vocational maladjustment. Sheppard (24) comments on the high cost of dissatisfied employees. Ronan, in a recent Journal of Applied Psychology Monograph (22), said, "Research findings
over the past years would seem to have demonstrated beyond
cavil that job satisfaction is a measurable human character-
istic and that it is important to people in their work."

There have not been many studies on the relationship of
education to satisfaction. Smith, et al (25), out of whose
work came the instrument used to measure satisfaction in
this study, found a positive correlation between years of
education and satisfaction in a group of industrial blue
collar workers. It is suspected that this group is not
necessarily typical of the population as a whole nor of other
types of occupations. Roehm (20) found that after one year
on the job, there was no difference in satisfaction between
associate degree, diploma or baccalaureate degree nurses.
Hogan (11) and Hoagland (12) found no significant correlation
for teachers between satisfaction, education level and
degree held. Completely disagreeing with Smith, Vollmer and
McKinney (26) found that workers of higher educational
accomplishments tended to be more dissatisfied. Fournet, et
al (9) feel that the function of educational level as a
predictor may be confusing because it interacts with other
variables, such as age.

It seems from the above that the studies concerning the
relationship of education to performance and satisfaction
have been generally negative or inconclusive. In the field of selling, there have been very few studies, and most of these have been of selling in general, or not closely related to the kind of selling involved in this present study. There have been enough significant results, however, (2, 5, 25, 26) to lend support to the conclusion that it is necessary to study these relationships within the framework of a specific job situation of interest, rather than making judgments based on results generalized from other studies.

One of the problems associated with describing relationships within groups is the effect of group homogeneity or lack thereof. It is an accepted phenomenon that some members of a group are more predictable than others (14), for reasons not necessarily connected with the study. In the group under study here, there were three sub-groupings of interest. These were sub-groups based on tenure, on response or non-response to the satisfaction questionnaire, and on terminations. Differences between overall results and results based on any one of these sub-groupings would have an effect on the evaluation of the various findings of this study.

The tenure range of this population was from six months to thirty-one (31) years. It would seem likely that there would be significant differences between personnel within such
a wide range. For the purpose of this study, it seemed desirable to know if any of these differences were connected with any of the variables under study.

Differences have also been found to exist between those who respond, and those who do not respond to questionnaires (18). Since a significant number of individuals in this study population did not return the satisfaction questionnaire, it seemed important to find out if there were any differences in these two groups as regards the variables under study.

Turnover has been studied in its relationship to both satisfaction and performance (13, 16, 22, 23, 24). In this present study, in addition to the relationship of turnover to these two variables, an examination was also made of the possible relationship of the educational variables to termination.

**Definition of Terms**

**Job Performance.** Job performance in the present study is a continuous variable expressed in terms of percentage of quota attained for the fiscal year, shown as sales points.

**Job Satisfaction.** Smith, et al (25) define job satisfaction as the feeling a person has about his job; his affective responses to the facets of the situation. These feelings are associated with the perceived difference between
what is expected as a fair and reasonable return and what
is experienced, as moderated by the alternatives available
in any given situation. For the purposes of this study,
job satisfaction is considered multi-dimensional, and to be
that which is measured by the Job Descriptive Index. It
has five dimensions on the index, i.e., work, pay, promotion,
supervision and coworkers, to which will be added a summed
score to obtain a measure of overall satisfaction.

RSQ. This is the abbreviation of R square, and shows
the percentage of variance in the criterion accounted for
by the predictor(s) in that model.

Limitations

The specific results of this study should be valid not
only for the population under study, but also for salesmen
of other commodities who work under similar circumstances.
Dunnette and Kirchner (7) have developed a Sales Job
Descriptive Checklist for the purpose of categorizing different
types of sales jobs, which would be useful in judging whether
a generalization should be made in a particular instance.
The study would not be valid for other kinds of sales jobs.

The study ignored the possible effects of environmental
and organizational variables which might be operative due to
the scattered locations of the subjects, since there is no possible way under the present circumstances to take them into account.

Measurement of Job Satisfaction

The instrument used in the measurement of job satisfaction was the Job Descriptive Index (JDI). This instrument was developed over a period of ten years by a group of psychologists at Cornell University. Vroom has called it one of the best instruments now in existence for measuring job satisfaction. This view is supported by Porter, in his foreword to the book by Smith, et al. (25), which contains a complete description of the JDI and its development.

The JDI is a simple instrument and takes only a few minutes to complete. This helps make it useful to a wide range of persons on a variety of jobs and in a variety of situations. It is worded simply enough that almost any employable person may understand it. It does not ask an individual how he feels about his job; but rather asks him to respond to words and phrases that describe his job. This approach does much to eliminate halo effect, and to maintain focus on the individual area of satisfaction being measured, rather than on an overall feeling of satisfaction or dissatisfaction in general.
The validation of the JDI has been extensive and reported in detail in the book mentioned above. Essentially, it has used multiple measures of the feelings of satisfaction per se, and a modification of the Campbell-Fiske model for the establishment of convergent and discriminant validity using cluster analysis or principal component analysis. It has been rather well established that satisfaction has a number of anchor points, and is not necessarily a global concept. Thus, our measures must allow us to distinguish satisfaction in one area from satisfaction in another. This is discriminant validity.

Convergent validity, also part of the validation strategy of the JDI, requires that the JDI measures and other maximally different types of measures in the same area of satisfaction be significantly similar in their evaluations.

A series of studies is reported by Smith (25) which go into detail concerning the validation research and its results. These studies used different types of subjects in each one to help insure the general applicability of the instruments across the widest possible range of situations. The instrument was refined using the discriminant and convergent criteria in conjunction with graphic rating scales, interview techniques, and other satisfaction instruments,
until it showed consistent ability to measure what seemed
common among the various methods of measurement. Factor
analysis was used extensively in this process, and factor
loadings consistently accounted for over 70% of the total
variance.

Reliability studies utilized the split-half techniques
and the Spearman-Brown adjustment formula. The reliability
figures for the five scales in the final version of the JDI
range from .80 to .88. Test-retest techniques would not be
valid for this instrument because any difference might very
well be caused by something which actually affected the
satisfaction of the individual.

The JDI discriminates among five areas of satisfaction.
These are the work itself, pay, promotion possibilities,
supervision, and coworkers. An overall score may be obtained
by simply summing the scores of the five areas. While such
score has limited usefulness, it may nevertheless be worth-
while as a sort of global measure of the entire satisfaction
syndrome, and was computed and used in this study.

Procedures for Collecting the Data

All salesmen (N=423) of a major division of a large
business forms firm, who had been with the company at least
six months were used in this study. A table of random
numbers was used to divide this group into two groups for validation purposes. Procedures for this validation are described in Chapter III.

A copy of the JDI was sent to each salesman directly, along with a cover letter from the manager of Sales Selection and Training, explaining the purposes of the study and soliciting cooperation. (See the appendix for copies of these documents). The completed satisfaction questionnaires were returned directly to the author of this study. Intermediate supervisors were bypassed so that anonymity of the replies were assured to encourage full and frank answers.

The data concerning education, tenure and performance were extracted from the personnel files. Educational level was stratified as follows:

1. High school or equivalent GED
2. One year college
3. Two years college
4. Three years college
5. Bachelor degree
6. Postgraduate

The data on the major field of study was stratified as follows:

1. None or unknown
2. General business
In order for this study to be helpful in the selection process, all predictor data was as of the date of hire.

The JDIs were scored by the author and all data were computer processed.

Procedure for Analysis of the Data

A combination of correlation analysis and multiple regression techniques as developed by Bottenberg and Ward was used to analyze the data (3). The critical values assigned to the correlations were obtained from a standard table published in a standard text (21). The level of confidence was established at the .05 level for a two-tailed test. The F ratio was used as the test for significance for regression results. It was also set at the .05 level of confidence.

Question A was answered by computing a correlation matrix of all variables and inspecting this matrix for coefficients which met or exceeded the critical value.
To answer Question B, the population was divided into two groups based on response to the satisfaction questionnaire. Vectors were formed to represent these two groups and point biserial correlations computed between them and the education and performance variables. Multiple regression was used to compute an F ratio for differences between the two groups on each criterion. The full regression model used the two group vectors as predictors and each of the above variables as a criterion. This was compared to the zero model in terms of the RSQ of both models. A significant difference between the RSQs would indicate that the two groups were different on that criterion.

Question C was answered in similar fashion by dividing the population into three groups according to tenure. (The rationale for this grouping is given in Chapter III). Vectors were formed to represent each of the three tenure groups and point biserial correlations computed between them and the education, satisfaction and performance variables. Multiple regression was used to compute an F ratio for differences between the three groups on each of the education, satisfaction and performance variables. The full regression model in each case used the three group vectors as predictor, and each of the above variables as a criterion. This model
was compared to the zero model in terms of the RSQ of both models. A significant difference between the RSQs would indicate that the three groups were different on that criterion. For the analysis of this question, the major field of study was separated into its nine component parts.

Question D was also answered in similar fashion by dividing the study population into two groups, consisting of those who terminated during the data collection phase and those who did not. Vectors were formed to represent these two groups and point biserial correlations computed between them and the education, satisfaction and performance variables. Multiple regression was used to compute an F ratio for differences between the two groups on each of the education, satisfaction and performance variables. The full regression model in each case used the two group vectors as predictors, with each of the education, satisfaction and performance variables being used as a criterion. This was compared to the zero model in terms of the RSQ of both models. A significant difference between the RSQs would indicate that the two groups were different on that criterion. For the analysis of this question, the major field of study was separated into its nine component parts.

Question E was answered by using the education variables in the combination which gave maximum possible prediction of the satisfaction and performance variables.
Question F was answered by subjecting the multiple regression equations developed in questions B, C, D and E to a regression procedure developed by Bottenberg and Ward (3) for testing the homogeneity of regression in separate, mutually exclusive groups. For this purpose, the study population was randomly divided into two groups.

Details for all the above procedures are found in Chapter III.
CHAPTER BIBLIOGRAPHY


CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The purpose of this chapter is to review the literature which relates to the various aspects of job performance, job satisfaction and the relationship of education thereto. In addition, it is necessary to consider studies on the discriminant characteristics of subgroups which have an effect on the results of analysis of the groups as a whole. The literature concerning the selection and classification of salesmen is also of interest.

Our society has seemingly accepted the idea that everyone should obtain as much education as possible. Education has been considered positively correlated with the better life, more income, prestige, power, etc. In 1966, Broman (5) spoke of the economic value of education, and made the following points:

(1) All segments of society encourage education.
(2) Employers offer more money to people with higher degrees, especially in science.
(3) Welfare cases are drawn from the undereducated.
(4) Industry supports education, especially that which pertains (or which it thinks pertains) to its own needs. (Parentheses not Broman's.)

(5) The government supports education as a means of raising the general level of the standard of living.

Broman qualifies these points somewhat by saying, "if education is to have economic value to the individual, (1) the individual must be willing to work, and (2) the education must be relevent to the needs of society."

There is now much discussion about "relevancy." This present study is concerned with relevancy to the extent that it explores the relationship of certain education variables to success and/or satisfaction in the specific occupational task of outside selling.

Warren and Platt, (38) speaking in 1967 of industry's vested interest in education, stated

The quality of American education will determine the quality of industry's future leaders--the calibre of American scientific and technical schools will determine the skill of industry's future planners and technicians--and the capability of the trade schools will determine the skills of the workmen.

This seems to be a rather general and sweeping statement. It is not clear what the criterion of quality is in this case. Perhaps it is kin to relevance. If so, the question arises as to how well we are doing in keeping our educational process qualified and relevant to the task.
Not everyone seems to agree that the level of education is all-important. In the May 1971 issue of the Phi Delta Kappan (28), a Department of Health, Education and Welfare task force on higher education is quoted as saying, "the college degree plays too large a role in American life. Much can and should be done to reduce its influence with employers."

Again, this statement seems to be speaking to the issue of relevancy. Perhaps it means that information of a more pragmatic and practical nature is needed to show the prerequisites for success in a particular job. Criteria for selection of employees perhaps need clarification so that potentially successful employees might not be screened out by what might be "non-relevant" requirements. The Federal government has been taking a more active role in this question as it seeks to eliminate discrimination of all types in employment. Employers are now being required to justify every criterion used in the selection of personnel. The responsibility is on the employer's shoulders to be able to show that his selection criteria are discriminatory only in terms of the ability to perform the task, or in the ability to be trained for it.

**Job Performance**

It is probably safe to say that the primary thing an employer is looking for in an employee is performance. The
selection procedure would seem to be an exercise in trying to forecast performance through knowledge of other attributes of the potential employee. The question then focuses on what has been shown to be predictive of performance in that particular kind of job, and how can the amount of this attribute in this employee be measured.

This present study is an attempt to find out if knowledge of certain educational variables helps answer this question as regards a specific occupation. The literature reviewed here will concern the relationship of education to success in general, to success in business, and to success in selling.

In 1965, Bergstrom (4), looking at the performance of young workers in relation to school background, interviewed the employers of 150 young employees. He found little correlation between school attendance, class rank, type of courses taken, and job content or "demandingness", except that there was some tendency for jobs requiring communications competency or skills unique to the job to be filled by young men with higher school achievement.

In 1968, Brenner (3) studied the use of high school data in the prediction of work performance. He sampled 100 employees of an aircraft corporation, who had attended the last two years of school in that geographical area, had been
hired within one year after graduation from high school, and who had been employed for at least one year. Teacher ratings, school absenteeism and three-year grade-point average were related to supervisor ratings, plant absenteeism and tardiness. The grade average was highly correlated to both the teachers' ratings and the supervisor ratings.

Also in 1968, Calhoun and Redely (6), reported on studies of the prediction of success. Success in this case was equated to salary, which is quite often highly correlative with performance. They found conflicting results using grade point average as a predictor. Extracurricular activities as a variable was more correlative than not, but there was no correlation with major field of study in the three studies reported using that criterion.

In 1966, Hoyt (17) reviewed the research on college grades and adult accomplishment. This study was done for the American College Testing program. Regardless of the criterion used for success, college grades correlated very low, if at all, in any of the studies he reviewed. He concluded that undergraduate study is primarily for the purpose of transmitting the cultural heritage, and that grades would not be useful in predicting success in a specific occupation.

In a somewhat related study in 1965, Holland and Richards (15) found that academic achievement (grades) was relatively
independent of other types of educational growth and development. In this study of 7,262 college freshmen from 24 colleges and universities, the following variables were used: achievement scores, scales of extracurricular activity achievement and grade point averages. In addition, the studies they reviewed suggested little relationship between academic success and effective performance outside the classroom.

In 1963, Lawson (23) found, in a study of the relationship of job success and undergraduate curricular and cocurricular attainment, that these two items may have some limited usefulness in prediction. Grades tended to be more useful in the technical fields, and activities more useful in teaching and public relations work. Success in this case was measured by salary and supervisory ratings.

In 1951, Martindale (24) studied the situational factors in success of teachers. One of the important variables he found was major subject in college. This is not surprising. A teacher needs a great deal of study in his major field to be qualified to teach it adequately.

In 1969, McClelland and Rhodes (25) studied 111 nurses aides and 100 orderlies, and attempted to predict job success for them from MMPI scores and personal history data. The
criteria of success were supervisor ratings, attendance and tenure. The biographical data predicted better than the MMPI. The number of years of education did not predict any of the criteria singly; but did significantly predict a composite criterion.

In 1966, Soistman (33) studied a group of 120 non college bound high school graduates. He found that their high school experience was a very poor preparation for job finding, with the exception that vocational courses were helpful to some extent. The majority did not possess realistic job entry goals, nor clear perceptions of occupational success. Most of them did not get one of their first two choices for jobs, and a few did not find any employment immediately.

Turning to success in business generally, we find Larson (22) in 1967 evaluating the results of a college retailing program. This was a comparative study of retailing and non-retailing students in the general college, who had graduated and established themselves in careers. He found no significant difference in the two groups with respect to background and occupational experience patterns. Non-retailing graduates are just as likely as retailing graduates to enter distributive occupations.

In 1965, Pallett (27) studied 230 graduates who had been out of school for five to ten years and had pursued business
careers. One-hundred-thirty-eight of these were business administration majors and the remaining ninety-two were liberal arts majors. He concluded that the major field of study has little influence in determining success in the general business world, and that grade point average is not a predictor of success in general business careers. His criterion of success was supervisor ratings of progress and potential.

In 1964, Williams and Harrell (39) found that, using salary as the criterion of success, offices held as an undergraduate correlated highest. However, the correlation coefficient in this case was only .24, and even smaller correlations were found with elective course grades.

Sales Performance

The studies cited to this point are general in nature. The question arises whether or not the same general results hold true for salesmen.

In 1936, Shultz (31) studied 556 life insurance salesmen. Personality tests and biographical data were studied for relationship to job performance ratings and sales production records. The personality tests correlated significantly, but biographical items such as age, education, experience, did not.
In 1954, Austin (1) reviewed research to date on the selection of sales personnel. He looked at 150 research studies, including twenty-four masters and doctoral theses. He found that rating scales, guided interviews and similar devices had demonstrated little value. At that time there was no test available which had demonstrated any success in predicting sales success. He also found that intelligence scores were not predictive. He concluded that it was doubtful if education beyond the minimum contributed to sales success. He did not specify what he meant by minimum in this case. He also suggested special ability keys should be developed on standard measures by comparing responses of successful and unsuccessful salesmen.

In 1964, Sorensen (34) did some work along the lines of Austin's suggestion, except that he used configural scoring of biographical data to predict sales success. He used a sample of 1182 salesmen for the study and validated it on another group of 598. He found that configural prediction based on biographical data yielded higher predictive efficiency than the linear regression models. However, the predictability of both methods was low. The biographical data included educational experience.

In 1966, Gardner (10) made a job activity analysis of selected graduates of the college of applied sciences of
Bradley University, to see what implications there might be for curriculum improvement. The idea was to see how well the curriculum met the needs of people in three fields, one of which was sales and distribution. The people in this field listed fewest courses that they thought should be required in preparation for their jobs. In general, it was not course content that was seen as needed as much as some skills in communicating. Writing, conferring and study activities were seen as important in all the fields.

In 1967, Vizza (36) made a study of the education and formal management training of chief sales executives of large industrial goods firms. Most held at least a bachelor's degree. Those who held advanced degrees were predominantly business majors. The bachelor degree holders were not predominantly business majors, and there was no significant correlation between what they felt was required, and their own educational background. Even so, they were strongly in favor of professional education, as opposed to liberal arts education, for future sales executives. The indications were that this was a subjective feeling, and not based on any reliable evidence.

In 1968, Baehr and Williams (2) tried to predict sales success from factorially determined dimensions of biographical
They first administered a wide-ranging biographical questionnaire to 680 paper forms salesmen and district sales managers in the insurance business. These responses were factor analyzed and produced twenty-five first order factors. From these, five second order factors were produced which seemed to represent broad behavior patterns associated with the needs and achievement drives of the individuals. They considered their findings an adequate basis for concluding that the dimensions of personal background data were related to occupational choice. Since the majority of subjects had been in their field for some time and regarded as moderately successful in it, the assumption was made that background dimensions were related to success. They investigated this last hypothesis on a 210 man sales force of a specialty food manufacturing organization with branches throughout the United States. Three of their factors were (1) school achievement, (2) higher education achievement, and (3) school activities. They used five measures of on-the-job performance as criteria. These were (1) paired-comparison performance ratings, (2) mean sales volume rank, (3) maximum sales volume rank, (4) route difficulty, and (5) tenure as a salesman. There was no significant difference between upper rated and lower rated salesmen on the three education factors listed above. As to
the relationships between the educational variables and the five criterion measures, school achievement was negatively correlated with the performance rating and mean sales volume rank. Higher education achievement correlated low positive with mean sales volume rank.

In 1969, Tanofsky (35) made a pattern analysis of biographical predictors of success, using 1525 insurance salesmen as subjects. He examined all possible combinations of biographical items associated with different levels of sales productivity. He analyzed subjects who had survived as salesmen at least one year. He found, among other things, that education was of negligible importance in the success of these people.

In general then, various educational variables have not been seen as related to sales success. However, there are a number of different kinds of sales tasks, and each of these kinds of salesmanship require different talents. So it would seem worthwhile to become more specific in the search for relationships, and look at a specific kind of selling, which is the purpose of this present study.

In 1959, Dunnette and Kirchner (7) recognizing the different kinds of selling, developed a checklist for differentiating among types of sales jobs. They reasoned
that there are many different kinds of selling situations and many different kinds of salesmen; therefore, it was reasonable to assume that different patterns of success exist for different selling situations. Their Sales Job Descriptive Checklist identified clusters of activities and broad categories, or groupings, which differentiated, but still allowed a large enough sample for validation. They felt that the next step should be to identify psychological test patterns for these groupings. The literature does not reveal that anyone has been successful in that endeavor.

In 1965, Guion (12), in his book on personnel testing, also makes the assertion that sales jobs differ and require different characteristics.

Job Satisfaction

Job satisfaction as a concern is not a new phenomenon. In 1931, Fisher and Hanna (8) wrote a book about it in which they stated,

Much of the vocational maladjustment in American industry is the result neither of intellectual deficiency nor technological incompetency, nor of objectionable factors inherent in the work itself; but rather of non-adjustive emotional tendencies within the individual which make a reasonable degree of harmony between him and most types of work impossible.

In 1950, Gardiner and Moore (9), speaking of human relations in industry, said, "We can ascribe the well-adjusted (or well-
satisfied) person as one who finds a balance between his demands and expectations, and the satisfactions which the work provides."

In 1965, Kornhauser (21) made a study of the mental health of industrial workers in Detroit. He stressed the importance of job satisfaction to a person's entire life adjustment. He concluded that job satisfaction and mental health are closely related.

In 1970, Ronan (30) stated, "Research findings over the past years would seem to have demonstrated beyond cavil that job satisfaction is a measureable human characteristic and that it is important to people in their work."

Job Satisfaction and Education

When speaking of the variables in any kind of study, problems often arise in the definition, and the extent to which the variables are consistent in their effects. Satisfaction and education are no exception.

In 1963, Kendall (19), one of the people who helped develop the JDI, had this to say, "Many variables affect job satisfaction; but no single variable does so reliably in all situations, with all measures of satisfaction, and at all levels of other influential variables."
This is one of the good reasons why research can profitably focus on questions for specific situations.

In 1955, Vollmer and Kinney (37) studied age, education and job satisfaction. They split the age factor into four categories: the education factor into grammar school, high school and college; and using a simple questionnaire, divided the group into highly satisfied, satisfied, and dissatisfied categories. They found that education correlated negatively with satisfaction; that is, workers of higher education level were more frequently dissatisfied with their jobs than were those less well educated.

In an experiment in a different culture, Sinka and Sarma (32), in 1962, found that there was no significant relationship between education and job satisfaction of workers in India.

In 1966, Roehm (29) studied the satisfaction of 824 nurses who had different academic preparations. Some had an associate degree, others had a diploma, while others had a baccalaureate degree. After one year on the job there was no discernable difference in satisfaction between the three groups. Satisfaction was, however, related to coping patterns in all three groups.

In 1968, Hogan (14) studied the satisfaction of 128 recent graduates of a master of arts in teaching program. He
found no significant correlations between job satisfaction and any of the measures of education.

Also in 1968, Hoagland (13) studied 496 teachers in six high schools. He found no significant correlation between degree held and satisfaction; but did find a significant relationship between the major field of study and satisfaction.

Subgrouping

This study has utilized subgroupings to make the results more valid and usable. There is ample precedent in the literature for this action.

In 1956, Ghiselli (11) drew attention to the fact that for some people there is a close correlation between test scores and criterion. For others in the same group, prediction is poor. Out of any population there is usually one or more subgroups that are more predictable in the subgroupings than they would be in the overall population.

In 1964, Medredeff (26) demonstrated the utility of subgrouping analysis in the prediction of sales success. He randomly divided 394 subjects into two groups. He used two personality instruments and identified six subgroups by factor analysis. He then used multiple regression to predict criterion measures with biographical information. He factored into subgroups with one kind of measure, and used another kind
of measure to predict the criterion for each group. He compared this method to that of predicting with biographical information for the entire population. The subgrouping procedure was much more effective.

In 1963, Kirchner and Mousley (20) made a study of seventy-two respondents and nineteen non-respondent salesmen to an attitude survey. The criteria were two measures of performance—net sales points and net total points. In this study the respondents were significantly better on both criteria.

There is also a considerable amount of literature on turnover. In 1962, Hopeman (16) studied the possibility of predicting voluntary terminations in industry. He used a number of biographical items, including level of educational attainment, and cross validated the results on almost 600 individuals in three companies. He concluded that the techniques could predict terminations.

It would seem logical to expect that those who terminate voluntarily would be significantly lower in satisfaction than those who stay. In 1966, Hulin (18) studied job satisfaction and turnover in a female clerical population of 350. One of the stratifications was educational level. All subjects who quit were less satisfied than those who did not. However, it
should be noted that quitting for dissatisfaction is tempered by the alternatives available for employment elsewhere.

Summary

In general, the literature seems to be saying that there is little relationship between performance and satisfaction on the one hand, and education on the other. There are, of course, some exceptions, such as teachers, whose performance, and also some satisfaction, may be related to field of study. This kind of relationship would seem to be a logical expectation in all kinds of occupations which rely heavily on educational experiences for qualification therein.

It also seems that communicative skills are essential to success. It would seem reasonable to assume that these skills are obtained from the education process. Perhaps that is what Austin (1) had in mind when he mentioned the word "minimum" in connection with the education needs of salesmen earlier. But even these skill requirements may be minimal in some jobs; which brings us again to the observation that generalizations about education in relation to work and satisfaction are probably of little practical value, as compared to more definitive information concerning the relationship of education to performance and satisfaction in a specific occupation.


CHAPTER III

METHODS AND PROCEDURES

Introduction

A pilot study was conducted using approximately one-third of this population as a sample. The results of this study led to these conclusions:

1. It was feasible and desirable to use the entire salesman force of the Division as the study population, except as noted in 3 below.

2. There was enough differentiation within the population in each of the education variables to assure valid results from statistical treatments.

3. The study should exclude salesmen who had been with the company less than six months, since they had not been employed long enough to establish a meaningful performance pattern; nor to have a reliable basis for expressing themselves on the satisfaction questionnaire. Therefore, any findings from data in which they were included would be highly distorted.
Job Satisfaction

Four hundred and twenty-three (423) salesmen were included in the study population. Each of these was sent a copy of the Job Descriptive Index to complete and return. Three hundred forty-six (346), or 81 per cent, returned the completed questionnaires. The Job Descriptive Index is described in detail in Chapter I, and was the instrument used to measure satisfaction.

One of the generally accepted theories concerning satisfaction is that it is operable in more than one dimension, and is not necessarily a global feeling. However, in this study, an overall score was computed and used in addition to the dimensional scores. Previous unpublished studies by the author have shown that an awareness of the general, overall level of satisfaction could be of importance. In one of these studies, the overall score was related to the criterion at a significant level, even though the dimension scores were not.

Performance

The performance criterion was available from the personnel records of the company, and consisted of one item only. This was the total sales points accumulated over the past year by each man. Sales points are the company's way
of measuring success in the attainment of sales quotas. Quotas are set for each individual, based on many factors concerned with the individual, his past performance, the territory, and anything else which might be expected to influence the sales potential of this individual. It is a weighting procedure which provides a means of measuring all the salesmen against a common yardstick. It is as near as it is possible to come to having a common parameter by which to judge salesman performance throughout the company.

Sales points are computed monthly by the company and are a direct representation of the percent of quota attained. For example, if a salesman attained 100 percent of his quota, he would earn 100 sales points for the month. This monthly figure is cumulative throughout the year, so that the same salesman, if he averaged 100 percent every month, would end the year with 1200 sales points. This yearly figure is the one used in this study. Looking at performance over this length of time would seem to give a reasonably accurate indication of the person's true abilities.

For those salesmen who had been with the company less than one year, an estimated annual performance figure was computed based on the average monthly sales points they had earned to date, and the rate at which they were improving.
Educational Data

The educational data were also extracted from the personnel records at division headquarters. The data available was in four major areas: (1) educational level attained, (2) major field of study, (3) grade point average, and (4) participation in extracurricular activities. All of these have been shown in other research to be related to satisfaction and/or performance. (See Chapter II.)

Table I shows the breakdown of the population by educational level.

**TABLE I**

**FREQUENCY DISTRIBUTION OF THE POPULATION BY EDUCATIONAL LEVEL**

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Post Graduate</td>
<td>xxxxx 25</td>
</tr>
<tr>
<td>Four Years College</td>
<td>xxxxxxxxxx 125</td>
</tr>
<tr>
<td>Three Years College</td>
<td>xxxxxxxxxx 42</td>
</tr>
<tr>
<td>Two Years College</td>
<td>xxxxxxxxxx 80</td>
</tr>
<tr>
<td>One Year College</td>
<td>xxxxxxxxxx 84</td>
</tr>
<tr>
<td>High School (GED)</td>
<td>xxxxxxxxxx 72</td>
</tr>
</tbody>
</table>

Since the major field of study is presumed to be of importance to the ability to perform in a specific field, it was desirable that as many fields as possible be differentiated within this population. The final analysis included
nine areas in this category. These areas, along with the number of subjects in each one, are shown in Table II.

### TABLE II

**FREQUENCY DISTRIBUTION OF THE POPULATION BY MAJOR FIELD OF STUDY**

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>None or unknown</td>
<td>xxxxxxxxx 86</td>
</tr>
<tr>
<td>Business (general)</td>
<td>xxxxxxxxxx 118</td>
</tr>
<tr>
<td>Accounting</td>
<td>xxxxxx 26</td>
</tr>
<tr>
<td>Management</td>
<td>x16</td>
</tr>
<tr>
<td>Marketing</td>
<td>xxxxxxxxxx 44</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>xxxxxxxxxx 49</td>
</tr>
<tr>
<td>Natural Science</td>
<td>x16</td>
</tr>
<tr>
<td>Social Science</td>
<td>x16</td>
</tr>
<tr>
<td>Professional/vocational</td>
<td>xxxxxxxxxx 53</td>
</tr>
</tbody>
</table>

Table III shows the frequency distribution of grade point averages among the population.

The extent of participation in extracurricular activity is difficult to measure with any degree of objectivity. A person with only one outside interest might spend more time with it and be more deeply involved than another spends with several interests. Since there is a tendency to consider a person with more kinds of interest a more well-rounded person,
TABLE III

FREQUENCY DISTRIBUTION OF THE POPULATION BY GRADES

Top 10% xxxxx28
Top 25% xxxxxxxxxxxxxxxxxxx101
Top 50% xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx270
Bottom 50% xxxxx20
Bottom 25% xx02

It was decided to have this parameter consist of the number of outside activities engaged in. This number was linked to the number of specific activities, rather than classes of activities. For example, if a person participated in several intramural sports events, he was given credit for each of them, rather than crediting intramural sports as one activity. Table IV shows the frequency distribution of extracurricular activity in this population.

TABLE IV

FREQUENCY DISTRIBUTION OF THE POPULATION BY NUMBER OF EXTRACURRICULAR ACTIVITIES

Over 5 xx6
5 xxx10
4 xxxxxx17
3 xxxxxxxxxxxxx55
2 xxxxxxxxxxxxxxxxxxxx80
1 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx132
0 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx123
Sub-grouping

Studies have shown (2, 4) that large groups such as this population are likely to have identifiable sub-groupings which differ from each other in significant ways, which lessens the validity of findings for the population as a whole. In this population, three different groupings suggested themselves.

The first of these was based on the fact that studies show (3) that persons who do not respond to questionnaires may be different in ways significant to the study from those who do. These differences, of course, can affect the validity of the study. As indicated, nineteen percent of the population in this present study did not return the satisfaction questionnaire. Question B of this study was designed to evaluate such possibility in this case.

The second of these sub-groupings was based on tenure with the company. The spread of service within this population was from six months to over thirty (30) years. The general characteristics of those entering the company more recently might reasonably be expected to reflect the changes that have occurred in our society during that time period. Thirty (30) years ago, the percentage of the nation's population which attended college was considerably
smaller than it is today. Also the attitude of the older people in general might be expected to be different, since the state of the nation and the environment in general was somewhat different during their formative years than it has been during recent years. Thus, it would be expected that the more senior employees would see things from a different viewpoint than would the more junior employees. It might be valuable to know something about these differences, some of which might be particularly pertinent to the purpose of this study, but which might not emerge unless the population was examined along this stratification.

Table V is a frequency table of the number of subjects in each year group. Inspection of this table suggests at least three distinct groupings by tenure, which would likely have enough homogeneity within them to be treatable as an entity; at the same time, enough disparity between them to be treated as separate entities. These breaks occur between the first and second years, and the fifth and sixth years of service. Each question in this study was analyzed not only for the entire group, but also in terms of these separate groupings.

A third grouping which seemed worthwhile was to separate those who terminated from those who did not, and see what
<table>
<thead>
<tr>
<th>Tenure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>*1</td>
<td>99</td>
</tr>
<tr>
<td>2</td>
<td>65</td>
</tr>
<tr>
<td>3</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>27</td>
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<td>6</td>
<td>16</td>
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<td>7</td>
<td>16</td>
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<tr>
<td>8</td>
<td>13</td>
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<td>9</td>
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<td>7</td>
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<td>11</td>
<td>13</td>
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<td>12</td>
<td>6</td>
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<td>12</td>
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<td>14</td>
<td>8</td>
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<td>15</td>
<td>8</td>
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<td>16</td>
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<tr>
<td>17</td>
<td>6</td>
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<tr>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>**Over</td>
<td>20</td>
</tr>
</tbody>
</table>

*This includes all with at least 6 months, but less than two years service.

**This category includes a fairly even distribution up to 31 years of service.
differences there were, if any, and how these differences might affect the results of this study. From the time this study began, until all the data were collected and tabulated, forty-nine (49) subjects terminated. Question D was designed to find out if there were significant differences between these subjects and the others in terms of the specific characteristics under study. This not only might add to the validity of the study, but furnish clues to ways of early identification of those prone to drop out.

Statistical Analysis

In all cases where multiple regression was used, the significance of the results was measured by the F statistic. The formula used is illustrated in the text by Bottenberg and Ward (1) and is as follows:

\[ F = \frac{(q_2 - q_1)/(df_1)}{q_1/(df_2)} \]

where

- \( q_1 \) = error sum of squares of the full model
- \( q_2 \) = error sum of squares of the restricted model
- \( (df)_1 \) = the difference between the unknown parameters in the full and restricted models
(df)\textsuperscript{2} = the difference between the number of elements in the vectors, and the number of unknown parameters in the full model.

The calculations for this statistic were included in a computer program, which printed out the F, the error sum of squares for each model, an RSQ for each model, and a probability level for the F.

In cases involving groups as predictors, such as questions B, C, D, and F, an insignificant F indicated that there were no significant differences in the groups on that criterion.

Question A

Question A was: What is the relationship between each of four educational variables, consisting of

1. Educational level attained,
2. Major field of study,
3. Grade average, and
4. Extracurricular activities;

and each of seven satisfaction and performance variables, consisting of

1. Satisfaction with the work itself,
2. Satisfaction with pay,
3. Satisfaction with promotion possibilities,
4. Satisfaction with supervisors,
5. Satisfaction with coworkers,
6. Overall satisfaction, and
7. Job performance?

This question was answered by computing a simple correlation between each of the first four items and each of the second seven items. The significance of these correlations was evaluated by a critical value obtained from the appropriate table (5). The figure used was for a two-tailed test at the .05 level of confidence.

The data shown for major field of study was not in the same form as the other variables, in that this vector consisted of numbers representing the different fields of study. These numbers had no hierarchial value; therefore could not provide meaningful correlations. This difficulty was solved by separating this variable into its component parts by making a separate variable of each different field of study, and computing correlations for each one with the other variables of interest.

Question B

Question B was: Satisfaction questionnaires were sent to each individual in the study population. Some individuals
did not return their questionnaire. Are there significant differences between the respondents and non-respondents as regards

1. Educational level,
2. Major field of study,
3. Grades,
4. Extracurricular activities,
5. Performance.

Vectors were formulated to represent the respondent and non-respondent groups. Correlations were computed between each of them and each of the criterion variables. The criterion variables for the question consisted of the education and performance variables. The significance of these correlations was tested by an F ratio computed by multiple regression, as outlined by Bottenberg and Ward (1) for solution to problems involving mutually exclusive categories.

Model sets were formulated for each of the criteria enumerated above as follows:

Full model: \( \hat{y} = a_1x^{(1)} + a_2x^{(2)} + e \)

where \( \hat{y} \) = criterion vector to be predicted.

\( x^{(1)} \) = vector in which the element was a 1 if the corresponding criterion
element was a respondent; an 0 otherwise.

\( x^{(2)} \) = vector in which the element was a 1 if the corresponding criterion element was a non-respondent; an 0 otherwise.

e = residual vector.

It was hypothesized that knowledge of group membership did not contribute to prediction of the criterion; therefore the least squares weight \( a_1 = a_2 = a_0 \), a common value. This restriction to the full model then became:

\[ \tilde{y} = a_0 u + d \]

where \( u = \) unit vector

\( d = \) residual vector which had as elements the differences between corresponding observed and estimated values in \( y \).

The computer program computed the error sum of squares for each of these models, the F ratio, and a probability figure for the F ratio. An insignificant F meant that there was no significant difference between the respondents and non-respondents on that criterion.

Question C

Question C was: Are there significant differences between the young tenure group (1 year), the medium tenure
group (2-5 years), and the old tenure group (over 5 years), as regards

1. Educational level,
2. Major field of study,
3. Grades,
4. Extracurricular activities,
5. Satisfaction with the work,
6. Satisfaction with pay,
7. Satisfaction with promotion possibilities,
8. Satisfaction with supervision,
9. Satisfaction with coworkers,
10. Overall satisfaction,

The possible effects of amount of time on the job, and its correlation with age and experience, on the satisfactions and performance of a group such as this seems obvious and therefore should, in some way, be taken into account in the final analysis. Not to do so would seem to introduce the likelihood of serious distortion of the results. Our purpose in this study was served by looking at the possible differences at time of hire which pointed toward longer or shorter tenure. We were also interested in changes in satisfaction and performance over time. While
it was impossible to get at the latter directly in this study, it was possible to get some indication of it by comparing age groups on the various parameters.

For this analysis, the major field of study variable was again regenerated into nine separate vectors corresponding to each field. Vectors were also generated to represent each of the tenure groups. Correlations were computed between each of the tenure group vectors and each of the education, performance and satisfaction criteria. As in question B, these correlations were tested by an F ratio computed by multiple regression. In this case, the full model was

\[ \hat{y} = a_1 x^{(1)} + a_2 x^{(2)} + a_3 x^{(3)} + e \]

where \( \hat{y} \) = the criterion vector to be predicted

\( x^{(1)} \) = vector in which the element was a 1 if the corresponding criterion element was from the young tenure group; an 0 otherwise;

\( x^{(2)} \) = vector in which the element was a 1 if the corresponding criterion element was from the middle tenure group; an 0 otherwise;
\[ x^{(3)} = \text{vector in which the element was a 1 if} \]
\[ \text{the corresponding criterion element was} \]
\[ \text{from the old tenure group; an 0 otherwise;} \]
\[ e = \text{residual vector} \]

Assuming that knowledge of group membership did not contribute to prediction of the criterion, the least squares weight \( a_1 = a_2 = a_3 = a_0 \), a common value. This would make the restricted model \( \hat{y} = a_0 u + d \)

where \( u = \text{unit vector} \), and
\[ d = \text{residual vector which had as elements} \]
\[ \text{the differences between corresponding} \]
\[ \text{observed and estimated values in } y. \]

The F ratio of the difference between these two models was computed as before for each criterion. An insignificant F meant that there was no significant difference between the three groups on that criterion.

**Question D**

Question D was: Are there significant differences between those of the study population who terminated between the beginning and the ending of the study, and those who did not, in terms of
1. Educational level,
2. Major field of study,
3. Grades,
4. Extracurricular activities,
5. Satisfaction with the work,
6. Satisfaction with pay,
7. Satisfaction with promotion possibilities,
8. Satisfaction with supervision,
9. Satisfaction with coworkers,
10. Overall satisfaction,

The procedure for analyzing this question was the same as for question B. The number of criterion variables increased from five to eleven (11) by the addition of the satisfaction dimensions, and in this question the predictor variables were the two mutually exclusive categories designated as non-terminators and terminators. Correlations were computed between each of these group vectors and each of the education, satisfaction and performance criteria. These correlations were tested by an F ratio computed by multiple regression. Model sets were formulated for each criterion. The full model was

\[
\hat{y} = a_1 x^{(1)} + a_2 x^{(2)} + e
\]
where \( \tilde{y} \) = criterion vector to be predicted.

\[ x^{(1)} = \text{vector in which the element was a 1 if} \]
\[ \text{the corresponding criterion element was} \]
\[ \text{a non-terminator; an 0 otherwise.} \]

\[ x^{(2)} = \text{vector in which the element was a 1 if} \]
\[ \text{the corresponding criterion element was} \]
\[ \text{a terminator; an 0 otherwise.} \]

\[ e = \text{residual vector.} \]

Again, assuming that knowledge of group membership
did not contribute to prediction of the criterion, the
least squares weight \( a_1 = a_2 = a_0 \), a common value. This
restriction on the full model became

\[ \tilde{y} = a_0 u + d \]

where \( u = \text{unit vector.} \)

\[ d = \text{residual vector which had as elements the} \]
\[ \text{differences between corresponding observed} \]
\[ \text{and estimated values in} \ y. \]

The F ratio of the difference between these two models
for each criterion was computed as before. An insignificant
F meant that there was no significant difference between
the non-terminators and terminators on that criterion.
Question E

Question E was: Is it possible to form a regression equation from among the education variables which will predict performance and satisfaction at a significant level?

The education variables were used in combination and with interactions to predict each of the performance and satisfaction criteria. The full model in each case included all the possible predictors. Successive restricted models were formed by dropping predictors from the equation one at a time and testing the significance of the difference in the RSQs with an F ratio. Those predictors which caused no significant drop in RSQ when deleted were not used in the final equation.

Question F

Question F was: Will the results obtained in questions B, C, D and E be valid for each of two groups into which the study population has been randomly divided?

This question was designed as a check on validity of the findings of this study. A finding that is valid for the whole population should be equally valid for random samples drawn from that population.
The procedure chosen to answer this question was developed by Bottenberg and Ward (1). It uses multiple regression to test the homogeneity of regression of two mutually exclusive groups. The population of this study was randomly divided into two mutually exclusive groups, designated as validation group 1 and validation group 2. The basic analytical question answered by this procedure is: does knowledge of which validation group a subject is a member of contribute to the prediction of the criterion for that subject? If the answer is no, then there is no difference between the two groups on that criterion, and the study results are as valid for one group as for the other, lending support to the validity of the findings for the population as a whole.

The procedure sets up a full model composed of the predictors used in each of the questions being validated for the population as a whole, plus predictor vectors representing each of the validation groups, plus the interactions between these two sets of predictors formed by multiplying each of the validation group vectors with each of the primary predictor vectors.

The restricted model is formed by dropping the validation group vectors and interactions, leaving only the primary
predictors. The difference in RSQs for these two equations is then tested by an F ratio. An insignificant difference means that there is no difference between the two validation groups on that criterion.

To validate each criterion in question B, the full model was

$$\tilde{y} = a_1 x^{(1)} + \ldots + a_8 x^{(8)} + e$$

where $\tilde{y} = \text{criterion}$

$x^{(1)}$ = vector in which the element was 1 if the corresponding criterion element was a respondent; an 0 otherwise.

$x^{(2)}$ = vector in which the element was 1 if the corresponding criterion element was a non-respondent; an 0 otherwise.

$x^{(3)}$ = vector in which the element was 1 if the corresponding criterion element was from validation group 1; an 0 otherwise.

$x^{(4)}$ = vector in which the element was 1 if the corresponding criterion element was from validation group 2; an 0 otherwise.

$x^{(5)}$ = product of $x^{(1)}$ and $x^{(3)}$.

$x^{(6)}$ = product of $x^{(1)}$ and $x^{(4)}$.

$x^{(7)}$ = product of $x^{(2)}$ and $x^{(3)}$. 
The restricted model was formed by dropping out the validation group and interaction vectors, leaving only the respondent, non-respondent group vectors as predictors:

\[ \tilde{y} = a_1 x^{(1)} + a_2 x^{(2)} + e \]

An insignificant F value in the difference of the RSQs of the two models meant that the two validation groups were similar in terms of the respondent, non-respondent measurements on that criterion.

To validate each criterion in question C, the full model was

\[ \tilde{y} = a_1 x^{(1)} + \ldots + a_{11} x^{(11)} + e \]

where \( \tilde{y} \) = criterion

- \( x^{(1)} \) = vector in which the element was 1 if the corresponding criterion element was from the young tenure group, 0 otherwise.
- \( x^{(2)} \) = vector in which the element was 1 if the corresponding criterion element was from the middle tenure group; 0 otherwise.
- \( x^{(3)} \) = vector in which the element was 1 if the corresponding criterion element was from the older tenure group; 0 otherwise.
\( x^{(4)} \) = vector in which the element was 1 if the corresponding criterion element was from validation group 1; 0 otherwise.

\( x^{(5)} \) = vector in which the element was 1 if the corresponding criterion element was from validation group 2; 0 otherwise.

\( x^{(6)} \) = product of \( x^{(1)} \) and \( x^{(4)} \).

\( x^{(7)} \) = product of \( x^{(2)} \) and \( x^{(4)} \).

\( x^{(8)} \) = product of \( x^{(3)} \) and \( x^{(4)} \).

\( x^{(9)} \) = product of \( x^{(1)} \) and \( x^{(5)} \).

\( x^{(10)} \) = product of \( x^{(2)} \) and \( x^{(5)} \).

\( x^{(11)} \) = product of \( x^{(3)} \) and \( x^{(5)} \).

\( e \) = residual vector

Again, the restricted model was formed by dropping the validation group and interaction vectors, leaving the tenure group vectors as predictors:

\[
\hat{y} = a_1 x^{(1)} + \ldots + a_3 x^{(3)} + e
\]

An insignificant F value on the difference of the RSQs of the two models meant that the two validation groups were similar in terms of the tenure group measurements on that criterion.

The procedure for validating question D was the same as for question B. The number of criterion variables
increased to eleven (11) for question D, and included all
the education, satisfaction and performance variables.
\[ \tilde{y} = a_1 x^{(1)} + \ldots + a_8 x^{(8)} + e \]
where \( \tilde{y} = \) criterion
\[ x^{(1)} = \text{vector in which the element was 1 if the} \]
\[ \text{corresponding criterion element was a} \]
\[ \text{non-terminator; an 0 otherwise.} \]
\[ x^{(2)} = \text{vector in which the element was 1 if the} \]
\[ \text{corresponding criterion element was a} \]
\[ \text{terminator; an 0 otherwise.} \]
\[ x^{(3)} = \text{vector in which the element was 1 if the} \]
\[ \text{corresponding criterion element was from} \]
\[ \text{validation group 1; an 0 otherwise.} \]
\[ x^{(4)} = \text{vector in which the element was 1 if the} \]
\[ \text{corresponding criterion element was from} \]
\[ \text{validation group 2; an 0 otherwise.} \]
\[ x^{(5)} = \text{product of } x^{(1)} \text{ and } x^{(3)} \]
\[ x^{(6)} = \text{product of } x^{(1)} \text{ and } x^{(4)} \]
\[ x^{(7)} = \text{product of } x^{(2)} \text{ and } x^{(3)} \]
\[ x^{(8)} = \text{product of } x^{(2)} \text{ and } x^{(4)} \]
\[ e = \text{residual vector.} \]

The restricted model was formed by dropping out the
validation group and interaction vectors, leaving only the
non-terminator, terminator group vectors as predictors:
\[ y = a_1 x^{(1)} + a_2 x^{(2)} + e \]

An insignificant F value in the difference of the RSQs of the two models meant that the two validation groups were similar in terms of the non-terminator, terminator measurements on that criterion.

The statistical procedure for validating question E was the same as for B, C and D. In this question, however, criterion variables were the six satisfaction scores and the performance score; while the predictors were the specific educational variables which had been established as predictors for each criterion in question F, plus the two validation group vectors, plus the interaction vectors between the education variables and the validation groups. The full model for each criterion differed to the extent of the difference in the number and identity of the predictors as established in question E. For each criterion it consisted of the applicable predictors, the two validation group vectors and the interactions between them. The restricted model was formed by dropping out the validation group vectors and interactions, leaving only the applicable education predictors. As before, the RSQs of these two models were compared by an F ratio, and insignificant difference meant that equation predicted the criterion as well for one validation group as for the other.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

The purpose of this chapter is to present and comment upon the data obtained from the analysis described in chapter III. The results for each question are presented in tabular form.

Question A

Question A concerned the relationship between the educational variables on one hand, and the satisfaction and performance variables on the other. These relationships were expressed as correlation coefficients and are shown in Table VI. These relationships are for the population as a whole. Although none of the correlations were significant at the established level of confidence, which was set at .05, several are worthy of note.

Education level correlates negatively with all aspects of satisfaction, and with performance. The negative correlations with pay and with overall satisfaction were significant at the .10 level. All the correlations over .10 are negative.
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</table>

Critical value = .195 for .05 level of confidence
Liberal arts majors are dissatisfied with the work. This may be some indication that the kind of people who are drawn to liberal arts studies are not as oriented toward sales activities as others might be.

There is also a marked negative correlation between grades and satisfaction with promotion. This might be due to the fact that people who are academic achievers during their school years tend to be recognized for that ability in school much more than the outside world is willing to recognize it later in terms of position or salary. This disparity may lead to later dissatisfaction

Question B

Question B asked about the differences, if any, between those who responded to the satisfaction questionnaire and those who did not in terms of the educational and performance data. It will be remembered from chapter III that Kirchner and Mousley found some differences in a similar case. Table VII shows the correlations between the education and performance variables and respondent and non-respondent groups.

It seems there was little to distinguish these two groups in this particular study. The only difference of any size was in the performance variable, where the non-
TABLE VII
CORRELATION COEFFICIENTS OF RESPONDENTS VERSUS NON-RESPONDENTS ON PERFORMANCE AND EDUCATION VARIABLES

<table>
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<td>Extracurricular activities</td>
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<td>.00</td>
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</table>

respondents were revealed to be the better performers. This figure, while not significant at the level of confidence established for this study, is nevertheless worthwhile to note, since it is significant at the .10 level.

This result is opposed to that found by Kirchner and Mousley, who found the respondents more productive. No particular reason suggests itself for this difference in findings. The quoted study used a much smaller sample, which could possibly have a bearing. In that study the total sample was n=91, with 72 responders and 19 non-responders. In this study, the total N was 408, with 333 responders and 75 non-responders. It is also possible that the difference in the type of salesmen had an effect.
Question C

Question C asked about the differences between the young, middle and old tenure groups as regards the education, satisfaction and performance variables.

Table VIII shows the correlations between these three tenure groupings and all of the education, satisfaction and performance variables.

Considering the range of years of service, these groups do not differ as much on the education variables as one might reasonably expect. Especially interesting is the fact that the older group shows the higher correlation with education level. It should be remembered that this represents education level at the time of hire, and therefore is not connected in any way with the fact that they have lived longer, nor does it take account of any education accomplished since the time of hire.

The analysis for question A showed that in the total population, the relationship of education level to performance was very insignificant. However, in this stratification, by looking at the three groups' relationship separately with both education level and performance, we see a different picture emerge. The middle tenure group is considerably below the other two groups in terms of education level; but
<table>
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*Significant at .05 level

**Significant at .01 level
markedly higher in performance. The difference between the middle tenure group and the younger tenure group is significant at the .05 level.

In terms of the variables under consideration in this study, the younger tenure group may be characterized as

(1) lower in performance, which might be reasonably expected; although one might expect that the difference would be even more marked than it is since a number of these individuals have been on the job only six months.

(2) higher in satisfaction with promotion, with supervision, and in overall satisfaction.

(3) lower in the number of school activities engaged in.

(4) having major fields of study predominantly in non-business areas.

The middle tenure group may be characterized as

(1) having a lower academic level.

(2) having had lower grades in school.

(3) having significantly higher performance.

The older tenure group may be characterized as

(1) having the highest educational level.

(2) having had higher grades in school.

(3) having significantly lower satisfaction with promotion, supervision and overall satisfaction.
(4) having major fields of study primarily in the business areas.

It would appear that the middle tenure group is made up of the most productive people; that after about the sixth year the best performers have either moved up into management or moved to other companies, leaving behind some good people who are doing a good job; but who become more dissatisfied as they feel they are not progressing properly in terms of promotion; but who do not become dissatisfied enough to seek employment elsewhere.

Question D

Question D asks about the differences between those who terminated while this study was in progress and those who did not, in terms of the variables in this study. Table IX is a presentation of the correlations between non-terminators and terminators and each of the education, satisfaction and performance variables.

Since most of these people terminated voluntarily, it was to be expected that their satisfaction levels would be significantly below that of those who stayed. The work, the pay and the supervision were the specific areas of dissatisfaction. Whether or not the lower performance was caused partially by the dissatisfaction, or the dissatisfaction
TABLE IX
CORRELATION OF TERMINATORS AND NON-TERMINATORS ON ALL VARIABLES

<table>
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**Significant at .01 level
caused by being unable to do the job, is an unanswerable question. The causative link between satisfaction and performance is a very complex and controversial one, and is outside the scope of this present study.

Two items emerge with regard to the education variables. The first concerns the significant differences in the number of activities in school. It could very well be that the type of person who gets himself involved with many activities in school is not the kind of person who finds it easy to stick with the discipline of this type of selling activity during the time it takes to become established and begin earning a good income.

The second item is that the terminators have a somewhat higher academic level, although not at the established level of confidence. This corresponds to the relationship of educational level to satisfaction of the entire population, which is negative, as shown in the satisfaction with work, pay, supervision and total revealed in the analysis for question A.

Question E

Question E asks if regression equations using the education variables as predictors can be formed to predict satisfaction and performance at a significant level. As
outlined in chapter III, regression equations were formed to gain maximum possible prediction of each criterion by combinations of the education variables. Table X shows the predictors which were significant enough to use in the equation for each variable. It also shows the RSQ, the F ratio for the test of significance of that RSQ, and the probability or confidence level of that F.

**TABLE X**

**PREDICTION OF SATISFACTION AND PERFORMANCE BY EDUCATIONAL VARIABLES**

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<th>Criterion</th>
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<td>5.47</td>
<td>.00</td>
</tr>
<tr>
<td>Promotion</td>
<td>1, 2, 5, 11, 12</td>
<td>.1036</td>
<td>9.48</td>
<td>.00</td>
</tr>
<tr>
<td>Supervision</td>
<td>4, 6, 9, 10</td>
<td>.0417</td>
<td>4.77</td>
<td>.00</td>
</tr>
<tr>
<td>Coworkers</td>
<td>No sig predictors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>.0167</td>
<td>5.61</td>
<td>.02</td>
</tr>
<tr>
<td>Performance</td>
<td>No sig predictors</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Predictors:

1 = Educational level  
2 = Grades  
3 = Major field unknown  
4 = General business major  
5 = Accounting major  
6 = Marketing major  
7 = Liberal Arts major  
8 = Social Science major  
9 = Young tenure group  
10 = Middle tenure group  
11 = Interaction--Grades & Middle tenure group  
12 = Interaction--Grades & Old tenure group
Satisfaction with coworkers and performance could not be predicted at a significant level with any combination of predictors or interactions. Satisfaction with promotion was the only variable affected by interactions.

It should be pointed out that, although the RSQs were at a significant level of confidence, they were quite small, and accounted for, at the highest, .10 per cent of the variation in any of the variables.

**Question F**

Question F addressed itself to the question of validation. It asked if the results of this study would be equally valid for both groups if the study population were randomly divided into two groups. The procedure for answering this question has been set forth in detail in chapter III. Table XI shows the results of this analysis in the form of F ratios for the differences between the two randomly selected validation groups on the variables applicable to each question.

In question B there are no figures for satisfaction, because the stratification was made on response to the satisfaction questionnaire. In question E, the educational variables were used as predictors. The validation was performed only on criterion variables.
### Table XI

**F Values for Homogeneity of Regression Equations for the Two Validation Groups on Questions B, C, D and E**

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Satisfaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work</td>
<td>NA</td>
<td>.10</td>
<td>.07</td>
<td>.45</td>
</tr>
<tr>
<td>Pay</td>
<td>NA</td>
<td>.02</td>
<td>.00</td>
<td>.28</td>
</tr>
<tr>
<td>Promotion</td>
<td>NA</td>
<td>.35</td>
<td>.32</td>
<td>1.03</td>
</tr>
<tr>
<td>Supervision</td>
<td>NA</td>
<td>.11</td>
<td>.07</td>
<td>.48</td>
</tr>
<tr>
<td>Coworkers</td>
<td>NA</td>
<td>.02</td>
<td>.08</td>
<td>.54</td>
</tr>
<tr>
<td>Total</td>
<td>NA</td>
<td>.27</td>
<td>.22</td>
<td>.81</td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.27</td>
<td>.02</td>
<td>.01</td>
<td>.34</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td>.07</td>
<td>.00</td>
<td>.00</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Field of Study</strong></td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Grades</strong></td>
<td>.02</td>
<td>.01</td>
<td>.00</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Extracurricular Activities</strong></td>
<td>.05</td>
<td>.01</td>
<td>.00</td>
<td>NA</td>
</tr>
</tbody>
</table>

Critical F value = 2.37 for the .05 level of confidence

Inspection of this table reveals no F value remotely approaching significance. This means that in all respects the results of this study are equally valid for the two randomly selected validation groups, which strengthens the
probability that these results are valid for the entire population.

It will be noted that Tables VI, VII, VIII, and IX contain variables which are categorized in terms of field of study, response to the satisfaction questionnaire, tenure groupings, and terminations, respectively. For the purposes of the point biserial correlation between these categories and the continuous data of the other variables, the dichotomy for each of these categories is represented by a binary vector in which the element was a 1 if the corresponding criterion element was from that category; an 0 otherwise.
CHAPTER V

SUMMARY, FINDINGS AND CONCLUSIONS

Summary

The purpose of this study was to determine the extent of the relationship between four measures of educational experience, a measure of job performance, and six dimensions of job satisfaction for a population engaged in outside sales.

Selling is one of the occupations for which there has been questions as to what kinds of educational preparation are most appropriate, or if indeed there exists within our educational framework specific experiences or academic preparation which is specific to success or satisfaction in the selling field. This question is pertinent to the activities of those people in the selling occupations who must make selection decisions; it is pertinent to counselors who work with students who aspire to selling careers; and it is pertinent to educators who aspire to develop curricula which may have practical value in a student's work life.
There are a number of different kinds of sales jobs, each calling for different skills. The present study is concerned with outside selling as opposed to retail clerical kinds of activity.

The population for this study was 423 salesmen of a large international business forms firm. Each salesman was asked to respond to the Job Descriptive Index, an instrument for measuring job satisfaction in five dimensions. A sixth dimension was added by summing the scores of the original five.

The measure of performance used was the number of sales points earned by each salesman during the year. These points were based on the percentage of sales quota obtained by each man. The quota is based on a combination of every factor that the company feels is indicative of what can be potentially accomplished by that particular man in the particular situation in which he finds himself. It is the closest thing to a common measurement of achievement which the company has been able to devise; therefore, it was used as the measure of performance which would apply most equally to each man.

The educational variables considered were (1) educational level attained, (2) major field of study, (3) grades, and
(4) extracurricular activities. The education level variable was stratified into high school; one, two, three and four years of college; and college postgraduate. The major field of study variable was stratified into nine categories. These were (1) unknown, (2) general business, (3) accounting, (4) management, (5) marketing, (6) liberal arts, (7) natural science, (8) social science, and (9) professional or vocational. This information was obtained from the personnel files of the company.

The study considered six questions. The first one had to do with relationship of each of the educational variables to each of the performance and satisfaction variables. The next three were concerned with characteristics of different stratifications of the population, and the last two were concerned with validation of the results.

The first of the three stratifications was based on response or non-response to the satisfaction questionnaire. Nineteen per cent of the study population did not return the satisfaction questionnaire. The second of these stratifications was based on an arbitrary division of the population into three groups according to tenure with the company. The study group consisted of salesmen who had been with the company from six months to over thirty years. This stratification was an attempt to see what effect such
wide disparity might have on the overall findings. The third stratification was based on the problem of turnover. Forty-five subjects terminated from the time this study was initiated until the end of the data collection phase. The majority of these had completed the satisfaction questionnaire prior to terminating. This provided an opportunity to see if these people differed significantly from those who stayed on any of the variables under study in this project.

Specifically, the questions were as follows.

A. What is the relationship of each of the educational variables to each of the performance and satisfaction variables?

The nine categories of the field of study were considered as separate variables, bringing to a total of twelve the number of educational variables considered in this question. Correlation coefficients were computed between each of the education variables and each of the performance and satisfaction variables. Significance of the values was tested by determining the critical value from a standard table.

B. Are there significant differences between the respondents and non-respondents to the satisfaction questionnaire in terms of the education and performance variables?
Correlations were computed between each of the education and performance variables and vectors representing the two groups. Significance of differences between the two groups was tested by an F ratio computed by multiple regression, using prediction models as outlined in chapter III.

C. Are there significant differences between the young tenure group (six months up to two years), the middle tenure group (two through five years), and the older tenure group (six years and up) as regards any of the variables used in this study?

Correlations were computed between each of the education, performance and satisfaction variables, and vectors representing each of the three tenure groups. Again, the significance of differences between the groups was tested by an F ratio computed by multiple regression.

D. Are there significant differences between those of the study population who terminate between the beginning and the ending of the study in terms of the educational, performance and satisfaction variables?

Correlations were computed between each of the education, performance and satisfaction variables, and vectors representing the non-terminators and the terminators. As before, the significance of any group differences was tested by an F ratio computed by multiple regression.
E. Is it possible to form a regression equation from among the educational variables which will predict performance and satisfaction at a significant level?

All education variables which had shown any relationship to a specific satisfaction or performance criterion were used in formulating a prediction equation for that criterion. Different combinations of variables and interactions were tested until the best combination was found, or until it was determined that no predictor or combination of predictors would predict at a significant level of confidence.

F. Will the results obtained in questions B, C, D and E be valid for each of two groups into which the study population has been randomly divided?

The population was randomly divided into two mutually exclusive groups. Each equation used in the analysis of questions B, C, D and E was subjected to a procedure developed by Bottenberg and Ward for testing the homogeneity of regression within two mutually exclusive groups. This procedure answered the question as to whether knowledge of validation group membership contributed to prediction of a given criterion. A negative answer meant that the groups were structured essentially the same as each other and as the population as a whole on that criterion.
Findings

Question A.
1. None of the correlations were significant at the established level of confidence, which was .05.
2. Although not at the established level of confidence, education level correlated negatively with all aspects of satisfaction and performance.
3. All correlations above .10 were negative and had to do with satisfaction.
4. Liberal arts majors were most likely to be dissatisfied with the work itself.
5. People with higher grades in school were less satisfied with promotion opportunities.

Question B.
1. None of the correlations were significant at the established level of confidence.
2. There was a substantial difference in performance in favor of the non-respondents, significant at the .10 level of confidence. This was at variance with an earlier study, which found the difference in favor of the respondents.

Question C.
1. The older tenure group had the highest education level, and the middle group had the lowest. The difference
between them was not, however, significant at the established level of confidence.

2. The middle tenure group was highest in performance, and the younger tenure group was lowest. In this case the difference was significant at the established level of confidence.

3. The younger group was characterized by
   a. lower performance.
   b. higher satisfaction with promotion possibilities, supervision and overall satisfaction.
   c. lower number of extracurricular activities engaged in.
   d. having major fields of study to a greater extent in the non-business areas.

4. The middle group was characterized by
   a. lowest academic level.
   b. lowest grades.
   c. significantly highest performance.

5. The older tenure group was characterized by
   a. highest academic level.
   b. highest grades.
   c. significantly lowest satisfaction with promotion possibilities, supervision and overall satisfaction.
d. major fields of study to a greater extent in
the business areas.

6. The various major fields of study were well
distributed among all three tenure groups, except that social
science was more heavily distributed toward the younger
group, with the difference between them and the older group
being at a significant level in this distribution.

Question D.

1. There were no significant differences between
terminators and non-terminators as concerns education level,
major field of study or grades, although the terminators
had a slightly higher education level.

2. There was a significant difference in the number
of extracurricular activities engaged in at school, with
the terminators having been much more active.

3. The terminators were significantly less satisfied
with the work, the pay and the supervision.

4. The terminators were significantly lower in
performance.

Question E.

1. Predictors were found which would yield a signifi-
cant RSQ for all the satisfaction variables except satisfaction
with coworkers.
2. No predictors were found from among the education variables which would predict performance at a significant level.

3. The RSQs which were significant were very small, and would probably be of little value in selection decisions.

Question F.

There were no significant differences between the two randomly selected validation groups on any of the results applicable to questions B, C, D and E.

Conclusions

As a result of the findings enumerated above, it is concluded that

1. Information concerning the education of the prospective employee is of little value in the hiring decision for this kind of salesman. As has been seen, the relationship between education experience and success and satisfaction in selling is not very strong. It is also noted that although certain variables predict various aspects of performance and satisfaction at a significant level of confidence, the actual percentage of variance accounted for by each equation is probably too small to be of value in a selection decision. It is possible that these variables, in conjunction with other criteria consisting of biographical
and/or test data, might become part of a more powerful predictive group of variables.

2. Education achievement is not a prerequisite for success or satisfaction in this kind of selling. On the contrary, the evidence is that it may be the opposite. In general, satisfaction correlated negatively with education level, and with grades. In the tenure group stratification, it was noted that the group which had the highest performance also had the lowest level of education and the lowest grades. In addition, the group with the highest education level and highest grades was the most dissatisfied. It was also noted that the group with the lowest satisfaction had been more oriented toward business type courses as a major field of study. Thus it would appear that, in this case at least, educational achievement and studies in business-oriented courses were tied directly to dissatisfaction, and were not related to performance.

3. In a group of this size, it is worthwhile to look at various subgrouping stratifications which might affect the results. While insignificant differences were found for the respondents versus the non-respondents; and the differences for terminators were as expected; the information yielded by the tenure group stratification was very revealing.
For example, in the overall correlations, the relationship between performance and grades was almost zero. Yet, in the stratification, it was seen that the group lowest on grades was highest on performance. This was a meaningful item of information which would not have emerged had the tenure stratification not been made.

Implications for Further Research

It seems that the negative character of the relationship between education experience and job satisfaction and job performance requires additional study. The following specific questions seem to be of interest.

1. Are the findings of this study applicable to other occupations?

2. Is there any evidence of causality in these relationships? If so, what?

3. What other variables are related to education, satisfaction and performance which might help account for some of these findings?

4. Would the addition of biographical and/or test data to the educational data be of value in prediction?

If the answer to the first question above is generally affirmative, it would seem to have substantial implication
for our educational system as it relates to the preparation for the life work of individuals in our society.
I. WORK ON PRESENT JOB

Think of your present work. What is it like most of the time? In the blank beside each word given below, write □ for "Yes" if it describes your work, □ for "No" if it does NOT describe it, □ if you cannot decide.

Fascinating   Creative   Tiresome   Simple
Routine      Respected   Healthful   Endless
Satisfying   Not   Challenging   Gives
Boring      Pleasant   On your feet   sense of accom-
Good        Useful   Frustrating    plishment

II. PRESENT PAY

Think of the pay you get now. How well does each of the following words describe your present pay? In the blank beside each word, put □ if it describes your pay, □ if it does NOT describe it, □ if you cannot decide.

Income adequate for normal expenses   Income provides luxuries
Satisfactory profit sharing   Less than I deserve
 Barely live on income   Highly paid
 Bad   Underpaid

III. OPPORTUNITIES FOR PROMOTION

Think of the opportunities for promotion that you have now. How well does each of the following words describe these? In the blank beside each word, put □ for "Yes" if it describes your opportunities for promotion, □ for "No" if it does NOT describe them, □ if you cannot decide.

Good opportunities for promotion   Unfair promotion policy
Opportunity somewhat limited   Infrequent promotions
Promotion on ability   Regular promotions
Dead-end job   Fairly good chance for
Good chance for promotion   promotion

IV. SUPERVISION ON PRESENT JOB

Think of the kind of supervision that you get on your job. How well does each of the following words describe this supervision? In the blank beside each word below, put □ if it describes the supervision you get on your job, □ if it does NOT describe it, □ if you cannot decide.

Asks my advice   Doesn't supervise enough   Intelligent
Hard to please   Quick tempered   Leaves me
Impolite   Tells me where I stand   on my own
Praises good work   Annoying   Around when
Tactful   Stubborn   needed
Influential   Knows job well   Lazy
Up-to-date   Bad

V. PEOPLE ON YOUR PRESENT JOB

Think of the majority of the people that you work with now or the people you meet in connection with your work. How well does each of the following words describe these people? In the blank beside each word below, put □ if it describes the people you work with, □ if it does NOT describe them, □ if you cannot decide.

Stimulating   Fast   Unpleasant
Boring   Intelligent   No privacy
Slow   Easy to make enemies   Active
Ambitious   Talk too much   Narrow interests
Stupid   Smart   Loyal
Responsible   Lazy   Hard to meet

- Fold and staple test so return address on back can be used for mailing.
- Please return immediately.
We are currently attempting to upgrade our sales selection procedures, in an effort to make them more realistic and helpful in assuring that the people who work with us not only are successful in selling our products; but, also, may find a reasonable measure of job satisfaction in doing so. In this task, we need and ask your help.

The attached satisfaction questionnaire, though simple in form, is a well-validated and reliable instrument for assessing job satisfaction. We need this information to relate to other information we already have from your sales application, to see if we can identify patterns which are predictive of satisfaction levels as a salesman for Moore Business Forms, Inc. Such predictive information would be helpful not only to the Company; but, also, to prospective employees in making decisions about pursuing this kind of work.

The results of the enclosed instrument will be used only for the above described purpose and will have absolutely no bearing in relation to your job functions, responsibilities, etc. This is a study to help validate selection procedures and to assist in making them more responsive to current realities.

To help us with this study, please complete the attached sheet, using the instructions as shown. As you can see, it will require only a very few minutes of your time to answer the questions, fold and staple the sheet so that the return address on the back will cause it to be returned directly to my office.

I want to emphasize that individual replies to this instrument will be held in strictest confidence. This is why there is a code number on your questionnaire rather than your name. Therefore, we ask that you be as open minded and frank as possible. This is a necessity if the study is to have any future usefulness. Thanks very much for your help and prompt attention in completing and returning the questionnaire.

Sincerely,

Tommy G. Chance, Manager
Sales Selection & Education

Attachment
PIBILIOGRAPHY

Books


Articles


Betz, W.L., "Need Reinforcer Correspondence as a Predictor of Job Satisfaction; Application of the 'Good fit'


Carlson, R.E., "Degree of Job Fit as a Moderator of the Relationship Between Job Performance and Satisfaction," Personnel Psychology, XXII (Summer, 1969), 159-170.


Schultz, R.S., "Test Selected Salesmen are Successful," Personnel Journal, XIV (October, 1935), 139-142.


Unpublished Materials


