THE ROLE OF HEIGHT AND WEIGHT IN THE  
PERFORMANCE OF SALESMEN OF  
ORDINARY LIFE INSURANCE  

DISSERTATION  

Presented to the Graduate Council of the  
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By  

Joe H. Murrey, Jr.  
Denton, Texas  
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Despite the obvious importance attached to the psychological significance of height and weight in everyday life, few researchers have studied the relationship of these variables to the sales performance of ordinary life insurance salesmen. In the present study, it was hypothesized that (1) taller and/or heavier ordinary life insurance salesmen are more successful than shorter and/or lighter ordinary life insurance salesmen; (2) those who possess more "ideal statures" are more successful than those who do not; and, secondarily, (3) life insurance companies tend to hire taller and/or heavier applicants for life insurance sales positions.

Data were submitted for 256 ordinary life insurance agents by five respondent companies covering the three year period 1971-1974. Complete data for each agent from all companies included (1) age; (2) sex; (3) marital status; (4) height in inches; (5) weight in pounds; (6) length of employment; (7) volume of insurance; and (8) premiums. Data for earnings were obtained for 72 agents.
from a total of four companies. The measure used for "stature" was the "Ponderal Index," found by dividing height in inches by the cube root of weight in pounds.

The primary hypotheses were tested by simple and multiple regression and correlation analysis. The secondary hypothesis was tested with a version of the $t$ test, in which mean heights and weights of the sample were compared with the means from a national sample of heights and weights for males and females.

Analysis of variance was used to test for significant differences between different categories of agents with respect to the variables in the study.

1. The results of this study do not enhance the fact or fiction of "Height" alone as a factor in sales production.

2. "Weight" was significantly correlated with "Volume" and "Premiums," but not "Earnings." However, low $R^2$'s, severely diminished its value as a predictor of success.

3. "Stature" was not significantly correlated with "Volume," "Premiums," or "Earnings," although the slope coefficients were negative, as hypothesized.

4. The respondent companies tended to hire men who were significantly taller and heavier on the average than are found in the general population.

5. The respondent companies tended to hire women who were significantly taller and lighter on the average than are found in the general population.
Several incidental findings of interest are discussed in the study.

The literature tends to suggest that those persons who are taller, heavier, and well-proportioned are perceived more favorably than those less physically endowed, and thus, in turn, develop the more favorable self-concept so vital to successful selling. These factors should interact with other essential qualities to produce more successful salesmen. The findings of this study offer very limited confirmation of this hypothesis, and then only with respect to weight when related to volume and premiums.

The results of this study offer further support for the view that many sales managers and recruiters tend to believe that "the bigger they are, the better," and to select applicants accordingly, with the qualification that in this sample, female agents were taller, but lighter than average.

These findings are discussed in terms of their implications for the life insurance industry and future investigations.
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CHAPTER I

INTRODUCTION

In recent years there have been studies that tend to indicate that "stature," (defined as height and weight) is a factor in starting job salaries, recruiting for sales positions, executive selection and promotion, and in a so-called "sociology of heightism" in America, a culture in which height is exalted and shortness tends to be equated with lower status.

Since the work of Sheldon, Kretschmer, Parnell, and others, there have been attempts to establish a relationship between "somatotype," or body build, and certain personality traits. To date, evidence establishing such an innate relationship would appear to be inconclusive.

On the other hand, numerous studies do suggest a relationship between body build and self-perception, and between body build and perception by others. There appears to be no recently published work attempting to establish a relationship between stature and the sales production of ordinary life insurance agents. A carefully conducted study would seem to be of considerable value to the life insurance industry in future recruiting efforts if such a relationship does exist and is properly understood.
Statement of the Problem

This study sought to determine if a relationship between stature and life insurance sales could be empirically established. The relationship of height, weight, and an index (which combined height and weight into "stature") to sales production was studied. Three measures of sales production were employed—volume, earnings, and annualized premiums. Assuming that a relationship does tend to exist, an attempt was made to determine the extent to which any of these variables became, or ceased to be, a factor in sales production.

Hypotheses

This study is concerned with three questions. Two primary questions are (1) Are taller and/or heavier ordinary life insurance agents more successful producers than shorter and/or lighter insurance agents, and (2) Are ordinary life insurance agents who possess "ideal" statures as defined in the study more successful than those who do not possess "ideal" statures? The third question is secondary in this study: (3) Do life insurance companies tend to hire taller and/or heavier applicants for ordinary life insurance agency positions?

Thus, the major research hypotheses is that (1) there is a positive correlation between height and sales production—taller ordinary life insurance agents tend to be more successful than shorter ordinary life insurance agents;
and (2) there is a positive correlation between weight and sales production, in that heavier (larger) ordinary life insurance agents tend to be more successful than lighter ordinary life insurance agents; and (3) there is a positive correlation between "ideal" stature (ideal combination of height and weight) and sales production—ordinary life insurance agents who more nearly approach their ideal statures are more successful than those who do not.

The sub-hypothesis is that (4) the respondent companies do tend to hire taller and/or heavier applicants for sales positions than the mean heights and weights for the general U. S. population. This would imply the same relationship for other United States life insurance companies when mean heights and weights for the sample are compared with a national distribution of heights and weights.

Significance of the Study

There are no recently published studies of the relationship between stature and production in the life insurance industry, although one exploratory study dealing with stature and sales production is known to have been completed and submitted for publication.¹

¹Letter to the writer from Robert E. Stevens, Dept. of Marketing, University of Southern Mississippi, May 3, 1973. Stevens used height and weight as independent variables and annualized premiums as the dependent variable. He employed a stepwise regression analysis program to analyze the results. He found an $R^2$ of only .0061, but his sample consisted of only thirty-seven salesmen. He stated his conviction that most sales managers believe a relationship does exist.
There seems to be a strong psychological basis for the belief that one possessed of larger stature has certain advantages over his fellows. "Hierarchy" is an institution that exists among all social animals, and the drive to dominate one's fellows appears to be an instinct 300-400 million years old. A leader who seeks to dominate his group must clearly display the trappings, postures, and gestures of dominance. In a situation where one must assert himself as a leader, he must literally rise above his fellows, matching his psychological status with his physical posture. The human leader can and often does resort to larger cloaks, taller headgear, mounting a throne, platform, animal, or vehicle, being carried aloft by his followers, or other artificial devices to convey the desired effect.

In American society, to be tall tends to be good, and to be short to be stigmatized. Our language is based on an implicit heightist bias. (For example, "look up to" versus "look down upon," "put them down," "feeling low," "short change," "short sighted," and "short shrift," to name a few.) In marital relations, political life,

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economic life, and popular culture, height and weight are variables highly visible, but often overlooked.\footnote{See, for example, Saul D. Feldman, paper presented before the American Sociological Association, Denver, Colorado, 1971; also, Ralph Keyes, "Runt's Lib," \textit{Playboy}, January, 1973, pp. 137-138.}

The literature suggests some very interesting relationships between body types and the individuals' self-concept, and also between body types and the way they are perceived by others. It is possible to hypothesize a relationship between body type, (or stature), and self-concept, perceived personality traits by others, and a distinct development of cultural stereotypes.

The significance of such a relationship to life insurance agent recruiters is apparent, in that if agents with larger stature perceive themselves to be more dominant, more successful, or better leaders (i.e., have a positive self-concept), and are also perceived by others as possessing more positive personal and social characteristics, applicants for agency positions who are larger in stature should be given preferential consideration, all other things being equal.

There are, of course, many variables that may, singly, or in combination, affect the sales performance of ordinary life insurance agents. The historical roles and significance
of many of these variables have been presented in a review in 1972.\textsuperscript{5} Due to the complexities of selecting, measuring, and weighing most of these variables, this study includes enough agents for observation so that other variables tend to average out while stature and sales performance can be isolated for analysis.

**Definition of Terms**

"Stature" will be defined by the "Ponderal Index," a means of combining "Height" and "Weight" in which an index figure is derived by dividing height in inches by the cube root of weight in pounds. Although there is some variation, a resultant index figure of 12.500 generally is used to indicate a well-proportioned, athletic physique. An index figure less than 12.500 would indicate a move toward a heavier physique, and an index figure greater than 12.500 would be indicative of a more slender physique. "Ideal stature" will be defined as an index figure of 12.500 for this study.\textsuperscript{6}

"Sales production" will be defined in terms of "Volume," or new face amount of life insurance delivered. It will


also be defined in terms of "Earnings," and finally, in terms of annualized "Premiums."

An "ordinary" life insurance agent is one who is exclusively involved in life insurance sales, with no "debit" responsibilities (policyholders to service and collect premiums from on a regular basis as part of his contract with the Company.)

In the research hypotheses, "success" in life insurance sales production will be defined as survival for three years and production of from $500,000 - $600,000 new face amount life insurance on the average for each of the three years. Annualized premiums should not fall below $10,000 per year, and earnings from commissions should not be below $6,500 the first year, $8,500 the second year, and $10,000 the third year.\(^7\) (This progression tends to allow for the typically slow buildup of life insurance commission earnings.)

Limitations and Assumptions

This study was limited to data obtained from respondent companies domiciled in the Dallas-Fort Worth "Metroplex" area. Time and financial constraints, as well as the necessity for personal contact in some instances, strongly influenced this decision.

None of the respondent companies was able to supply all of the monetary criteria for success. All but one were able to provide both new face amount of insurance delivered (dollar volume) and annualized premiums. One company could supply only new face amount insurance delivered and earnings. Using company and industry guidelines, one can closely approximate annualized premiums from earnings figures. The most commonly used industry measure of production is new face amount insurance delivered, which was readily obtainable from all respondent companies.

Procedures for Collecting Data

A letter soliciting cooperation in the study was sent to approximately sixty legal reserve life insurance companies domiciled in the Dallas-Fort Worth "Metroplex" area. Respondent companies were asked to submit data collected at the time of appointment on all ordinary life agents employed during the last calendar quarter of 1970 and the first calendar quarter of 1971. This was done to provide a sufficient number of agents for observation over the three year period ending March 31, 1974. The following information for each appointed agent was requested: (1) age; (2) sex; (3) height; (4) weight; and for each year and/or part of a year up to March 31, 1974 or date of termination—(5) volume delivered; (6) annualized premiums, and (7) earnings. Every effort was made to secure all three measures of performance—items (5), (6),
and (7). However, securing any one of them from all respondent companies makes a valid study possible.

Procedure for Treating Data

The major hypothesis was tested by Simple Regression and Correlation Analysis, using "Height" in inches as the independent variable and one of the measures of "sales production" as the dependent variable. Each measure of production obtained was related to "Height." Similarly, "Weight" in pounds and "Ponderal Index" were treated as independent variables and sales production as the dependent variable, with each measure of production obtained related to these variables. Finally, Multiple Regression and Correlation Analysis was employed to test the dependent variable "production" against "Height," "Weight," and "Ponderal Index" as independent variables. Regression analysis seeks to provide information supporting judgments concerning the existence of a positive relationship between the variables selected for analysis.

One change in procedure with respect to the "Ponderal Index" should be noted. It was essentially hypothesized that any tendency away from the ideal stature (as indicated by an index score of 12.500) in either direction would decrease sales effectiveness. For example, being too thin (12.500) or too heavy (12.500) might have similarly negative effects.
Therefore, instead of using the raw Ponderal Index scores, calculated as previously explained, the following procedure was substituted when, and only when, regression and correlation analysis was employed. From the raw index score of each agent in the study was subtracted the ideal figure of 12.500, and the plus or minus sign in the result was dropped. Thus, the absolute differences between each agent's index score and the ideal figure of 12.500 were regressed against the other variables employed in the particular equation utilized. This technique made the data amenable to the SPSSH package program which tested the hypotheses, and which is referred to more specifically in Chapter Four.

The sub-hypothesis was tested by a version of the "t" test. The mean heights and weights of agents in the sample were compared with a national height and weight distribution. It was anticipated that most of the respondent companies operate in the fifty states. Thus it was possible to infer certain conclusions regarding tendencies of the companies to hire according to height and weight.

The statistical techniques referred to can be found in any standard textbook on statistical inference. The statistical treatment of data obtained is not seen as a serious limitation to the study.

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CHAPTER TWO

REVIEW OF THE RECENT LITERATURE CONCERNING
THE RELATIONSHIP BETWEEN HEIGHT,
WEIGHT, AND VARIOUS ASPECTS
OF PERSONALITY AND BEHAVIOR

Introduction

The unresolved controversy over an alleged innate relationship between constitutional body type and personality perhaps reached its peak in intensity during the 1920's and 1930's, and has either diminished considerably or shifted emphasis since. Occasional studies can be found, some as late as the 1960's and 1970's, dealing with this relationship. Although several of these are cited for background purposes, the principal thesis of this paper is concerned with perceived relationships between height and weight, or body type, and various aspects of personality and behavior, if and as they may relate directly or indirectly to success in selling life insurance.

The published works in this area can be broken down into three general categories: (1) studies concerned with "height" as the independent variable; (2) studies with "weight" as the independent variable; and (3) studies using both "height" and "weight" as independent variables.
In short, some studies compared height alone with other variables, some compared weight alone with other variables, and others combined the two into "stature," "constitution" or "body type" and related them to other variables.

Studies Primarily Concerned With Height

**Height and Intelligence**

Pardo and Diaz\(^1\) found a positive correlation between height and academic output in a study of 98 Mexican third-graders in a 1971 study. Their results, they state, tend to agree with Anglo-Saxon research in this area.

A group of 47 New York Jewish boys and girls between the ages of 7 and 9 were chosen as testing above 135 IQ, and without any reference to size. They were subsequently measured annually 7 times for height. The measurements of each individual showed a close self-consistency when stated as ratios to the normal height of New York Jewish children, averaging around 105%. It was concluded that the intellectually gifted tend to maintain as they grow the comparatively greater stature that typifies them in childhood.\(^2\)

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Height and Selling

Building upon the work of Kitson\(^3\) and others, Burtt\(^4\) concluded in 1957 that salesmen in general are taller than their prospects. From 7 samples he found the average salesman's height to range from 68.8 - 69.6 inches, whereas the average height of men in the Army during World War I was 67.5 inches. While he did not find a significant correlation between height and actual sales, he did conclude from his data that height may be an advantage up to a certain point, but beyond that seems to make little difference.\(^5\)

Evans\(^6\) examined the interaction situation of prospect-salesman dyads, using 125 established and successful life insurance salesmen and 500 prospects, half of whom had purchased insurance from them and half of whom had not. The hypotheses of this 1963 study was that the more similar the parties in the dyad were, the more likely a favorable outcome, or sale. The areas studied included numerous


\(^5\)Ibid.

social, economic, physical, personality, and community characteristics of both parties. One finding was that a somewhat higher percentage of sales resulted where the salesman was the same height or taller than the prospect. In the dyads where the salesman was the same height or taller, sales resulted from 32%, whereas in those dyads where the salesman was shorter than the prospect, the percentage of sales was only 28% of the total. No other factors or criteria for salesmen's success were mentioned in connection with height.  

"Heightism" in America

In recent years, there has been renewed interest in various aspects of height and "heightism." Weinberg in 1968 discussed the problems of midgets and dwarfs in America, and ways in which an organization known as "The Little People of America" has been dealing with problems faced by these stigmatized persons. Among its many functions, LPA aids in role adjustment, social participation, and even facilitates mate selection.

In a speech that received extensive press coverage, Feldman reported his findings in a paper presented before

7 Ibid.
9 Saul D. Feldman, op. cit.
the 1971 meetings of the American Sociological Association. His theses was that there is a "heightist emphasis" within American society manifested in many aspects of daily life.

The "Rhetoric of Heightism"

"The rhetoric of the joys of being tall and the evils of being short are well demonstrated in our daily language."\(^{10}\) Whether in casual conversation or the communications media, the tendency is invariably to promote heightism and downgrade shortness. In an article disguised as humor, Keyes\(^{11}\) further illustrated the many ways our vocabulary perpetuates this heightist emphasis. (Actor Robert Blake recently appeared in a movie titled "Electra Glide In Blue, billed as "the story of a 5'4" cop in a 6'2"world.")\(^{12}\)

Height and Marriage

With respect to marital relationships, Feldman states that most marriages are homogeneous by height, as well as with regard to race, ethnicity, social class, and age range. By "homogeneous" is meant "compatibility," for women; it means marrying an individual somewhat taller than she, and for a male, it means being certain that he may be

\(^{10}\) Ibid.

\(^{11}\) Ralph Keyes, *op. cit.*

\(^{12}\) Personal observation of the author.
able to look down upon his mate. Short males are very limited in their range of dates, and even short females may feel that short males seek their companionship only because both are short.\textsuperscript{13} While equal size of partners is tolerated, and when both partners are tall, even considered appealing, the union of a tall woman with a short man seems to be offensive to taste. In the competition between the sexes, tallness is equated with adulthood, and shortness with the subordinate estate of childhood. Most men do not feel attracted to taller women, nor do shorter males generally strike the female as true men.\textsuperscript{14}

**Height and Politics**

Height is and has been an important aspect of the political scene in America. Almost every American president elected since 1900 has been the taller of the two major political candidates.\textsuperscript{15} In the 1969 Mayoral election in New York City, Berkowitz, et. al.,\textsuperscript{16} examined the hypothesis that voters tend to prefer candidates of relatively similar height to their own. Just prior to the election, 276 male

\textsuperscript{13}Feldman, op. cit.


\textsuperscript{15}Feldman, op. cit.

pedestrians were interviewed. The leading candidates were John Lindsay (6'3") and Mario Procaccino (5'6"). The subjects reported both their own heights and their voting preferences. Whereas the shorter subjects were about evenly divided, the taller subjects preferred Lindsay 3 to 1.\(^{17}\) It has also been suggested that the more favorably inclined people are toward a politician, the taller they will think he is.

Ward\(^{18}\) asked 920 males and females to estimate the heights of the average American male and the average American female, then to judge the heights of President and Mrs. Lyndon B. Johnson. Next, these subjects were asked to express their liking or disliking for the President and First Lady. Among both sexes, the height of each subject was positively related to the height judgements of the same sexed figure. The prediction that estimates of President Johnson's height would be higher for those who liked him than for those who disliked him confirmed for males, and partially so for females.\(^{19}\)

\(^{17}\)Ibid.


\(^{19}\)Ibid.
This tends to agree with a study by Bleda which concluded that estimates of a figure's height tend to increase as attitudinal agreement is increased, and that both attraction and perceived height are positively related linear functions of attitude similarity.

Some duly authorized agents of political authority, particularly policemen and firemen in some municipalities, must be at least 5'7" to 5'8" to be employed. While it may be desirable for children to "look up" to policemen and firemen, there is nothing inherent in the duties of either occupation that really requires height; in fact, short policemen and firemen would be more able to crawl into smaller spaces.

**Height and the Business World**

It is a well-documented fact that the short man has been discriminated against in the world of business and economic life. Packard contends that appearance is a significant factor in executive success, that while one may find men of strikingly different appearance within the

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21 Ibid.

22 Feldman, *op. cit.*

same executive suite, there are also, over-all, striking appearance patterns among executives. In an increasingly marketing-oriented economy, more and more emphasis is being placed on the "total package," so that aspiring younger executives must now possess "executive bearing." Part of this "leader-father" image is tallness, and the trend is toward towering executives, particularly in sales type positions. There are exceptions, but 5'8" seems to be the minimum height for many positions. Men under 5'8", it is felt, do not tend to "command the respect" of their taller associates. Packard also feels that the trend toward tall executives is more pronounced in the larger, publicly held corporations, as opposed to the smaller, family, or entrepreneurial type businesses.  

Higher Starting Salaries

A recent survey of University of Pittsburgh graduates indicates that tall men (6'2" and taller) have received an average starting salary 12.4% higher than that of graduates under 6'0" in height. Deck received the reports of 91 1967-graduates who gave their starting salaries on jobs obtained through the Placement Service. Salary data

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24 Ibid.

was correlated with statements on height given at the time the graduates registered for interviews with the recruiters. The lower half of the group (men who claimed to be under 6'0") reported a monthly salary averaging $701. The sixfooters averaged $719, those 6'1" averaged $723, and those 6'2" received a mean monthly salary of $788 - 12.4% above the average salary of all men below 6'0". Overall, those above 6'0" (the upper half of the class according to height) averaged $729, or 4% above the lower half. Three incidental observations were noted: (1) there is a point of diminishing returns at 6'2" - above that point, starting salaries began to drop back to the 6'0" level; (2) the height variables among the men under 6'0" did not make much difference, whether 5'11" or 5'7"; (3) there was some evidence that applicants were overstating their heights slightly.26

Deck also found that the upper half of the class in scholarship received a bonus of only 4% for being better than average performers. The cum laude graduates averaged $747 month starting salaries, versus the $788 of the 6'2" group. To broaden his sample, he checked the starting salaries for 168 college teachers leaving the University of

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26 Ibid.
Pittsburgh in 1967, and found a 10% advantage for those over 6'0", and an 8% advantage to tallness in the graduating librarians of that year. His conclusion was that height is a factor in selection because it is the most readily ascertainable variable among educated applicants. 27

Recruiting for Height

Kurtz 28 asked 140 recruiters to make a hypothetical hiring choice between two equally qualified applicants -- one 6'2" tall, and the other 5'5", for a sales position. Seventy-two percent selected the taller applicant, 27% expressed no preference, and 1% chose the shorter applicant. Kurtz stated his belief that most recruiters for sales positions subscribe to the belief that "the bigger they are, the better." 29

Height and Popular Culture

Possibly our obsession with height is most evident in the area of popular culture. Games such as basketball are dominated by tall players and few football or baseball players are short. In boxing, the taller middleweights and heavyweights draw the crowds. Only in horse racing

27 Ibid.
29 Ibid.
does it pay to be short, but even there the horse is better known than its jockey. In the movies, the short actor seldom plays the romantic lead -- Alan Ladd wore elevated shoes to be on a par with his leading ladies. Thus, the short actor must play the buffoon (e.g., Mickey Rooney), the arch-villian, (e.g., Peter Lorre), or the small tough guy with the big Napoleon complex (e.g., Edward G. Robinson).  

Severely restricted in the ability to make adverse comments about a person's race, religion, sex or ethnicity, the media are completely uninhibited in making adverse remarks about height. Such examples as "stubby little --," "bumptious little --", "feisty little --," "pintsize," "sawed off," and "might mite," are only a few. In a society directed toward overabundance and glorification of anything above average, to be of less than average height in American society is to fall short of the mark in almost all aspects of everyday life.

**Height and the Self-Concept**

Several studies conducted within the past 15 years tend to further illustrate the effects of height on the self-concepts and judgements of others. A study of 173 subjects

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30 Feldman, op. cit.
31 Ibid.
suggested that people have a tendency to select friends closer to their own heights than would have been expected by chance, based upon an analysis of their own stated heights related to the perceived heights of their three closest friends.\textsuperscript{32}

In studies at Virginia Commonwealth University, investigators conducted a test to determine literally who was most approachable, a short person or a tall one. Two psychology students were selected - one short and one tall. Eighty-four undergraduates were then instructed to approach each person, but to stop when they felt "uncomfortable." Results showed a dramatic difference: "Males and females maintained twice as much distance between themselves and the tall person than between themselves and the short person."\textsuperscript{33}

**Height Overstated**

A study of 1342 boys and 989 girls between the ages of 11\textsuperscript{1/2} and 15 in Paris, France showed a consistent tendency on the part of each subject to overestimate his or her size, and the amount of overestimation tended to


\textsuperscript{33}Study Reported in the *Family Weekly*, supplement to the *Hattiesburg, (Mississippi), American*, February 16, 1975.
increase with age. Although girls were more objective than boys, sex differences were slight.  

Fisher hypothesized that a male concerned with proving his superiority will tend to have an exaggerated idea of his "bigness." In a study of 52 males, he related measures of "power aspirations" and "masculine superiority" to the subjects' judgments of self-height. Fisher felt that an analysis of the results significantly supported his hypothesis.

Tuohy found in a study of 60 males that members of two experimental groups rated themselves as significantly taller than members of the control group after hearing a brief lecture designed to raise their expectations regarding future success. Members of the experimental groups appeared to be readily persuadable with respect to height.

Tallness a "Threat"?

A recent investigation focused on the degree to which a person's height is a determinant of his interpersonal

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36 Ibid.

interactions. Extremely tall or extremely short people were conceptualized as "deviants," and it was postulated that the height of persons and the difference in height between persons will have an effect on the extent of one's conformity in a face-to-face situation. The subjects were 48 white male undergraduate students. Twenty-four were "short" (5'2" - 5'7") and 24 were "tall" (6'1" - 6'4"). Of six confederates chosen, 3 were 'short' (5'6") and 3 were "tall" (6'2"), giving 4 subject-confederate treatment conditions (short-short, short-tall, tall-short, and tall-tall). In a conformity task especially designed for the study, the subjects were asked to estimate the number of dots projected onto a screen for one second in each trial. The subjects then stated their estimates after the confederates on all trials. All subjects were administered certain scales from the California Psychological Inventory and the Edwards Personal Preference Schedule (EPPS). The data strongly supported the hypothesis: subjects conformed to a significantly greater extent with short than with tall confederates, and conversely, less with tall than with short confederates. Also, short subjects conformed significantly less than tall subjects to tall confederates. It was speculated that subjects perceived a threat inherent in "tallness," short subjects more so than tall subjects, and thus acted in a manner contrary to the group in order to maintain their behavioral freedom. Deviant subjects tended to resolve dissonance by either upgrading the value
of being their particular height, or by degrading the validity of the consensus of persons of a different height. Shorter subjects were found to be significantly less satisfied with their height than were the taller subjects.  

**Height and Status**

Height has even been found to have ethnic overtones. A study of 126 undergraduate subjects indicated that individuals ranked high on the Bogardus Social Distance Scale were perceived as being taller than other individuals of the same height who were ranked lower on the Bogardus Social Distance Scale.  

Another study, conducted among 110 Australian undergraduate students, showed how perceived height of one individual can change with successive changes in that individual's ascribed status. The subjects were divided into 5 groups, and the same man, unknown to anyone in any of the groups, was presented to each group so that his status changed each time. His dress and features were such that he could easily be accepted as a "student," "demonstrator," "lecturer," "senior lecturer," or "professor," as represented. It was found that the mean estimated


height of this authority figure was directly related to his ascribed status, increasing as his academic status increased. The mean estimated height for the course director, who introduced the authority figure to each group, showed no significant change between groups.  

A third study employing similar methodology indicated that low status of a person observed can lead to inaccurate perception of his height, whether tall or short, so that the height of a tall, low-status person may be underestimated and that of a short, low status person overestimated. These results also indicated that the height of the person who introduced the stimulus person did tend to significantly affect estimates of the latter's height. For example, the taller the former, the shorter the mean estimated height of the stimulus person.  

The previously mentioned studies are not represented as being all-inclusive, but are sufficient to suggest an increasing interest in the role that height plays in our everyday lives. Indicative of the lay interest in the anti-heightism movement is the formation of the "159 Athletic Club" in Des Moines, Iowa. Billed as "the most
unique sports group in the U.S.A.," it places a top limit of 5'9" in height for membership and participation in numerous competitive leagues. Featuring an annual "159 Decathlon," the organization is dedicated to becoming a nationwide force in achieving recognition for smaller athletes everywhere, whom it contends are the best all-round, pound-for-pound.  

Studies Primarily Concerned with Weight

The studies encountered in the literature dealing primarily with weight seem to be less numerous than those concerned primarily with height and are mainly concerned with various aspects of the problem of obesity. The scores of books on diets and dieting, the renewed interest in physical fitness, the continuous barrage of media commercials, and many other facets of American life make it intuitively obvious that in our society today, it is better by far to be "trim." In addition to tallness, the trend among big company executives is also toward "the lean look" - the "heavy-boned, muscular mesomorphs are giving way to tauter, more streamlined models."  

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42 Brochure from the "159 Athletic Club," sponsored by the International Organization of Smaller Persons, (Des Moines, Iowa), Robert Armstrong, Director.

43 Packard, op. cit.
company prejudice against plumpness in executives is not merely a matter of vogue, of course, since fat appears to be a definite health hazard, and top management people have often speculated on whether the fat man can stand the pace of work most companies demand today.\footnote{Ibid.}

**Childhood and Obesity**

Several studies tend to indicate that problems associated with obesity can be traced to childhood and maternal attitudes. One such study by Turbert\footnote{Jessie Turberg, *An Investigation of the Association of Maternal Attitudes and Childhood Obesity and the Self-Concept of the Obese Child*, Doctoral Dissertation, New York University, 1966.} in 1966 found that mothers of obese boys and girls demonstrated hostile-dependent attitudes and behavior toward their children. Passivity and dependence were encouraged, as the dictatorial attitudes typically demonstrated by these mothers restricted opportunities for self-expression and independent action. Similar attitudes and behavior were not observed for mothers of normal weight boys and girls. Attitudes expressed by mothers of children in the obese group could generally be classified as rejecting.\footnote{Ibid.}

In tests administered for family and social adjustment, feelings of personal inferiority, and day-dreaming, other significant findings emerged. The obese children exhibited
a consistent tendency to undervalue themselves, demonstrated by results which indicated confusion and conflict in sexual identity and distortion in body image. This was considered to be associated with the mother's failure to meet the child's need for acceptance. Other manifestations included the excessive preoccupation with food which typifies the emotional difficulties of obese children. A similar study by Cazullo in 1968 produced similar results; passiveness, dependence, inability to endure frustrations, and a deep feeling of insecurity were evident in obese children.

Adult Obesity

Essentially the same findings have emerged from studies of adults and various aspects of obesity. Buchanan and Rubin developed an "obesity profile" from group therapy over a five-year period. The subjects of this study exhibited an obsessive preoccupation with food, a significant number of "oral" activities (talking, etc), intake patterns similar to those of drug addicts and alcoholics, and a

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47 Ibid.
49 Ibid.
definite defect in body precept. Conspicuous also was failure to achieve autonomous functioning and independence. In a similar vein, Stewart, et al., suggest that both markedly thin and obese persons tend to share the traits that characterize "orality." Both types tend to be "followers," socially acquiescent, and dependent. However, the common factor between them is not necessarily "orality," but the social rejection that seems to accompany these opposed physiques. Stunkard, et al., also concluded that disturbances in the body image are specifically related to obesity, and cause self-consciousness and impairment in social functioning. In fact, obesity has been shown to be a factor in severe depression.

**Obesity, Peer Acceptance, and Occupation**

The obesity factor, as evidenced by abdomen circumference and body weight, is detrimental to peer acceptance.

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51 Ibid.


as well as motor performance. A study by Erwin\(^{55}\) of 308 white fourth-grade boys in two mid-west urban areas found this to be the case at an early age.

The maladjustment in school that often tends to accompany obesity can set the stage for later problems concerning the choice of occupation. This in turn, may lead to a choice of occupation that tends to aggravate the problems of obesity and emotional disturbance.\(^{56}\)

**Obesity and Persuasibility**

Persons of abnormal weight - both underweight and overweight - have been shown to be more receptive to persuasion than those of average weight. An experimental group consisting of both overweight and underweight subjects along with normal weight subjects listened to a discussion of four current issues. Attempts were made to first persuade the subjects in one direction, then in another direction, on the same set of four issues.


the overweight and underweight subjects showed greater overall changes in opinion than did the normal subjects exposed to the same persuasive appeals. 57

**Obesity and Perception**

It has been found that obesity tends to affect and distort the perception of one's own body size and also perception of the weight of others. In a study by Schonobuch and Schell, 58 overweight, underweight, and normal weight male college students estimated their body appearances by selecting from a graded series of pictured physiques the one that most nearly resembled the subject's own physique. When selections were compared with actual physiques, it was found that overweight and underweight subjects were more inaccurate in judging their own body appearances than those of normal weight. There was a tendency for both of the deviant groups to overestimate their body size and shape. 59 Several other studies have also tended to support the general hypothesis that obesity distorts the perception of one's own weight and the weight of others. 60

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59 Ibid.

The Effects of Weight Loss

The normalization of weight can produce a complete change in personality. Rohrbacher collected height and weight data on 204 obese boys in the 8-12 year old range in a period six months and one year before they attended an eight-week special camp program designed to aid in weight loss and attainment of normal height and weight balance. Assessments of body image and self-concept were made before and after the eight-week program, and then four months after the camp program had ended. The subjects of the study were grouped for statistical purposes by maturation level, degree of overweight, ordinality, religion, parental status, and parental obesity. While the self-concept did not change significantly, the body image showed a significant positive change as a result of the program. Since the long-term trend of normal weight gain appeared to be interrupted and lost weight was not regained, it was concluded that perhaps a longer follow-up period would produce more significant results.


63 Ibid.
A similar study involving a smaller sample indicated that the concrete growth and success attainable through a physical fitness program can be therapeutic and greatly enhance the self-concept.\(^{64}\)

Another study of 79 freshman college males had as its secondary purpose the determination of the effect of an adaptive health and physical activity program on the degree of obesity, self-concept, and attitude toward physical fitness and exercise on obese subjects. A significant correlation was found between the degree of obesity and the self-concept of the selected sample, and while no significant change occurred in the self-concept, degree of obesity, or attitude toward physical fitness and exercise in the three groups (2 experimental, 1 control) during the study, there was a significant correlation between the changes in the degree of obesity and self-concept within the two experimental groups during the study. It was concluded that a reduction in the degree of obesity significantly affects the self-concept to the extent that as obesity decreases, self-concept scores tend to rise.\(^{65}\)


Studies Concerned with Both Height and Weight

Most of the studies encountered in the literature do involve both height and weight as independent variables. In combination, they are variously referred to as "stature," "constitution," "body-type," "body-build," or "somatotype," and are not usually treated without further modification by bone structure, measures of girth, etc. Much of the basic work in the attempts to establish an inherent relationship between somatotype and other personality traits and characteristics was done by Sheldon, Kretschmer, Parnell, and others.

Height, Intelligence, and Scholarship

Some investigators have purported to find a relationship between somatotype and intelligence. In a study of 112 boys and 117 girls ranging in ages from three to five years, Katz in 1940 found a significant positive correlation.

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69 E. Katz, "The Relationship of IQ to Height and Weight From Three to Five Years," Journal of Genetic Psychology, LVII (1940), 65-82.
between height and IQ, and weight and IQ for girls at each age. Middleton and Moffett\textsuperscript{70} studied 490 college freshmen in 1940, and claimed to find a small, but positive, correlation between height and weight and intelligence test scores. They also found a positive correlation between height and "dominance" as measured by the Bernreuter Personality Inventory, but a negative correlation between weight and "dominance." In a study of 153 male and 166 female students in 1967, Hurster and Archer\textsuperscript{71} found a positive association between physical growth and scholastic achievement which was statistically significant for the females. Van Iden\textsuperscript{72} produced similar findings in a 10 year longitudinal study of 134 boys from the third grade through high school in Cleveland, Ohio. (Reliance was placed upon body size, physique, direction and speed of growth as provided by the Wetzel Grid technique, rather than simple height, weight, and age norms. Scholastic

\textsuperscript{70}W. C. Middleton and D. C. Moffett, "The Relation of Height and Weight Measurements to Intelligence and to Dominance - Submission Among A Group of College Freshmen," Research Quarterly, American Association of Health and Physical Education, 1940, pp. 53-59.

\textsuperscript{71}Madeline Hurster and Morton Archer, "Selected Parameters of School Achievement Among Urban Adolescents: A Study In Four New York City Junior High Schools," Journal of School Health, XXXVII (1967), 511-518.

\textsuperscript{72}Starr Stanley Van Iden, Scholastic Progress of Boys Classified by the Wetzel Grid Technique, (A Ten-Year Longitudinal Study), Doctoral Dissertation, Western Reserve University, 1965.
achievement was measured by grade point average, IQ tests, and achievement tests.) It was concluded that GPA trends were not completely dependent upon IQ tests, but were positively correlated with growth trends. In short, the taller, bigger boys maintained their GPA more effectively than, for example, those who tended toward obesity, whose academic achievement was noticeably less. The results all pointed to the single conclusion that steady scholastic achievement, consistent with capacity (IQ), cannot be expected from pupils whose physical growth is demonstrably under par.73

In a study involving 200 soldiers, Rees74 found body build to be a factor in what he called the "effort syndrome," (making it therefore a necessary factor in medical and eugenic diagnoses). Mochizuki75 divided 247 seventh-graders into groups according to height and weight, classified as "obese," "in between," and "very thin." All subjects were tested for mental tempo, and in general, the obese subjects tended to be slowest, the very thin fastest, in mental tempo.76 The 42 members of the Texas A & M track team

73Ibid.
76Ibid.
were the subjects in a comparative study of those athletes classified as "sprinters" and those classified as "distance runners." Among the conclusions were that distance runners tend to be somewhat taller but lighter than sprinters, and to surpass sprinters on most measures of scholastic aptitude and achievement. Some support was found for the view that gifted children from different socio-economic backgrounds tend to be taller and heavier than those less gifted. A study of elementary school children in Ohio, found that children with an IQ of 125 or better and scoring high in other measures, were taller and heavier than those defined as less gifted. (However, the test for significance at the .05 level failed.)

Physique and Marital Choice

In 1968, Spuhler reported a study of 40 human populations which listed marital correlations for 105 physical characteristics. Some small support was found for the view that people tend to select mates closer to their own sizes.

77 C. E. McCandless, C. W. Landiss, and D. G. Barker, "Comparisons of Distance Runners and Sprinters On Selected Physiological and Behavioral Variables," Perceptual and Motor Skills, XXIII (1966), 483-489.


Physique and Occupational Choice

Physique has been found to be a factor in occupational choice. Tanner\textsuperscript{80} presented evidence from several studies to show that persons are attracted to different careers according to their physiques. Some 287 officer cadets, 171 students at Oxford University and 162 medical students were classified (somatotyped) according to body build. Tanner related several significant differences—the cadets tended to be more "mesomorphic" (muscular, athletic), and lower in "endomorphy" (thick, heavy) and "ectomorphy" (tall, thin). The medical students were lowest in endomorphy and lay between the other two groups in mesomorphy.\textsuperscript{81}

Somewhat similar findings emerged from another study of 35 boys and 37 girls whose growth and development were checked at age 11 and then again in high school. Their occupational interest choices in high school were compared with similar measures for the same group at age 11. The data indicated a significant relationship between their growth characteristics and the development of their occupational interests.\textsuperscript{82}


\textsuperscript{81} Ibid.

Stature and Leadership Ability

Physical proficiency and stature have been used frequently in the military services in selecting officer candidates and in predicting leadership ability. Height, weight, and physical proficiency were held to be valid predictors of leadership ability in one Air Force study\(^{83}\) and in a World War II study involving the selection of officer candidates for field and combat duties in the U. S. Army.\(^{84}\)

Body Type and Personality

With particular respect to the alleged relationship between somatotype (body type) and certain psychological variables, there have been a number of studies from the early 1920's to current date that have offered a greater or lesser degree of confirmation of the hypothesis. Only a few will be cited, for the purpose of providing reference points for further reading in this general area.

Results of an analysis of detailed bodily ratios of 258 Harvard students judged to be representative of the student body indicated a relationship between bodily disproportions and the frequency with which certain dominant


personality traits were observed. Students who were unstable, less integrated, more sensitive and complex, and who found it hard to make social adjustments had more bodily disproportions than those who were stable and well-integrated. The author suggested that the disproportions were constitutional and as such, may have indicated a genetic element in the determination of personality and behavior.  

Four-hundred and ninety De Pauw University freshmen, both men and women, were the subjects of a study by Middleton in 1941. When correlations were made between physical measurements and personality variables, there was a tendency for heavier men to be extroverted. Taller women tended to be neurotic, self-sufficient, introverted, dominant, self-conscious and slightly non-social. Heavier women tended to be more well-balanced, but lacking in self-sufficiency, and slightly extroverted, slightly submissive, slightly social, and self-conscious. In a later study involving college women exclusively, 

85 C. C. Seltzer, "Body Disproportions and Dominant Personality Traits," Psychosomatic Medicine, VIII (1946), 75-97.

86 W. C. Middleton, "The Relation of Height and Weight Measurements to Certain Personality Qualities as Measured by the Bernreuter Inventory," Journal of Psychology, XI (1941), 143-150.

87 Ibid.
Slaughter found a significant correlation between mesomorphy (trim, athletic, well proportioned) and "low-anxiety" for the 157 female subjects tested.

**Impulsivity**

A Study of elementary school children in grades 1, 3, 4, and 5 attempted to assess the relation between "conceptual impulsivity" and body build as measured by the "Matching Familiar Figures Test" and height and chest girth dimensions. The findings for boys in the 3rd, 4th, and 5th grades were the most reliable, and indicated that boys who were shorter and broader for their ages were more likely to be impulsive rather than reflective.

**Need for Achievement**

Cortes and Gatti found the "mesomorph" (physically strong, hard, athletic, and muscular) to have a significantly higher need for achievement (concern over accomplishments,  

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energetic, non-conforming, competitive - one who wishes to do well in whatever he undertakes) than the "ectomorph" (physically thin, tall, weak, and linear) or the "endomorph" (physically round, soft, circular, and fat.) This 1966 study involved 100 boys with a mean age of 17½ years who were seniors in a private Boston high school, and 100 delinquent boys, also with a mean age of 17½ years, who were either sentenced to prison or on probation. The correlation between mesomorphy (athletic) and need achievement was positive for both groups, and significant at the .05 and .01 levels respectively. There was also a positive, but lower and not significant association for the endomorphs (heavy). Ectomorphy (tall, thin) was negatively and significantly correlated with the need for achievement. (The authors cautioned that in interpreting the association between physique and need for achievement, most motives are learned, and that environmental factors play an important role in the field of motivation. They did postulate some continuity between physical and psychological energy.)

Attitude Consistency

Finally, the consistency of a person's attitudes were found to be related to somatotype to a significant degree.

\(^{91}\text{Ibid.}\)
In particular, relatively low value integrity was found for individuals with a high endomorphic component and relatively high value integrity for individuals with a high ectomorphic content. In other words, the round, fat types were more changeable, and the tall, thin types less changeable in the values to which they adhered. These polar components seem to be related to highly extroverted and introverted tendencies. For individuals who tend to be purely mesomorphic (muscular, athletic), the measure of value integrity achievable seems to be roughly midway between that of the pure endomorph (fat) and the pure ectomorph (thin), suggesting that this component is a balancing factor between two possible extremes of attitude consistency.  

Changing Thought

In recent years, there seems to have been a shift away from the attempt to establish an innate relationship between stature, body build, or somatotype, however called, and psychological variables. Instead, there has been an increasing number of studies dealing with perceived relationships between somatotype and various psychological variables.

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"It has often been suggested that social stereotypes may account for a major share of the correlation between physique and temperament. Those who take this point of view argue that reactions to body build are likely to be important features of the individual's social environment, both in terms of the personality and character traits others expect of him."

Body Image and the Self-Concept

Another factor to be considered is the relationship between one's body image and self-concept, or the effect that self-perception of the body might have upon personality and character traits as influenced by the self-concept.

In one attempt to relate the body concept to the self-concept, Zion\(^94\) defined the components of the "self-concept" as (1) self-description; (2) self-acceptance; (3) ideal body; and (4) the discrepancy between self-description and the ideal self. The components of the "body concept" were (1) body description; (2) body acceptance; (3) ideal body; and (4) the discrepancy between body description and ideal body. (In her investigation of 200 college freshmen women, she found a significant linear relationship between self-description and body-description, ideal self and ideal body, and also between self description -

\(^93\) William D. Wells and Bertram Siegel, "Stereotyped Somatotypes," Psychological Reports, VIII (1961), 77-78.

\(^94\) Leela C. Zion, Body Concept as it Relates to Self-Concept, Doctoral Dissertation, University of California at Berkeley, 1963.
ideal self discrepancy and body description - ideal body discrepancy.)

This complex relationship has been the subject of numerous studies, several of which are applicable here. The existence of a satisfactory working arrangement between mind and body, i.e., healthy "feelings of personalization," so necessary to proper psychological adjustment, begin in early childhood, and are based in large part on positive parental attitudes toward the child's body. Sugarman explored the relationships between body type and "sophistication of body concept" as measured by human figure drawings. The subjects were 102 male college students who were photographed, measured, and then tested for sophistication of body concept. Subjects who were high in mesomorphy (more nearly average in build) were more sophisticated in body concept (drew more sophisticated human figures) than those who were high in endomorphy (heavier, fatter). Sophistication of body concept was considered to be a manifestation of body cathexis (degree of feelings of satisfaction or esteem for

\(^{95}\)Ibid.


the body). Studies have also indicated that although the degree of certainty as to correctness may vary, people are highly accurate in recognizing their own bodies. One group of college males recognized with 100% accuracy their own bodies, devoid of clothing, facial or situational clues, from among a series of seven photographs which included their own bodies, and which included others of minimum and maximum similarity to their own.

An investigation of freshmen college females found that the endomorph (heavy) woman held the lowest self-image, with both the mesomorph (average) and ectomorph (thin) significantly more acceptant of their self-images. Similar findings emerged from a study of pre-, mid- and post-pubescent girls by Oscarson in 1969.

In a study of pre-school children, a significant inverse relationship was found between the "self-estimates"

98 Ibid.


of girls (their estimates of how others rated them as "favorite," "medium," or "least favorite" in seven areas) and estimates of their own height. Girls with high estimates of themselves under-estimated their heights, whereas those with low estimates of themselves over-estimated their heights. With respect to boys, there was some evidence that just the opposite was true - the higher the self-estimate, the more the tendency to over-estimate own height.  

A study of young, healthy Navy men indicated that the more a subject's actual height and weight deviated from his preferred or "ideal" height and weight, the greater his dissatisfaction with the former. In other words, dissatisfaction with height and weight varied directly with deviation from preferred height and weight. Height appeared to have a very pervasive effect upon self-evaluation generally. The subjects in the Short-Underweight and Short-Overweight groups tended to have the least favorable self-images. Neither height nor weight appeared to have an effect upon performance of military duties except at the extremes. Very short and very overweight individuals tended to be both unhappy with themselves and

ineffective in performance. Rosen and Ross found in a study of 82 college students that satisfaction with body image and satisfaction with self-concept are positively related.

Advanced physical maturation and a physique with a strong mesomorphic component are advantageous to self identity by contributing to a positive body self through increasing "body cathexis." Boys who are physically more mature, muscular, and taller than other boys their age express more satisfaction with their bodies. Delayed maturation and a predominantly ectomorphic (thin) component can be related to some extent to poor emotional stability. A significant negative relationship exists between the degree of the endomorphic (heavy) component and psychological control.

While maturation and physique are only two of many factors, their impact on adolescent development can be substantial.


The Role of "Significant Others"

It might be expected that the self-concept of a person who has negative traits attributed to his body type by "significant others" (those whose opinions he values, etc.) would be markedly different from the self-concept of a person whose society attributed positive traits to his body type. This notion has found empirical support in the research of Lerner and Korn.\(^{106}\) Another study suggested that the physical characteristics of the subjects were of a greater importance in this regard than the opinions of significant others. The reasoning was that a liking or disliking for the person being judged affects the judgment of his physical attractiveness.\(^{107}\) It is nonetheless logical to expect that society's appraisals of one's body would become increasingly more salient as the person developed from late childhood into adolescence because of the concomitant increase in the salience of the peer group. Thus, for a child during the period of his development, appraisals of his body might provide an extremely important source of his self-concept. "To a considerable degree, a younster is his body, and his body is he."\(^{108}\)

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Physique and Self-Description of Temperament

A significant correlation between physique and self-description of temperament was found in a study of both boys and girls of pre-college and college age, who were somatotyped by the investigators, then asked to rate their own temperaments as, "dependent," "detached," "outgoing," "suspicious," etc, by selecting from among approximately 63 adjectives to complete sentences describing themselves. In all cases, the subjects attributed to themselves the qualities typically associated with the heavy, average, and thin body types. The heavier types tended to rate themselves significantly more often as "kind," "relaxed," "warm," and "soft-hearted;" average types as "confident," "energetic," "adventurous," and "enterprising;" thin types as "detached," "tense," "shy," and "reserved."

The correlation was very high and significant beyond the .001 level, and the relationship between physique and temperament was higher in the sample of girls than for the boys. The authors offered as an explanation for these results that it was "nature and nurture working together."  

Lerner, et al., asked 118 male and 190 female undergraduates to rate 24 bodily characteristics in terms


of (1) how satisfied they were with each of these characteristics of their own body; (2) how important each part was in determining their own physical attractiveness; and (3) how important each part was to them in determining the physical attractiveness of the opposite sex. In addition, all subjects responded to a short self-concept scale. The relations between satisfaction ratings for each body characteristic and self-concept for both males and females showed that distribution of weight and body build were two items that were highly correlated for both sexes with self-concept. "Width of shoulders" and "height" were more important for males, predictably, than for females. Both college-age males and females maintained otherwise markedly consistent attitudes about the importance of various body characteristics in determining both their own physical attractiveness and that of the opposite sex.111

**Body Awareness**

Results based on an investigation of 25 male and 67 female college students significantly supported the hypothesis that the greater an individual's awareness of his own body in relation to his total perceptual field, the more

111Ibid.
likely he is to display selectively superior recall for words referring to the body. 112

**Cultural Stereotyping**

"Cultural stereotyping" may be said to be the attribution of personality or temperamental characteristics to various somatotypes, or body builds. The interrelationship between the self-concept and cultural stereotyping in a "body-conscious" society is a complex one, and it is difficult to isolate the two variables. "The findings of body image stereotype studies indicate that body build stereotypes are generalizable across age, sex, geographical location, and perhaps even race. 113 It may even be possible to measure the degree to which an individual possesses body stereotypes, and "on the basis of the data, it is reasonable to conceptualize male body image stereotyping as a need to reduce social uncertainty. 114 In other words, stereotyping can enhance the self-concept.

**Cultural Stereotyping by Children**

Three recent studies of kindergarten children of both sexes have tended to indicate that cultural stereotyping


114 Ibid.
of body builds begins at an early age. The first, by Lerner and Gellert\textsuperscript{115} in 1969, involved 24 white male children and 21 white female children. Each child was shown pictures of three different children in bathing suits, faces covered, of the same sex as the subject, with each representing either a "chubby," "average," or "thin" body build type. Each subject was asked to choose the picture he or she most resembled (self-identification), would most want to look like (preference), and would least want to look like (aversion). Each child was also asked to suggest classmates of the same sex who most resembled each picture. Although the majority were not able to identify their own body build types, a number (24%) significantly above chance were able to do so. Females were better at matching body builds than males. Although no particular body build preference was indicated by the majority, a consistent aversion to "chubbiness" was expressed by 86% of the children. This was in accordance with society's current aversion to fat, but no aversion to thinness nor preference for the average physique were shown. The study did show the ability of the children to discriminate with respect to body build, and suggested very strongly that the children either reacted in typical fashion, or that

Two years later, this study was replicated by Lerner and Schroeder with some changes in methodology. Again, a significant number of children identified their own body build type and exhibited an aversion to chubbiness. However, this time, a significant number displayed the expected preference for average builds. The investigators concluded that kindergartners "---show a physique preference consistent with their society's favorable orientation toward average body builds."

Another attempt was made to assess the nature of the words that 50 male and 26 female kindergarten children used in describing fat and thin children. Each child was asked such questions as "what does it mean to be a fat (thin) boy?" and "what would a fat (thin) boy be like?" The results strongly indicated an awareness of body build behavior attitudes in the children.

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116 Ibid.
118 Ibid.
Further evidence of cultural stereotyping emerges from studies of elementary school children. Felker\textsuperscript{120} presented silhouettes representing endomorph (fat), mesomorph (muscular), and ectomorph (thin) body types, to 75 male and 62 female children from grades 1, 3, and 5. Each child was asked to assign 40 adjectives, ranging from "strong" to "weak," "neat" to "sloppy," "smart" to "stupid," and so on, to each of the three body types. The author found consistent stereotypic assigning of adjectives related both to body type and facial characteristics. In all comparisons of body type, the heavy body type received the least favorable adjectives. "The most striking finding was the high consistency of stereotypic behavior across grades, sex of the subjects, and sex of body form."\textsuperscript{121}

In similar study involving boys, 6-10 years old, Stafferi\textsuperscript{122} offered further support for the view that body type may be a determinant of personality through the process of social learning, that personality correlates of body type may be a determinant of personality through the process of social learning, and that personality

\textsuperscript{120}Donald W. Felker, "Social Stereotyping of Male and Female Body Types with Differing Facial Expressions by Elementary Age Boys and Girls," \textit{Journal of Psychology}, LXXXII (September, 1972), 151-154.

\textsuperscript{121}\textit{Ibid.}

correlates of body type may be reasonably explained on the basis of expected behavior. If children behave, even to a minimal degree, in a manner consistent with expectations, some reinforcement of the expectations will occur, and give continued support to the stereotype.

Significant adjectives assigned to the mesomorph (muscular, athletic) were favorable - "strong," "best friend," "clean," "lots of friends," etc. The adjectives assigned to the endomorph (heavy, fat) were socially unfavorable and primarily socially aggressive - "cheats," "argues," "gets teased," "forgets," "lazy," "lies," "sloppy," "naughty," "mean," "ugly," "dirty" and "stupid." Most of these were highly significant. The adjectives assigned to the ectomorph (tall, thin), were primarily personally unfavorable, but of a socially submissive type - "quiet," "worries," "lonely," "sneaky," "afraid," "sad," and "weak." Some were highly significant. The subjects displayed reasonable accuracy in their perception of their own body types, and a clear preference to look like the mesomorph image. This study also indicates a rather clear stereotype pattern for three body images within age levels and across age levels.\textsuperscript{123} These results were supported by another study of middle class white grade school children,\textsuperscript{123}\textsuperscript{Ibid.}
both male and female, 6-10 years old, by Hassan\textsuperscript{124} in 1968. The evidence strongly suggested that social stereotypes also exist among girls in the ages 6-10 group, and that there is a relationship between the self-concept and body types. Those with favored physiques tended to have more accurate self-concepts than those possessing unfavored physiques, and this conclusion was applicable to both boys and girls.\textsuperscript{125}

Caskey and Felker\textsuperscript{126} applied Staffieri's technique in a study of 75 elementary school girls, with the result that the ectomorphic (slender) body received the socially favorable adjectives, while body image mesomorph (well-built) received only those favorable adjectives which are related to the physical ("strong," "healthy," "brave," etc.). As hypothesized, the endomorphic (heavy) body type was assigned more unfavorable adjectives than the other two. Interestingly, the subjects did not assign a greater number of favorable adjectives to the silhouette which resembled their own body type, but tended to adopt the


\textsuperscript{125}\textit{Ibid.}

\textsuperscript{126}Sheila R. Caskey and Donald W. Felker, "Social Stereotyping of Female Body Image by Elementary School Age Girls," \textit{The Research Quarterly}, XLII (October, 1971), 251-255.
stereotypes of the group even when those stereotypes were highly unfavorable to their own body type.\footnote{Ibid.}

Sixty white elementary school girls 7 to 11 years old, in the second through sixth grades, were the subjects of a similar study by Staffieri\footnote{J. Robert Staffieri, "Body Build and Behavioral Expectancies in Young Females," \textit{Developmental Psychology}, VI (January, 1972), 125-127.} in 1972 to investigate the expectancies of young females of the behaviors to be emitted by females with varying body builds. The results indicated that girls in this study demonstrated a common set of behavioral descriptions which they associated with various body types. All the significant adjectives assigned to the average, well-built figure were of favorable connotation, and all of the significant adjectives assigned to the chubby figure were of unfavorable connotation. This is somewhat at variance with the findings of Caskey and Felker\footnote{Sheila R. Caskey and Donald W. Felker, \textit{op. cit.}} above, in which the tall, slender type was preferred. In the study at hand, the author interpreted the results as remarkably similar to those stereotypes found with boys. While boys tend to see the tall, thin type as a socially submissive, lonely, nervous individual, girls tend to see a weak, quiet person, suggesting a socially withdrawing trend, but do not associate other personally
negative traits with it. Staffieri concluded that the results indirectly reinforced the concept of social mediation as a basis for the general findings in the area of body build and personality. 130

**Cultural Stereotyping by Teenagers**

Fifty teenage boys were asked to select phrases describing pictures representing adult male endomorph (fat), mesomorph (average), and ectomorph (thin), body types. One example was: "The man who would ......," with choices ranging from "assume leadership," "drink the most," "make the poorest doctor," to "never have a nervous breakdown," etc.). No significant differences were found in the attribution of behavioral descriptions to body types between age levels, and as predicted, the mesomorph was generally associated with a socially "positive" stereotype, whereas the remaining two types were associated with socially "negative" stereotypes. 131 A similar study by the same author was reported two years subsequently, with 60 male teenagers, somewhat similar methodology, and the same general conditions. In addition, the mesomorph was

130 Staffieri, "Body Build and Behavioral Expectancies in Young Females," _op. cit_.

the most preferred type, and at all age levels, most subjects gave physical and physique-related reasons for their preference. ¹³²

**Cultural Stereotyping by Adults**

Similar results have been obtained in studies of adults and stereotyping. Evidence has tended to show consistent stereotyped perceptions of physiques by middle-aged men,¹³³ and has also suggested that anxiety and need for group affiliation can affect one's perception of physique.¹³⁴

One study indicated that males tend to have definitely stereotyped perceptions of female physiques and to attribute certain personality and behavioral traits to women. Few studies of this type were encountered, and although some of the findings were significant, the sample of fourteen


male subjects was small. A study in which 90 female college students attributed various personality traits and social behaviors to adult male body types also showed that the endomorph (fat), and ectomorph (thin), types were associated with "negative" items and the mesomorph (muscular, athletic) type with socially "positive" items. These results were thus in accord with studies involving younger female subjects showing a common body build behavior stereotype.

Diabase and Hjelle examined the interrelationships among bodily image stereotypes, body type preferences, and body weight of the subjects. The muscular, athletic type was perceived by all subjects as more active, energetic, and dominant, whereas the heavy and thin types were both rated as more withdrawn, shy, and dependent. No relationship was found between the body-image stereotypes and the subjects' body weight, although all subjects expressed a preference to look like the mesomorph (athletic type).


The authors suggested that cultural influences and the role of body dissatisfaction may serve to explain these results.138

Another study of 120 adults produced the following ratings: endomorph (heavy, fat) older, shorter, larger, more old fashioned, less strong, less good looking, more talkative, more warm-hearted and sympathetic, more good natured and agreeable, more dependent, and more trusting of others; mesomorph (muscular, athletic) stronger, more masculine, better looking, more adventurous, younger taller, more ambitious, more suspicious of others, more tense and nervous, less masculine, more stubborn, quieter, more pessimistic, and more inclined to be difficult.139

In a British study, a few of the significant traits attributed were: endomorph - need for affection and approval, people-orientation, love of comfort, sociability, etc.; mesomorph - orientation toward youth, adventurous, claustrophobia, need to take action when troubled, etc.; ectomorph - hypersensitivity to pain, love of privacy and solitude, social inhibitions, vocal restraint, etc. This study suggested that stereotypes concerning body type are intermediary in the determination of personality.140

138 Ibid.

139 William D. Wells and Bertram Siegel, op. cit.

Perception of Masculinity and Femininity

Traditionally, basic characteristics of masculinity have been portrayed as massive shoulders, tapered waist, and strong muscle molding, while femininity has been characterized by soft narrow shoulders, rounded flared hips, and soft smooth muscles. Two studies, one old, one recent, have indicated some disparities in the way males and females view masculinity. Wallace\textsuperscript{141} in 1941 had 70 students judge photographs of four men, then evaluate the men in the photographs for apparent intelligence, energy, happiness, likeability, and good looks. Tallness seemed to elicit higher ratings with respect to likeability and good looks, and broadness with respect to energy. Men tended to prefer broadness, whereas women preferred height. Darden\textsuperscript{142} in 1972 found that both males and females tended to share a common definition of femininity. However, men tended to equate massive musculature with masculinity, whereas women tended to see masculinity in the trimmer, more athletic physique. Thus, there was a significant difference in the way the two sexes perceived masculinity in this study.\textsuperscript{143}


\textsuperscript{143}Ibid.
Other Differences Between the Sexes

Kurtz\textsuperscript{144} presented the following hypotheses about the relationships between sex, body size, and body build:

1. Women not only like their bodies better than men, but also have a more clearly differentiated notion of what they like and dislike about their bodies.
2. Men tend to judge their bodies as more "potent" and "active" than women.
3. Large men and women judge their bodies as more potent than medium or small men or women.
4. Mesomorphic (muscular, athletic) men like their bodies more and judge their bodies as more potent than medium or small men.

Kurtz later replicated some of these findings in a study in 1971.\textsuperscript{145}

In a study to investigate the differential role of the body image between males and females in social interaction, it was found that body cathexis and body form as aspects of the body image operate differently for males and females. Body cathexis was indicated to influence the social self-esteem of females and their social acceptance.


of other females. Body form appeared to be an important variable for males in their initial acceptance of other males and females. 146

Another comparison was made between the sexes as to satisfaction or dissatisfaction with body and facial features, which were in this instance presented on slides. The results indicated that the male subjects tended to be dissatisfied with body dimensions from the waist up, whereas the female concern was for changes from the waist down. The female subjects were less satisfied with facial features, on the other hand, than were the males in the study. 147

Stature and "Personal Space"

"Recently there has been increasing recognition of the significance of physical space in social interaction. In addition to territoriality, which connotes fixed geographic location, a concept of the significance of distances between individuals has evolved. The concept of "personal space" has arisen to refer to the space immediately surrounding an individual which he feels to be personal, to belong to himself. Depending on various


factors, people attempt to maintain certain distances between themselves and others. Recent research studies have demonstrated the relevance of such variables as culture, ecological setting, the interpersonal relationship, feeling states, and personality.\textsuperscript{148}

The development of personal space schemata toward the Endomorph, (chubby), Mesomorph (average), and Ectomorph (thin) body builds was investigated by Lerner\textsuperscript{149} in a study of 86 male and female kindergarten through third grade children. The children were instructed to move a marker along a board to indicate how close they wanted to come to stimulus figures prepared by a professional artist, which included three body build figures representing a chubby, average, and thin boy. Results indicated that females used greater spatial distances than did males at all age levels, and that in grades 103, greater distance was used toward the Endomorph than towards either the Mesomorph or Ectomorph. Greater distance was used by the third graders, or older children, than by those from the lower grades. The author concluded by stating that:


"Previous research has provided considerable evidence indicating that the personality development of chubby children, as compared with average build children, is quite unfavorable. If future research extends the present findings to the domain of actual interpersonal spatial usage, then this would suggest that the socializing environment of chubby children would similarly portend unfavorable social development.\textsuperscript{150} It seems logical at this point to predict further research into the whole area of personal space versus body build.

\textbf{Physique and Salesmanship}

With respect to any relationship between physique and sales ability, there are few studies to be found. In his 1923 study, Swartz made a brief statement as follows with respect to the profile of a successful life insurance salesman: "he should be well built, and certainly not so much as 10 percent underweight."\textsuperscript{151} No further reference or clarification was offered to define the term "well built."

Burtt\textsuperscript{152} concluded in 1942 that salesmen as a whole are larger than the average individual. Included in his

\textsuperscript{150}\textit{Ibid.}

\textsuperscript{151}George O. Swartz, \textit{op. cit.}, p. 459.

figures were the average height and weight for about 1,000,000 men in the Army, for about 220,000 men based on actuarial data, and a considerable sampling of sales groups. The insurance salesmen in the sample averaged over an inch taller and were somewhat heavier than the Army and General population samples. Burtt also surmised that men of medium stature, although above that of the general population, were somewhat more effective than those at either extreme.\textsuperscript{153} In an earlier reference to an unpublished study by Stevens,\textsuperscript{154} it was also pointed out that many sales managers believe in a relationship between stature and productivity resulting in some evidence that larger men are given preferential consideration for sales positions. This is also consistent with the findings of Kurtz.\textsuperscript{155}

Thus, with respect to the thesis of this study, stature and sales productivity of life insurance salesmen, studies are extremely limited in number and in scope.

Summary

It would appear that height has become a most pervasive factor in every aspect of American life - business, politics, business, politics, business, politics.
athletics, entertainment, education, the language we use, all sorts of social and cultural relationships. Americans tend to "think tall," to hire taller applicants and pay them higher salaries, choose friends their own height, and to ascribe higher status to those who are tall, or greater height to those with higher status. The short person tends to become stigmatized; he resents height and reacts to it, yet will overstate his height or otherwise attempt to appear taller himself. The evidence suggests that salesmen are generally taller than members of the general population, and that while extremes in height may be detrimental, height does help sales production. People have been shown to buy more readily from those their same height or taller.

The obese person begins to learn even before he sets foot on the schoolyard that he faces a life of parental and peer rejection. From infant to adult, he finds that in all society, from social life to the executive suite, the trend is toward the "lean look." Consequently, it is not surprising that he develops feelings of inferiority and a poor self-concept, which create a passive, dependent, self-conscious, persuasible person with tendencies toward depression and low tolerance for frustration. These have been shown to be qualities that greatly inhibit the sale of life insurance, or any other product.\textsuperscript{156}

\textsuperscript{156}Joe H. Murrey, Jr., \textit{op. cit.}
With respect to body build, it pays to be a muscular, athletic type rather than a fat, chubby, or tall, thin type. Evidence tends to indicate that body build stereotypes do exist in our society, and they are generalizable across age, sex, geographical location, and race. People attribute more favorable personality traits and behavioral characteristics to the muscular, athletic type than to the other types, and this type in turn tends to perceive himself in more socially desirable terms than either of the other two body build types. In effect, the self-concept seems to be enhanced by a socially accepted physique; those whom people like also tend to like themselves. While men seem to prefer muscularity and women seem to prefer the "trim" type, there are nevertheless many similarities between them. The value of a positive self-concept and a physique to which society in general attributes all noteworthy virtues should be obvious to the life insurance sales recruiter.\footnote{Ibid.}
CHAPTER III

PRESENTATION OF DATA

Procedure For Obtaining Sample

Initially, sixty life insurance companies domiciled in the Dallas-Fort Worth "Metro-plex" area were sent letters soliciting their cooperation in the study. These companies accounted for $37.6 billion or approximately 87% of the life insurance in force for all companies domiciled within this area. Companies not contacted were omitted from the study because their insurance and premiums in force did not appear to be capable of sustaining a full-time sales force, as required for this sample.

From early responses, it became apparent that many of the variables sought were not available, even from companies expressing some interest in the study. During this period, some thirty companies indicated by their responses that for reasons beyond their control, they were unable to cooperate in the study. A follow-up letter was then sent to those companies originally indicating an interest, requesting that they provide only those variables that responses had indicated might be obtained from all likely participants.\(^1\)

\(^1\)A copy of this letter can be found in the appendix.
Description of the Sample

Subsequently, seven companies, comprising a preponderance of the larger companies in terms of insurance and premiums in force, assets, and agency forces, agreed to participate in the study. Finally, two of these companies found they were unable to provide data on several essential variables, and had to be omitted. Of the five companies remaining, three could be considered "major" companies, one was medium-size, and one was a small, new company, but all were experiencing a dynamic period of growth during the time period covered. It was felt that, effectively, no less than one-sixth of the companies that could have contributed data did so, and probably few, if any, of the nonrespondents could in fact have participated.  

The 256 agents in the sample are believed to be representative of the sales forces of the respondent companies. Three of the companies were able to supply data on all of their agents contracted during the time period from which agents were selected. The total number of agents on whom these three companies supplied data was 136, or 53.1% of the total sample. The two remaining companies, similar in size, felt that the agents from each company on whom data was supplied (50 from one, 70 from the other) comprised a representative sample of their respective sales forces.

\[2\] Total life insurance in force for the five respondent companies was approximately $13.9 billion, or nearly 37% of the insurance in force represented by the companies contacted.
Variables Obtained

Because of the considerable variation in selection techniques employed by the respondent companies, it was possible to obtain only the following information on each agent from all companies: (1) age; (2) sex; (3) marital status; (4) length of employment in days; (5) height; (6) weight; (7) volume of life insurance delivered, in dollars; (8) premium volume in dollars; and, where possible, (9) earnings. One company was unable to provide any earnings figures, and three were able to provide this information for only some of their field force. In general, where this information was available, it tended to be for those who had been with that particular company for a longer period than the average agent. The fifth company did not as a matter of practice maintain records on premium volume but instead could readily supply figures for each agent on volume of life insurance delivered and earnings. Based on that company's statistics on commission percentages, it was a relatively simple matter to convert earnings to approximate premiums for each of the 50 agents in the sample.

The Ponderal Index

It was necessary to devise or select a procedure by which "height" and "weight" could be combined in an index to relate to the other variables within the study. So long as the index functioned consistently, it was not particularly important which one was used, but the
"Ponderal Index" encountered in several review articles seemed ideally suited for this purpose. This index figure results from height in inches divided by the cube root of weight in pounds.  

Entire Sample Statistics

Table One presents the distribution statistics for the entire sample of 256 agents and variables. Thus, the mean age for the sample was approximately age 33, the minimum age was 19 and the maximum age was 62. The period of employment ranged from only 9 days to the full three-year period studied, with a mean of approximately 449 days. "Height" ranged from 5'6" (60") to 6'5" (77"), with the mean height slightly over 5'10" (70.3"). Mean sample weight was slightly over 177 lbs, with weights ranging from 105 lbs. to one agent who tipped the scales at 310 lbs. Volume was expressed in thousands of dollars delivered per month, for the purpose of facilitating comparisons, and mean volume for the entire sample was $32,070.00 per month, although the range was from zero volume to $519,165.00 per month.

Premiums also were expressed in thousands of dollars delivered per month. Here, minimum premium was zero dollars.

3See, for example J. Robert Staffieri, "A Study of Social Stereotype of Body in Age in Children," op. cit.
ranging to a maximum of $10,759 premiums per month, with a mean of $518.20.

TABLE I

DISTRIBUTION STATISTICS FOR ENTIRE SAMPLE OF INSURANCE COMPANIES

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>256</td>
<td>33.33</td>
<td>9.79</td>
</tr>
<tr>
<td>Length of Employment in Days</td>
<td>256</td>
<td>449.30</td>
<td>389.63</td>
</tr>
<tr>
<td>Height in Inches</td>
<td>256</td>
<td>70.31</td>
<td>3.05</td>
</tr>
<tr>
<td>Weight in Pounds</td>
<td>256</td>
<td>177.39</td>
<td>27.10</td>
</tr>
<tr>
<td>Volume in Dollars Per Month (000)</td>
<td>256</td>
<td>32.07</td>
<td>59.90</td>
</tr>
<tr>
<td>Premiums in Dollars Per Month (000)</td>
<td>256</td>
<td>.52</td>
<td>1.00</td>
</tr>
<tr>
<td>Ponderal Index</td>
<td>256</td>
<td>12.56</td>
<td>.48</td>
</tr>
<tr>
<td>Earnings in Dollars Per Month (000)</td>
<td>72</td>
<td>.39</td>
<td>.61</td>
</tr>
</tbody>
</table>

The Ponderal Index for each agent in the sample was computed, and these ranged from 10.49 (rather heavy) to 13.77 (rather thin). The mean figure derived for the sample was 12.56, (a figure indicating almost perfect balance between height and weight for the individual in that category, and indicating a high degree of symmetry between height and weight for the sample as a whole.)
With respect to earnings, 72 valid observations were possible, with a mean of $380.10 per month, ranging from zero earnings per month, to a maximum of $4,791 per month for the top producer.

Statistics for Male Employees

Table Two shows the distribution statistics for the male employees in the sample. It is readily apparent that in all categories, the means and standard deviations are close to those for the overall sample. This can be explained by the fact that 234 or 91.4% of the total sample of 256 agents are male.

Statistics for Females

Table Three contains the distribution statistics for the 22 female agents in the sample. Here, there are several noticeable differences between the sexes. The mean age is 3.61 years higher for female than male agents, with the standard deviation of 8.00 indicating a tighter cluster about the mean age of 36.64. Interestingly, the mean period of time employed of 575.9 days exceeded the mean for the male agents by 138.51 days. Predictably, mean height and mean weight were lower for females than males, with mean height being nearly 5'4½" and mean weight being 134 pounds. The mean figures for volume and premiums are somewhat lower also; perhaps with a larger sample of female agents, these figures would have been closer than $13,000 volume and $200 month premiums.
Comparison of the mean figures for the Ponderal Index suggest that the female agents were slightly more slender than the male agents, which may have been anticipated. A comparison of earnings figures is meaningless because

**TABLE II**

**DISTRIBUTION STATISTICS FOR MALE EMPLOYEES**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>234</td>
<td>33.02</td>
<td>9.88</td>
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<tr>
<td>Length of Employment in Days</td>
<td>234</td>
<td>437.40</td>
<td>394.05</td>
</tr>
<tr>
<td>Height in Inches</td>
<td>234</td>
<td>70.86</td>
<td>2.51</td>
</tr>
<tr>
<td>Weight in Pounds</td>
<td>234</td>
<td>181.46</td>
<td>23.73</td>
</tr>
<tr>
<td>Volume in Dollars Per Month (000)</td>
<td>234</td>
<td>33.20</td>
<td>62.29</td>
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<tr>
<td>Premiums in Dollars Per Month (000)</td>
<td>234</td>
<td>.54</td>
<td>1.05</td>
</tr>
<tr>
<td>Ponderal Index</td>
<td>234</td>
<td>12.55</td>
<td>.47</td>
</tr>
<tr>
<td>Earnings in Dollars Per Month (000)</td>
<td>71</td>
<td>.39</td>
<td>.62</td>
</tr>
</tbody>
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TABLE III
DISTRIBUTION STATISTICS FOR FEMALE EMPLOYEES

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>22</td>
<td>36.64</td>
<td>8.00</td>
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<tr>
<td>Length of Employment in Days</td>
<td>22</td>
<td>575.91</td>
<td>312.08</td>
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<tr>
<td>Height in Inches</td>
<td>22</td>
<td>64.43</td>
<td>1.80</td>
</tr>
<tr>
<td>Weight in Pounds</td>
<td>22</td>
<td>134.05</td>
<td>22.39</td>
</tr>
<tr>
<td>Volume in Dollars Per Month (000)</td>
<td>22</td>
<td>20.14</td>
<td>18.11</td>
</tr>
<tr>
<td>Premiums in Dollars Per Month (000)</td>
<td>22</td>
<td>.32</td>
<td>.31</td>
</tr>
<tr>
<td>Ponderal Index</td>
<td>22</td>
<td>12.65</td>
<td>.56</td>
</tr>
<tr>
<td>Earnings in Dollars Per Month (000)</td>
<td>1</td>
<td>.51</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Earnings were available for only one female agent. Again, it must be noted that with women comprising only 8.6% of the total sample, these differences may not be truly representative.

Statistics for Single Agents

Table Four presents the distribution statistics for single employees, and suggests that the companies studied do not tend to use very many single agents. The 37 agents in the sample comprise only 14.4% of the total, and earnings data was available for only 12, or roughly a third of these.
Mean age was 24.92, with a standard deviation of 3.94, indicating as expected that single agents were younger. Length of employment was only 280.70 days on the average, 168.60 days less than the mean for the total sample of 256. Mean height and mean weight were very close to those for the sample as a whole. Mean volume ($15,200) and mean premiums ($230) were roughly 1/2 that of the entire sample, and the earnings figures that were available showed the single agents far behind, $230 per month on the average to $390 per month, the mean figure for the 72 agents on whom earnings data were secured. (These results are in accord with studies reviewed which indicate that single agents do not produce as well as those who are married.)

Statistics for Divorced Agents

In Table Five are the distribution statistics for the divorced agents in the sample, who were only 3.125% of the total sample. Mean age was 36.5 years, with a standard deviation of 8.47 years. This is 3.2 years higher than the mean age for the entire sample. Mean length of employment was 488.88 days, some 39.58 days higher than for the entire sample. Mean height was 68.06 inches, some 2.25 inches shorter, perhaps due to the presence of two female agents in this small subsample of 8 divorced agents. Mean weight was also 8.26 pounds lower, 169.13 to 177.39 pounds. Standard deviation was 24.17. Mean volume
### TABLE IV

**DISTRIBUTION STATISTICS FOR SINGLE EMPLOYEES**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>37</td>
<td>24.92</td>
<td>3.94</td>
</tr>
<tr>
<td>Length of Employment in Days</td>
<td>37</td>
<td>280.70</td>
<td>294.69</td>
</tr>
<tr>
<td>Height in Inches</td>
<td>37</td>
<td>70.41</td>
<td>2.74</td>
</tr>
<tr>
<td>Weight in Pounds</td>
<td>37</td>
<td>173.95</td>
<td>25.64</td>
</tr>
<tr>
<td>Volume in Dollars Per Month (000)</td>
<td>37</td>
<td>15.20</td>
<td>22.24</td>
</tr>
<tr>
<td>Premiums in Dollars Per Month (000)</td>
<td>37</td>
<td>.23</td>
<td>.31</td>
</tr>
<tr>
<td>Ponderal Index</td>
<td>37</td>
<td>12.66</td>
<td>.46</td>
</tr>
<tr>
<td>Earnings in Dollars Per Month (000)</td>
<td>12</td>
<td>.23</td>
<td>.14</td>
</tr>
<tr>
<td>Variable</td>
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<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---</td>
<td>------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Age</td>
<td>8</td>
<td>36.50</td>
<td>8.47</td>
</tr>
<tr>
<td>Length of Employment in Days</td>
<td>8</td>
<td>488.88</td>
<td>349.43</td>
</tr>
<tr>
<td>Height in Inches</td>
<td>8</td>
<td>68.06</td>
<td>3.43</td>
</tr>
<tr>
<td>Weight in Pounds</td>
<td>8</td>
<td>169.13</td>
<td>24.17</td>
</tr>
<tr>
<td>Volume in Dollars Per Month (000)</td>
<td>8</td>
<td>26.60</td>
<td>27.09</td>
</tr>
<tr>
<td>Premiums in Dollars Per Month (000)</td>
<td>8</td>
<td>.49</td>
<td>.62</td>
</tr>
<tr>
<td>Ponderal Index</td>
<td>8</td>
<td>12.35</td>
<td>.42</td>
</tr>
<tr>
<td>Earnings in Dollars Per Month (000)</td>
<td>2</td>
<td>.85</td>
<td>.60</td>
</tr>
</tbody>
</table>

at $26,600 per month was lower by $5,470 than for the whole sample, and the standard deviation was $27,090, indicating a wide dispersion of values around the mean. Mean premiums per month of $490 represented a decrease of $30 below the mean for the entire sample. The standard deviation of $620.00 indicates a wide range of values, also. The mean figure for the Ponderal Index of 12.34 and standard deviation of 0.42 suggest a tendency for the divorced employees to be slightly heavier than for the sample as a whole. Mean earnings of $850 per month were impressively
high, but must be discounted because data was available for only 2 agents. The same must be said for all results from this small sample of only 8 agents.

Statistics for Married Agents

The distribution statistics for the 211 married agents in Table Six closely approximate those for the entire sample in most respects, as expected, since married agents comprise 82.4% of the total. Mean age of 34.79 years is slightly above that for the whole sample and the standard deviation of 9.8 years closely approximates that of the whole sample (9.79 years). Mean number of days employed is somewhat higher, by 28.07 days, 477.37 to 449.30 days. The standard deviation of 398.11 days indicates a wider range of values. Mean height was 70.37 inches, standard deviation was 3.05 inches. Mean weight of 178.30 pounds and standard deviation of 27.35 pounds was also very close to those of the total sample. Mean volume is $35,240 per month, some $3,170 higher than for the total sample. The standard deviation of $64,640 somewhat exceeds that for the entire group of agents. Mean premiums of $570 per month are slightly higher, but the greater standard deviation ($1,080) shows greater extremes. Mean figures for the Ponderal Index ($X = 12.55, \sigma = 0.48$) closely approximate total sample figures. Mean earnings of $410 per month are also close, as is the standard deviation of $660 per month.
TABLE VI
DISTRIBUTION STATISTICS FOR MARRIED EMPLOYEES

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>211</td>
<td>34.69</td>
<td>9.80</td>
</tr>
<tr>
<td>Length of Employment in Days</td>
<td>211</td>
<td>477.37</td>
<td>398.11</td>
</tr>
<tr>
<td>Height in Inches</td>
<td>211</td>
<td>70.37</td>
<td>3.05</td>
</tr>
<tr>
<td>Weight in Pounds</td>
<td>211</td>
<td>178.30</td>
<td>27.35</td>
</tr>
<tr>
<td>Volume in Dollars Per Month</td>
<td>211</td>
<td>35.24</td>
<td>64.64</td>
</tr>
<tr>
<td>Premiums in Dollars Per Month</td>
<td>211</td>
<td>.57</td>
<td>1.08</td>
</tr>
<tr>
<td>(000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ponderal Index</td>
<td>211</td>
<td>12.55</td>
<td>.48</td>
</tr>
<tr>
<td>Earnings in Dollars Per Month</td>
<td>58</td>
<td>.41</td>
<td>.66</td>
</tr>
<tr>
<td>(000)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of Variance

Analysis of Variance was used to test for differences between male and female agents in the sample. Group means and standard deviations are presented in Table Seven.

Male vs. Female Agents

Results of one-way analysis of variance testing for differences between male and female agents are presented in Table Eight. Only two variables - Height in Inches and Weight in Pounds - were shown to be significantly different. As expected, both were highly significant at the .01 level;
male agents were both taller and heavier than female agents. However, there was no significant difference in the mean Ponderal Index for each group.

Comparison by Marital Status

The same test was applied to determine differences among agents by marital status. Group means and standard deviations for each of the three groups are presented in Table Nine. Table Ten presents differences among the single, married, and divorced groups as disclosed by one-way analysis of variance. There was a highly significant difference between the mean ages of the three groups, at the .01 level. Significant at the .05 level was the variable "Length of Employment in Days." No other variable even approached significance when one-way analysis of variance was employed. Subsequently, multiple comparison of group means was made.4

Multiple Comparison

Table Eleven presents the results of the comparison of the means of the three groups two at a time for the variables which reached significance in one-way analysis of variance. Not unexpectedly, there was a significant difference at the .01 level between single agents and

4The technique employed was the Scheffe method of multiple comparison.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Group Name</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Male Employees</td>
<td>234</td>
<td>33.02</td>
<td>9.90</td>
</tr>
<tr>
<td></td>
<td>Female Employees</td>
<td>22</td>
<td>36.64</td>
<td>8.19</td>
</tr>
<tr>
<td>Length of Employment in Days</td>
<td>Male Employees</td>
<td>234</td>
<td>437.40</td>
<td>394.90</td>
</tr>
<tr>
<td></td>
<td>Female Employees</td>
<td>22</td>
<td>575.91</td>
<td>319.42</td>
</tr>
<tr>
<td>Height</td>
<td>Male Employees</td>
<td>234</td>
<td>70.86</td>
<td>2.52</td>
</tr>
<tr>
<td></td>
<td>Female Employees</td>
<td>22</td>
<td>64.43</td>
<td>1.85</td>
</tr>
<tr>
<td>Weight</td>
<td>Male Employees</td>
<td>234</td>
<td>181.46</td>
<td>23.78</td>
</tr>
<tr>
<td></td>
<td>Female Employees</td>
<td>22</td>
<td>134.85</td>
<td>22.92</td>
</tr>
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<td>Volume</td>
<td>Male Employees</td>
<td>234</td>
<td>33.20</td>
<td>62.43</td>
</tr>
<tr>
<td></td>
<td>Female Employees</td>
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<td>20.14</td>
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<tr>
<td>Premiums</td>
<td>Male Employees</td>
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<tr>
<td></td>
<td>Female Employees</td>
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<td>.31</td>
</tr>
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<td>Male Employees</td>
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<td>12.55</td>
<td>.47</td>
</tr>
<tr>
<td></td>
<td>Female Employees</td>
<td>22</td>
<td>12.65</td>
<td>.57</td>
</tr>
<tr>
<td>Earnings</td>
<td>Male Employees</td>
<td>71</td>
<td>.39</td>
<td>.62</td>
</tr>
<tr>
<td></td>
<td>Female Employees</td>
<td>1</td>
<td>.51</td>
<td>0.00</td>
</tr>
</tbody>
</table>
TABLE VIII

ONE-WAY ANALYSIS OF VARIANCE: DIFFERENCES AMONG
MALE AND FEMALE EMPLOYEES
(d.f. between groups = 1; d.f. within groups = 254)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Variance Estimate</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between Groups</td>
<td>Within Groups</td>
</tr>
<tr>
<td>Age</td>
<td>262.79</td>
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</tr>
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<td>Length of Employment in Days</td>
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<td>151484.76</td>
</tr>
<tr>
<td>Height in Inches</td>
<td>830.41</td>
<td>6.09</td>
</tr>
<tr>
<td>Weight in Pounds</td>
<td>45211.61</td>
<td>562.02</td>
</tr>
<tr>
<td>Volume in $1,000 Per Month</td>
<td>3427.89</td>
<td>3603.30</td>
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<tr>
<td>Premiums in $1,000 Per Month</td>
<td>.95</td>
<td>1.01</td>
</tr>
<tr>
<td>Ponderal Index</td>
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<td>.23</td>
</tr>
<tr>
<td>Earnings #</td>
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<td>.39</td>
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# For Earnings: d.f. between groups = 1; d.f. within groups = 70
**p < .01
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<th>Mean</th>
<th>Standard Deviation</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
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<td>37</td>
<td>24.92</td>
</tr>
<tr>
<td></td>
<td>Married Employees</td>
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<td>8</td>
<td>34.69</td>
</tr>
<tr>
<td></td>
<td>Divorced Employees</td>
<td>8</td>
<td>8</td>
<td>36.50</td>
</tr>
<tr>
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<td>Single Employees</td>
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<td>37</td>
<td>298.75</td>
</tr>
<tr>
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<td>8</td>
<td>260.70</td>
</tr>
<tr>
<td></td>
<td>Divorced Employees</td>
<td>8</td>
<td>8</td>
<td>477.37</td>
</tr>
<tr>
<td>Height</td>
<td>Single Employees</td>
<td>21</td>
<td>37</td>
<td>88.88</td>
</tr>
<tr>
<td></td>
<td>Married Employees</td>
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<td>8</td>
<td>59.06</td>
</tr>
<tr>
<td></td>
<td>Divorced Employees</td>
<td>8</td>
<td>8</td>
<td>68.06</td>
</tr>
<tr>
<td>Height</td>
<td>Single Employees</td>
<td>21</td>
<td>37</td>
<td>173.95</td>
</tr>
<tr>
<td></td>
<td>Married Employees</td>
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<td>8</td>
<td>70.41</td>
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<td>Divorced Employees</td>
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<td>40.37</td>
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<td>2.78</td>
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<td>Divorced Employees</td>
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<td>3.06</td>
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<td>26.00</td>
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<tr>
<td></td>
<td>Married Employees</td>
<td>21</td>
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<td>22.54</td>
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<tr>
<td></td>
<td>Divorced Employees</td>
<td>8</td>
<td>8</td>
<td>27.41</td>
</tr>
<tr>
<td>Weight</td>
<td>Single Employees</td>
<td>21</td>
<td>37</td>
<td>28.84</td>
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<tr>
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<td>Married Employees</td>
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<td>8</td>
<td>64.79</td>
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<tr>
<td></td>
<td>Divorced Employees</td>
<td>8</td>
<td>8</td>
<td>68.06</td>
</tr>
<tr>
<td>Weight</td>
<td>Single Employees</td>
<td>21</td>
<td>37</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Married Employees</td>
<td>21</td>
<td>8</td>
<td>3.09</td>
</tr>
<tr>
<td></td>
<td>Divorced Employees</td>
<td>8</td>
<td>8</td>
<td>1.09</td>
</tr>
<tr>
<td>Premiums</td>
<td>Single Employees</td>
<td>21</td>
<td>37</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Married Employees</td>
<td>21</td>
<td>8</td>
<td>5.56</td>
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<tr>
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<td>Divorced Employees</td>
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<td>8</td>
<td>4.48</td>
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<tr>
<td>Earnings</td>
<td>Single Employees</td>
<td>58</td>
<td>37</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Married Employees</td>
<td>56</td>
<td>8</td>
<td>1.5</td>
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<td></td>
<td>Divorced Employees</td>
<td>2</td>
<td>8</td>
<td>0.85</td>
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TABLE X

ONE-WAY ANALYSIS OF VARIANCE: DIFFERENCES AMONG EMPLOYEES BY MARITAL STATUS
(d.f. between groups = 2; d.f. within groups = 253)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Variance Estimate</th>
<th>F</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>Between Groups</td>
<td>Within Groups</td>
</tr>
<tr>
<td>Age</td>
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</tr>
<tr>
<td>Height In Inches</td>
<td>20.79</td>
<td>9.23</td>
</tr>
<tr>
<td>Weight In Pounds</td>
<td>580.68</td>
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</tr>
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</tr>
<tr>
<td>Premium In $1,000 Per Month</td>
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<td>1.01</td>
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<tr>
<td>Ponderal Index</td>
<td>.37</td>
<td>.23</td>
</tr>
<tr>
<td>Earnings #</td>
<td>.37</td>
<td>.38</td>
</tr>
</tbody>
</table>

# For Earnings: d.f. between groups = 2; d.f. within groups = 69
**p < .01
*p < .05
TABLE XI

COMPARISON OF MARITAL STATUS GROUPS' MEANS TWO AT A TIME FOR VARIABLES WHICH REACHED SIGNIFICANCE IN ONE-WAY ANALYSIS OF VARIANCE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>$\bar{X}$ (with)</th>
<th>Group</th>
<th>$\bar{X}$</th>
<th>F'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Single</td>
<td>24.92</td>
<td>Married</td>
<td>34.69</td>
<td>35.47**</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>24.92</td>
<td>Divorced</td>
<td>36.50</td>
<td>10.42**</td>
</tr>
<tr>
<td>Length of Employment in Days</td>
<td>Single</td>
<td>280.70</td>
<td>Married</td>
<td>477.37</td>
<td>8.19*</td>
</tr>
</tbody>
</table>

**$p<.01$  
* $p<.05$
<table>
<thead>
<tr>
<th>Variable</th>
<th>Insurance Company</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
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<td>39.50</td>
<td>11.40</td>
</tr>
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<td></td>
<td>No. 2</td>
<td>50</td>
<td>27.64</td>
<td>6.54</td>
</tr>
<tr>
<td></td>
<td>No. 3</td>
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<tr>
<td></td>
<td>No. 4</td>
<td>52</td>
<td>37.29</td>
<td>8.66</td>
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<tr>
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<td>No. 5</td>
<td>70</td>
<td>30.94</td>
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<td>Length of Employment</td>
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<td>8</td>
<td>874.25</td>
<td>331.57</td>
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<tr>
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<td>No. 2</td>
<td>50</td>
<td>520.64</td>
<td>437.17</td>
</tr>
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<td>52</td>
<td>267.17</td>
<td>293.70</td>
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<td>No. 5</td>
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<td>404.64</td>
<td>413.46</td>
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<td>70.53</td>
<td>1.80</td>
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<td>71.28</td>
<td>2.29</td>
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### TABLE XII --Continued

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<td>.49</td>
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<td>12.60</td>
<td>.47</td>
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<td>.44</td>
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<td>.52</td>
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<td>.21</td>
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<td>.36</td>
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<td>2.04</td>
<td>2.39</td>
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<td>No. 5</td>
<td></td>
<td>11</td>
<td>.30</td>
<td>.19</td>
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</table>

*Not available for Company No. 3
Married agents, \( (\bar{X} = 34.69 \text{ and } 36.5) \) respectively), and between single and divorced agents \( (\bar{X} = 36.50) \). A significant difference at the .05 level was found for "Length of Employment in Days" between single agents \( (\bar{X} = 280.7) \) and married agents \( (\bar{X} = 477.37) \). These findings tend to support previous studies that have shown single agents to leave employment sooner. Implicit in these results is the suggestion that the youth and inexperience of single agents are factors in their overall greater turnover.

Differences Among the Companies

Analysis of Variance was again used, to test for differences among the five life insurance companies studied. Group means and standard deviations are presented, for each variable, for each company in Table Twelve.

The results of one-way analysis of variance are presented in Table Thirteen. Three variables reached significance at the .01 level, "age," "Length of Employment in Days," and "Earnings." The variable "height in Inches" reached significance at the .05 level. One of the other variables approached significance, but did not reach significance in the multiple comparison of group means, although "Height in Inches" only approached significance when Company Number 2 \( (\bar{X} = 71.28) \) was compared with Company Number 3 \( (\bar{X} = 69.57) \). However, 19 of the 22 women in total sample \( (\bar{X} \text{ height } = 64.43) \) were members of Company Number 3's agency force, comprising 25% of the total
force. This obviously lowered the mean height for Company Number 3, rendering the tests for significance virtually meaningless.

Multiple Comparison

Results of comparison of group means for the five companies two at a time for variables which reached significance in one-way analysis of variance are depicted in Table Fourteen. Three variables reached significance - "Age," "Length of Employment," and "Earnings."

With respect to "age," there was a significant difference at the .01 level between Company No. 2 ($\bar{X} = 27.64$) and Company No. 3 ($\bar{X} = 35.92$); Company No. 2 and Company No. 4 ($\bar{X} = 37.29$); and Company No. 4 and Company No. 5 ($\bar{X} = 30.94$). Significance at the .05 level was found in the comparison of Company No. 1 ($\bar{X} = 39.50$) and Company No. 2, and Company No. 3 with Company No. 5. Thus, Company No. 2 with the lowest mean age of 27.64 years tended to differ significantly with the other companies in the sample, which appeared to hire somewhat older applicants, based on mean ages in the 30's.

With respect to the second variable, "Length of Employment in Days." Company Number 1 ($\bar{X} = 874.25$) differed significantly from Company Number 4 ($\bar{X} = 267.17$) at the .01 level, as did Company Number 3 ($\bar{X} = 523.25$) from Company Number 4. Company Number 1 differed significantly from Company Number 5 ($\bar{X} = 404.64$) and Company No. 2
### TABLE XIII

**ONE-WAY ANALYSIS OF VARIANCE: DIFFERENCES AMONG FIVE INSURANCE COMPANIES**

(d.f. between groups = 4; d.f. within groups = 251)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Variance Estimate</th>
<th>F</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Between Groups</td>
<td>Within Groups</td>
</tr>
<tr>
<td>Age</td>
<td>911.82</td>
<td>83.14</td>
</tr>
<tr>
<td>Length of Employment in Days</td>
<td>995205.39</td>
<td>138972.48</td>
</tr>
<tr>
<td>Height In Inches</td>
<td>26.34</td>
<td>9.05</td>
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<td>Weight In Pounds</td>
<td>1458.10</td>
<td>725.63</td>
</tr>
<tr>
<td>Volume In $1,000 Per Month</td>
<td>4011.42</td>
<td>3586.10</td>
</tr>
<tr>
<td>Premium In $1,000 Per Month</td>
<td>.36</td>
<td>1.02</td>
</tr>
<tr>
<td>Ponderal Index</td>
<td>.46</td>
<td>.23</td>
</tr>
<tr>
<td>Earnings #</td>
<td>2.85</td>
<td>.27</td>
</tr>
</tbody>
</table>

# For Earnings: d.f. between groups = 3; d.f. within groups = 68

**p .01
*p .05
a = approached significance
### TABLE XIV

**COMPARISON OF FIVE INSURANCE COMPANIES GROUPS' MEANS TWO AT A TIME FOR VARIABLES WHICH REACHED SIGNIFICANCE IN ONE-WAY ANALYSIS OF VARIANCE**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>$\bar{x}$ (with) Group</th>
<th>$\bar{x}$</th>
<th>$F'$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
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<td>Company No. 2</td>
<td>27.64</td>
</tr>
<tr>
<td></td>
<td>Company No. 2</td>
<td>27.64</td>
<td>Company No. 3</td>
<td>35.92</td>
</tr>
<tr>
<td></td>
<td>Company No. 2</td>
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<td>37.29</td>
</tr>
<tr>
<td></td>
<td>Company No. 3</td>
<td>35.92</td>
<td>Company No. 5</td>
<td>30.94</td>
</tr>
<tr>
<td></td>
<td>Company No. 4</td>
<td>37.29</td>
<td>Company No. 5</td>
<td>30.94</td>
</tr>
<tr>
<td>Length of Employment In Days</td>
<td>Company No. 1</td>
<td>874.25</td>
<td>Company No. 4</td>
<td>267.17</td>
</tr>
<tr>
<td></td>
<td>Company No. 1</td>
<td>874.25</td>
<td>Company No. 5</td>
<td>404.64</td>
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<tr>
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<td>Company No. 3</td>
<td>523.35</td>
<td>Company No. 4</td>
<td>267.17</td>
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<tr>
<td>Height In Inches</td>
<td>Company No. 2</td>
<td>71.28</td>
<td>Company No. 3</td>
<td>69.57</td>
</tr>
<tr>
<td>Earnings</td>
<td>Company No. 1</td>
<td>.25</td>
<td>Company No. 4</td>
<td>2.04</td>
</tr>
<tr>
<td></td>
<td>Company No. 2</td>
<td>.33</td>
<td>Company No. 4</td>
<td>2.04</td>
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<tr>
<td></td>
<td>Company No. 4</td>
<td>2.04</td>
<td>Company No. 5</td>
<td>.30</td>
</tr>
</tbody>
</table>

**p .01

*p .05

*a approached significance
This could be anticipated from such extremes in mean days of employment as 874.25 and 267.17, even though Company Number 1 had a small number of agents qualified for the sample due to organization shortly before the beginning of the time period under study.

The third variable to reach significance was "Earnings in $1,000 per month, and in each comparison the results were at the .01 level of significance. The differences developed between Company No. 1 ($X = 250$) and Company No. 4 ($X = 2,040$); Company No. 2 ($X = 330$) and Company No. 4; and between Company No. 4 and Company No. 5 ($300$). Unfortunately, the limited number of observations from Company No. 4 ($N = 3$) and Company No. 1 would seem to raise serious questions about the value of the results.

Summary

Data on 256 agents from 5 life insurance companies with respect to 9 variables was obtained. After means and standard deviations were found, Analysis of Variance was used to test for significant differences between groups and within groups of agents and companies with respect to these variables.

Among the more important findings were that (1) single agents were significantly younger than married and divorced agents ($p .01$) and left employment much sooner
than married agents (p .05); (2) considerable variation in mean ages existed among the companies, with the range from 27.64 years to 39.5 years producing significant differences between companies that reached the .01 level in 3 cases; and (3) a significant difference among companies developed because of a wide range in mean days of employment (267.17 to 874.25), reaching the .01 level in 2 instances. "Height," "Weight," "Ponderal Index," "Volume," and "Premiums" were not significantly different with respect to marital status for the 5 companies. The significant difference between height and weight for males and females was anticipated. The significance that emerged from a comparison of earnings for each of the 4 companies would appear to be of questionable value.

In the following chapter, the data will be subjected to regression and correlation analysis in order to test the hypotheses in the study.
CHAPTER IV

TESTS OF THE HYPOTHESES

The Primary Hypotheses

In this chapter, the primary hypothesis and the secondary hypothesis are tested. In the first instance, it was hypothesized that there is a positive correlation between (1) height, (2) weight, and (3) an index combining height and weight, and the sales production of ordinary life insurance salesmen as measured by volume, premiums, and earnings (where available.) To test the primary hypothesis, the data obtained was first subjected to simple linear regression and correlation analysis, and then to multiple regression and correlation analysis.

The regression equation chosen for the initial treatment of data is of the following form: \( y = a + \hat{B}X \);
where \( y \) = dependent variable, \( a \) = intercept of the equation, \( \hat{B} \) = estimated slope coefficient (b), and \( X \) = independent variable.

Results of Simple Linear Regression

Tables 15 and 16 present the results of this treatment. Where "Volume" was employed as the dependent variable, all independent variables except "Age" (which closely approached significance) and "Ponderal Index" reached significance. "Height," "Weight," and "Length of Employment" reached the
.01 level, with the latter close to the .001 level, but in all cases the low coefficients of determination ($r^2$'s) considerably diminished the value of these variables as predictors of "Volume." The $r^2$'s were as follows: for Height, 0.024; for Weight, 0.027; and for Length of Employment, 0.032.

A similar pattern emerged when "Premiums" was employed as the dependent variable. All independent variables except the "Ponderal Index" reached significance (Age = $p<.05$; Length of Employment, Height, and Weight = $p<.01$), but $r^2$'s ranged from 0.013 for "Age" to 0.029 for "Length of Employment." With so much unexplained variance in each instance, it appears rather conclusively that none of these variables is predictive with respect to "Premiums."

In the smaller sample ($n = 72$) of agents for whom "Earnings" were available, only "Length of Employment" was significant ($p<.05$) with an $F$ of 4.780, but $r^2$ was low at 0.064, although higher than for the results obtained with "Volume" and "Premiums."

Simple Correlation Coefficients

Table 17 presents simple coefficients of correlation, all of which were low except for "Height" vs. "Weight (0.67) which was positive and highly significant as might be expected,
TABLE XV

SIMPLE REGRESSION ANALYSIS VALUES OF DEPENDENT
WITH ASSORTED INDEPENDENT VARIABLES

\[ n = 256; \text{d.f.} = 1,254 \]

\[ y = a + \hat{B}x \]

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Constant (a)</th>
<th>Independent Variable</th>
<th>( r^2 )</th>
<th>Standard Error</th>
<th>( \hat{B} )</th>
<th>Standard Error of ( \hat{B} )</th>
<th>Value of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>11.371</td>
<td>Age</td>
<td>0.010</td>
<td>59.830</td>
<td>0.621</td>
<td>0.382</td>
<td>2.642^a</td>
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<tr>
<td>Volume</td>
<td>19.631</td>
<td>Length of Employment</td>
<td>0.032</td>
<td>59.156</td>
<td>0.028</td>
<td>0.009</td>
<td>8.516**</td>
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<tr>
<td>Volume</td>
<td>-179.808</td>
<td>Height</td>
<td>0.024</td>
<td>59.429</td>
<td>3.014</td>
<td>1.219</td>
<td>6.115**</td>
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<td>Weight</td>
<td>0.027</td>
<td>59.334</td>
<td>0.360</td>
<td>0.137</td>
<td>6.334**</td>
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<td></td>
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<tr>
<td>Premiums</td>
<td>0.119</td>
<td>Age</td>
<td>0.014</td>
<td>1.002</td>
<td>0.012</td>
<td>0.006</td>
<td>3.497*</td>
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<tr>
<td>Premiums</td>
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<td>Length of Employment</td>
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<td>0.994</td>
<td>0.001</td>
<td>0.001</td>
<td>7.546**</td>
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<td>Height</td>
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<td>0.020</td>
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<td>Weight</td>
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<td>8.325**</td>
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<td>Ponderal Index</td>
<td>0.003</td>
<td>1.008</td>
<td>0.093</td>
<td>0.207</td>
<td>0.202</td>
</tr>
</tbody>
</table>

^a - approached significance

^p - F level insufficient for further computations

**p<.01

*p<.05
TABLE XVI

SIMPLE REGRESSION ANALYSIS VALUES OF DEPENDENT
WITH ASSORTED INDEPENDENT VARIABLES

n = 72; d.f. = 1,70

\( y = a + \hat{b}x \)

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Constant (a)</th>
<th>Independent Variable</th>
<th>( r^2 )</th>
<th>Standard Error</th>
<th>( \hat{b} )</th>
<th>Standard Error of ( \hat{b} )</th>
<th>Value of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings</td>
<td>0.183</td>
<td>Age</td>
<td>0.009</td>
<td>0.619</td>
<td>0.007</td>
<td>0.008</td>
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<td>Earnings</td>
<td>0.181</td>
<td>Length of Employment</td>
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<td>0.602</td>
<td>0.001</td>
<td>0.001</td>
<td>4.780*</td>
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<tr>
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<td>Height</td>
<td>0.001</td>
<td>0.622</td>
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<td>0.033</td>
<td>0.006</td>
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<tr>
<td>Earnings</td>
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<td>Weight</td>
<td>0.001</td>
<td>0.622</td>
<td>0.001</td>
<td>0.003</td>
<td>0.061</td>
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<td>Earnings</td>
<td>0.492</td>
<td>Ponderal Index</td>
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<td>0.615</td>
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<td>0.232</td>
<td>1.757</td>
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</tbody>
</table>

*p<.05
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<th>Height</th>
<th>Weight</th>
<th>Volume</th>
<th>Premiums</th>
<th>Index</th>
<th>Earnings&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
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<td>0.05</td>
<td>0.10</td>
<td>0.12</td>
<td>-0.10</td>
<td>0.10</td>
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<tr>
<td>Length of Emp.</td>
<td>-0.04</td>
<td>-0.01</td>
<td>0.18**</td>
<td>0.17**</td>
<td>-0.05</td>
<td>0.25*</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>0.67***</td>
<td>0.15**</td>
<td>0.17**</td>
<td>-0.08</td>
<td>-0.01</td>
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<td></td>
</tr>
<tr>
<td>Weight</td>
<td>0.16**</td>
<td>0.18**</td>
<td>-0.05</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td></td>
<td></td>
<td>0.96***</td>
<td>-0.01</td>
<td>0.97***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premiums</td>
<td></td>
<td></td>
<td></td>
<td>-0.03</td>
<td>0.98***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td></td>
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<td></td>
<td></td>
<td>-0.16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>n = 72

**p < .01
***p < .001
* p < .05
and "Premiums" vs. "Volume" (0.96), "Premiums" vs. "Earnings" (0.98), and "Volume" vs. "Earnings" (0.97) where the correlations were positive and almost perfect, also as anticipated.

"Height" was positively correlated with "Volume" (0.15) (p<.01) and "Premiums" (0.17) (p<.01), and was negatively correlated with "Age" (-0.14) (p<.05), "Length of Employment" (-0.04), "Earnings" (-0.01), and the "Ponderal Index" (-0.08). The fact that "Earnings" is positively correlated with "Volume" and "Premiums", yet negatively correlated with "Height" might be explained by the differences in the two samples, (n = 256 versus n = 72). When the "Earnings" sample of 72 agents was analyzed separately, it was found that negative correlations also emerged between the "Ponderal Index" and "Volume" (-0.16), "Premiums" (-0.15), and "Earnings" (-0.16), none of which was significant.

"Weight" was positively correlated with "Earnings", but the correlation was low (0.03) and insignificant. "Weight" was also positively correlated with "Volume" (0.16) (p<.01), "Premiums" (0.18) (p<.01), and "Age" (0.05). This variable was negatively correlated with "Length of Employment" (-0.01) and the "Ponderal Index" (-0.05), both low and insignificant. As previously explained, the values for the "Ponderal Index" were computed in terms of absolute differences from the "ideal" value of 12.500 for
treatment by regression analysis. Thus, a negative correlation between the "Ponderal Index" and an independent variable used in the study would tend to suggest a curvilinear relationship between the index and that variable, i.e., the greater the difference between the ponderal index score for a given agent and the value of 12.500, the less effective as a salesman that agent should be. In other words, as the absolute difference rises, the measure of sales production employed declines. The coefficients obtained here were both low and insignificant, but in the hypothesized direction.

The correlation between "Earnings" and "Age" is positive (0.10), and also between "Earnings" and "Length of Employment" (9.25) (p .05), both being interesting, but not unexpected, findings.

The "Ponderal Index" as a measure of "stature" in this study is negatively correlated with all independent variables. Thus, while both "Height" and "Weight" are positively correlated with "Volume" and "Premiums," and "Weight" is positively correlated with "Earnings," the index and the other variables tend to move in opposite directions. Negative correlations with the index were observed for "Age" (-0.10), "Length of Employment" (-0.05), "Height" (-0.08), "Weight" (-0.05), "Volume" (-0.01), and "Premiums" (-0.03). It should be restated that the coefficients that bear upon the primary hypothesis tend to be low, and are not significant.
Thus, from simple regression and correlation analysis, it would appear that there is some support for a relationship between "Height" and "Weight," separately, and "Volume" and "Premiums" as indicated by significant values of F, but not between "Height" and "Weight" and "Earnings." However, because of the low values of $\chi^2$ observed, the value of "Height" and "Weight" as predictors of "Volume" and "Premiums" is severely limited. This is generally supported by the correlation coefficients obtained, which, while significant, were low.

With respect to "Stature," as measured by the "Ponderal Index," there seems to be no support for the hypothesized relationship between "Stature" and "Volume," "premiums," or "Earnings," as all F values were insignificant, and all correlation coefficients were negative, low, and insignificant. Thus it remains to subject the data to a stronger test.

Multiple Regression and Correlation

In the second stage, the data were subjected to multiple linear regression and correlation analysis, using a regression equation of the following form: $y = a + \hat{\beta}_1x_1 + \hat{\beta}_2x_2 + \ldots + \hat{\beta}_nx_n$, where $y$ = dependent variable; $a =$ intercept of the equation; $\hat{\beta}_i =$ estimated slope coefficient (b) for the independent variable employed; and $x_i =$ the independent variable employed. The program utilized was the step-wise regression program in the Statistical Program For the Social Sciences (SPSSS) package, Version 6.00.
Results of Multiple Regression and Correlation

Table 18 presents the best regression equation that emerged from the trade-off between standard error, $R^2$, and significance where "Volume" was used as the dependent variable against the independent variables in the study.

The values for the estimated regression coefficients ($\hat{B}$) were both significant in the equation selected. For "Length of Employment" and "Weight" the estimated regression coefficients that were obtained ($F$ of $\hat{B} = 8.834$ and $9.288$, respectively) were highly significant at the .001 level.

The value for the multiple correlation was positive at 0.244 and the value of $F$ for the regression equation (7.991) reached significance at the .01 level, but the value of $R^2$ (explained variance) was disappointing at 0.052. Thus, the equation was a good one, with positive $R$ value and significant $\hat{B}$ values for "Weight." Unfortunately, however, the failure of "Height" and the "Ponderal Index" to reach significance and the low $R^2$ value, indicating a high percent of unexplained variance, offer extremely limited confirmation of the primary hypothesis, at best, with respect to "Volume."

Premiums

On the basis of significance, $R$, and $R^2$, a better equation occurred when "Premiums" was employed with the same independent variables in step-wise regression analysis as above. Table 19 shows the estimated regression coefficient
TABLE XVIII
MULTIPLE REGRESSION AND CORRELATION
Dependent Variable = Volume
n = 256; d.f. = 2,253

<table>
<thead>
<tr>
<th>Constant</th>
<th>Independent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length of Employment</td>
</tr>
<tr>
<td>B</td>
<td>0.028</td>
</tr>
<tr>
<td>Standard Error of B</td>
<td>0.009</td>
</tr>
<tr>
<td>F of B</td>
<td>8.83**</td>
</tr>
</tbody>
</table>

Adjusted $R^2 = 0.052$
Std. Error of Regression = 58.441
$F$ of Regression = 7.991**
$R = 0.244$

**p<.01
*p<.05
### TABLE XIX

**MULTIPLE REGRESSION AND CORRELATION**

**Dependent Variable + Premiums**

\( n = 256; \ d.f. = 3,252 \)

<table>
<thead>
<tr>
<th>Constant ( = -1.161 )</th>
<th>Independent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight</td>
</tr>
<tr>
<td>( \hat{\beta} )</td>
<td>0.007</td>
</tr>
<tr>
<td>Standard Error of ( \hat{\beta} )</td>
<td>0.002</td>
</tr>
<tr>
<td>( F ) of ( \hat{\beta} )</td>
<td>8.224**</td>
</tr>
</tbody>
</table>

\[ \text{Adjusted } R^2 = 0.060 \]

\[ \text{Std. Error of Regression} = 0.976 \]

\[ F \) of Regression = 6.406** \]

\[ R = 0.266 \]

**p .01**

**p .05**
for "Length of Employment" and "Age" ($F$ of $\hat{B} = 7.456$ and $2.675$, respectively) to be significant at the .01 level and .05 levels, respectively, and the coefficient for "Weight" ($F$ of $\hat{B} = 8.224$) to be highly significant ($p<.01$).

The value of $F$ for the regression equation (6.406) was significant beyond the .01 level. Both "Height" and "Ponderal Index" again failed to produce a significant value for the estimated regression coefficient ($\hat{B}$), and therefore were not fitted into the equation. Although the value for $R^2$ was slightly higher than in the equation utilizing "Volume" as the dependent variable (0.060 vs. 0.052), it was still so low as to leave substantial unexplained variance. Thus, there is again very limited confirmation of the primary hypothesis with respect to "Weight" vs. "Premiums", but none with respect to "Height" vs. "Premiums," or "Ponderal Index" vs. "Premiums." None of the independent variables in either equation can be considered to be predictive of success as measured by "Volume" and/or "Premiums."

**Earnings**

From the smaller subsample of 72 agents for whom earnings data were available, neither "Height" nor "Weight," nor "Ponderal Index" emerged with significant estimated regression coefficients from step-wise regression. In fact, only "Length of Employment" was found to bear a significant relationship to "Earnings" ($F$ of $\hat{B} = 4.780$), ($p<.05$), as indicated in Table 20.
TABLE XX
MULTIPLE REGRESSION AND CORRELATION
Dependent Variable = Earnings
n = 72; d.f. = 1,70

<table>
<thead>
<tr>
<th>Constant = 0.181</th>
<th>Independent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length of Employment</td>
</tr>
<tr>
<td>( \hat{B} )</td>
<td>0.001</td>
</tr>
<tr>
<td>Standard Error of ( \hat{B} )</td>
<td>0.001</td>
</tr>
<tr>
<td>( F ) of ( \hat{B} )</td>
<td>4.780</td>
</tr>
</tbody>
</table>

Adjusted \( R^2 \) = 0.051
Std. Error of Regression = 0.602
\( F \) of Regression = 4.780*
\( R \) = 0.253

*p .05

The value for \( R \) (0.253) was positive, if not high, and \( R^2 \) was in the same range (0.051) as previously found, being too low for the independent variable "Length of Employment" to be a predictor of "Earnings." Thus, for "Earnings," the primary hypothesis cannot be sustained.

Test of the Secondary Hypothesis

The secondary hypothesis of the study was that the respondent companies tend to hire taller and heavier applicants for positions as ordinary life insurance agents.
A comparison of heights and weights for the agents in the sample and a national sample of males and females\textsuperscript{1} was made by using a variation of the t test in which the population means of two independent samples were tested.\textsuperscript{2}

The basic hypothesis is $H_0$: $\mu_1 = \mu_2$, that the mean height (weight) is not different between the sample and the population of the United States; or, alternatively, $H_1$: $\mu_1 > \mu_2$, that the mean height (weight) of the sample is greater than that for the U.S. population as a whole.

The basic test is:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sigma^2}{n_1} + \frac{\sigma^2}{n_2}}}; \text{ and}$$

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\Sigma^2 \sqrt{\frac{1}{n_1} - \frac{1}{n_2}}}$$

Results

Table 21 presents the results for both men and women.

For men, mean height was 68.2 inches for the U.S. population


**TABLE XXI**

**COMPARISON OF TWO POPULATION MEANS USING INDEPENDENT SAMPLES**

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Population Mean</td>
<td>Population Variance</td>
</tr>
<tr>
<td>Height</td>
<td>68.2</td>
<td>.6040</td>
</tr>
<tr>
<td>Weight</td>
<td>168.0</td>
<td>.1128</td>
</tr>
<tr>
<td>Height</td>
<td>63.0</td>
<td>.0039</td>
</tr>
<tr>
<td>Weight</td>
<td>142.0</td>
<td>.0800</td>
</tr>
</tbody>
</table>

*Critical value 3.291 at the .001 level using the t statistic*
versus 70.85 inches for the sample of insurance salesmen. Mean weight was 168 pounds for the U. S. population against 181.46 pounds for the insurance sample.

Thus, the sample of male agents had a mean height 2.65 inches greater than that for the general population, and a mean weight 13.46 pounds greater than that for the U. S. population. These differences resulted in extremely high values for t, significant beyond the .001 level.

For women, the mean height of the sample of agents was 1.4 inches greater than that for the U. S., (64.4 inches vs. 63 inches), whereas mean weight was 7.96 pounds less than that for the U. S. population (134.04 pounds to 142 pounds). The differences, which showed the insurance women to be taller and lighter, were not as striking as for the insurance men (who were taller and heavier), but were still beyond the .001 level of significance.

It was not possible to use the Ponderal Index as a measure of stature, since the sample data for the U. S. population did not contain any reference to it, and therefore it was not possible to compute the variance \( \sigma^2 \) needed in this test.

It is possible, based on data available, to state that the insurance companies in the sample tended to hire taller and heavier males than were found in the sample of U. S. males, and tended to hire taller and lighter females than those in the U. S. sample.
Summary

When the sample data were subjected to simple regression and correlation analysis, the following findings emerged:

1. Volume was significantly related to "Height" and "Weight" (p<.01), but not to "Ponderal Index." Correlation coefficients (r) were positive and significant, but low between "Height" and "Volume," and "Weight" and "Volume," and negative, low, and not significant between "Volume" and "Ponderal Index." Coefficients of determination (r^2) were low in all cases, being less than 0.03.

2. Premiums were significantly related to "Height" and "Weight" (p<.01), but not to "Ponderal Index." Values for r were positive, significant and low between "Premiums" and both "Height" and "Weight," and negative, low, and not significant between "Premiums" and "Ponderal Index."

3. There was no significant relationship between "Earnings" and either "Height," "Weight," or "Ponderal Index," in any respect.

When the data were subjected to multiple regression and correlation analysis, the following findings appeared:

1. Volume was significantly related to "Weight," but not to "Height" and the "Ponderal Index." "Length of Employment" and "Age" were also significant at the .01 level, and R was positive for four variables. The R^2 was very low, negating the predictive value of the equation.

2. Except for the fact that the regression equation was slightly better in all respects, substantially the same conclusions can be stated for "Premiums as for "Volume." ("Age" did reach the .05 level of significance).

3. Only "Length of Employment" was significantly related to "Earnings." The value for R^2 was too low to be predictive.
The hypothesis that taller men and/or women tend to be more successful ordinary life insurance salesmen as measured by "Volume," "Premiums," or "Earnings" received only weak support from the results of this study.

The hypothesis that heavier men and/or women tend to be more successful ordinary life insurance salesmen as measured by "Volume" and "Premiums" (but not "Earnings") has received very qualified confirmation from the results of this study.

The hypothesis that men and/or women who more nearly approach their ideal stature (as measured by the "Ponderal Index") are more successful ordinary life insurance salesmen as measured by "Volume", "Premiums," and "Earnings" has received no confirmation from the results of this study, although the results were in the hypothesized direction.

With respect to the question of how the subjects in the sample of insurance agents compared with a sample of men and women representing the United States population, it was found that:

1. Males in the insurance sample were significantly taller and heavier than males in the U. S. sample.

2. Females in the insurance sample were significantly taller and lighter than females in the U. S. sample.
The hypothesis that the respondent companies tend to hire men who are taller and heavier than the national averages can be sustained by the results of this study.

The hypothesis that the respondent companies hire women who are taller than the national averages can be sustained by the results of this study, but not that they are heavier.

The findings of this study and their implications are discussed in the fifth and concluding chapter which follows.
CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS OF THE STUDY

Hypotheses

The major research hypothesis was that there is a positive correlation between "Height" and "Weight," separately, and sales production (as measured by "Volume," "Premiums," and "Earnings"), and between "Stature" (as measured by the "Ponderal Index") and sales production.

The major hypothesis was first tested by simple regression and correlation analysis. Each independent variable - "Height," "Weight," and "Ponderal Index" - was related to each dependent variable - "Volume," "Premiums," and "Earnings." Subsequently, multiple regression and correlation analysis was used, in which the independent variables in the study were related to the dependent variables in an attempt to derive statistically significant and predictive equations.

Two other independent variables, namely "Age," and "Length of Employment," were also used in the above statistical tests, in order to strengthen the validity of the study. While a meaningful study was possible, the fact that more variables were not available from all respondent companies has to be viewed as a limitation of the study.
On the other hand, it was felt that the large number of agents in the sample may indeed have tended to offset the effect of the lack of other variables so that an "averaging out" did occur as hoped.

The secondary hypothesis was that the respondent companies, consistent with past studies that would so suggest, tend to hire taller and heavier applicants who more nearly approach their "ideal" statures than the mean heights, weights, and statures found in a national sample of men and women taken from the U. S. population as a whole.

As stated in Chapter Four, a comparison of heights and weights for male and female agents in the insurance sample and a national sample of males and females was made by using a version of the "t" test, in which the population means of two independent samples were tested for statistically significant differences.

It was not possible to compare the "statures" of the agents in the insurance sample with the "statures" of those persons in the national sample because no figures for the "Ponderal Index" or any other similar measure were available for the national sample. Thus, it was not possible to compute any variances in "statures" from the national sample, a necessary computation in the test employed. Even so, some highly significant findings did emerge from this analysis, and are discussed later.
Sample and Variables

Data was submitted for 256 agents by five respondent companies covering a three-year period from 1971-1974. The data included the following information for each agent from all companies: (1) age; (2) sex; (3) marital status; (4) height in inches; and (5) weight in pounds, all at the time of appointment, plus (6) length of employment in days; (7) dollar volume of new life insurance delivered per month; and (8) premiums in dollars per month.

A ninth variable - earnings in dollars per month - was supplied for 22 agents by three companies on a "data available" basis. A fourth company was able to provide this information accurately and completely for each of its 50 agents in the sample, thus raising the total to 72 agents for whom earnings figures were available. The fifth company was unable to produce any earnings figures for any of its agents.

A tenth variable - "Ponderal Index" - was derived for each agent by dividing his or her height in inches by the cube root of his or her weight in pounds, as previously mentioned. The resulting index figure was used as a measure of "stature," combining height and weight in order that they might be more easily related to the measures of production: "Volume," "Premiums," and "Earnings." (As previously explained, the variable was computed in terms of absolute differences from the
"ideal" index figure of 12.500 for testing by regression and correlation analysis).

In Chapter Three, means and standard deviations were calculated for all variables with respect to the sample as a whole; then the data was broken down on the basis of "male versus female," by marital status (single, married, divorced), and for each of the five respondent companies in the study.

Analysis of variance was then used to seek significant differences between any of the different categories of subject agents with respect to any of the variables in the study. A number of statistically significant differences were developed, and these will be discussed shortly.

Findings From Testing the Primary Hypotheses

Simple Regression Findings

Simple regression analysis involves relating a dependent variable, such as, "Volume," "Premiums," or "Earnings" to a single independent variable, such as "Height," "Weight," or "Ponderal Index"

1. With respect to the hypothesis that taller and/or heavier life insurance salesmen are better producers, both "Height" and "Weight" reached significance (p<.01) when related to "Volume" and "Premiums." In this instance the findings tend to confirm many of the studies in the literature which would imply that taller and heavier salesmen somehow perform in a more
successful manner than those less physically endowed.\textsuperscript{1} As stated earlier, however, the value of the findings in predicting "Volume" or "Premiums" must be considered negligible, because of the very low value for $\chi^2$.

2. With respect to the hypothesis that life insurance agents who more nearly approach their "ideal statures," (as measured by the "Ponderal Index"), are better producers than those who do not, it was noted that the variable "Ponderal Index" had a slight negative slope coefficient, but a low $\chi^2$, and did not reach significance when related to either "Volume" or "Premiums." Thus, at this point in the analysis, the results are inconclusive at best.

3. Only "Length of Employment" reached significance ($p<.05$) when related to "Earnings" - no other variable did so. The simple coefficient of correlation ($r$) was positive and significant at 0.25, but the simple coefficient of determinations ($r^2$) was low at 0.064, as previously discussed. ("Length of Employment" also reached significance with "Volume" and "Premiums" ($p<.01$), but with $r^2$'s again being too low to claim predictive value. "Age" reached the .05 level with "Premiums," also with low $r^2$ (0.014); in other words, the results were the same).

\textbf{Findings from Multiple Regression}

Next, step-wise regression analysis was employed in an attempt to derive predictive equations for "Volume," "Premiums," and "Earnings."

1. With respect to the hypothesis that taller life insurance agents are better producers, the independent variable "Height" failed to reach significance in any of the resultant equations. This, of course, was contrary to the preponderance

\textsuperscript{1}For example, Saul D. Feldman, \textit{op. cit.}, Ralph Keyes, \textit{op. cit.}, David L. Kurtz, \textit{op. cit.}, and others.
of studies cited in the literature, and clearly indicates that the results of this study do not enhance the fact or fiction of "Height" alone as a factor in sales production.

2. With respect to the hypothesis that heavier life insurance agents tend to be the better producers, "Weight," on the other hand, was significant \( p < .00 \) in the equation for "Volume" and also in the equation for "Premiums," (but not for "Earnings"). Such a significant correlation with "Volume" and "Premiums" would tend to agree with the philosophy that "the bigger they are, the better" as salesmen, and possibly with those studies suggesting that men prefer masculinity in other men. With the majority of the agents in this sample being males, presumably calling on male heads of families for the most part, this is a distinct possibility. The low \( R^2 \)'s of both the equation for "Volume" and for "Premiums" greatly reduce the predictive value of "Weight" and the other variables which were fitted into these equations - "Age" and "Length of Employment."

As many studies have shown, there are numerous variables that enter into the success or failure of life insurance salesman. "Weight" alone could hardly be expected to be a key variable, but if in a hypothetical situation all other variables possessed equal value in the hiring decision, "Weight" would be worthy of some slight consideration.

3. With respect to the hypothesis that life insurance agents who more nearly approach their "ideal stature" are more successful than those who do not, the "Ponderal Index" again failed to reach significance in the equations for "Volume," "Premiums," and "Earnings." Even though the slope coefficients were in the hypothesized direct, these findings do not adequately support

\[ \text{2. David L. Kurtz, op. cit.} \]

\[ \text{3. R. P. Wallace, op. cit., and Ellington Darden, op. cit.} \]

\[ \text{4. Joe H. Murrey, Jr., op. cit.} \]
the early studies by Burtt\(^5\) and Swartz\(^6\) which found that "well-built" agents, and not extremes, tend on the whole to be better performers. Nor did they support the great number of studies cited in Chapter Two favoring the "mesomorph" (trim, athletic) body type as the most desirable in our society.

The results tend to suggest that it is not tallness, but perhaps "bigness" that may be a factor in sales production, and there is just a hint that it may be the trim, well-built, athletic type that performs best, all other things being equal. The failure of the "Ponderal Index" to reach significance in any equation, and the low \(r^2\) for "Weight" negate the predictive value of these variables as determinants of success in life insurance selling, same time, if all other signs are favorable, the larger, more well-built agent may deserve a slight competitive edge. The problem lies in the multitude of intangible factors that mitigate against all other factors ever "being equal," and the tremendous variation in the abilities of sales managers to select those agents who will later become successful.\(^7\) This is but another reason why the results of this study afford only a limited confirmation of the primary hypothesis.

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\(^5\) Harold E. Burtt, *op. cit.*

\(^6\) George O. Swartz, *op. cit.*

\(^7\) Joe H. Murrey, Jr., *op. cit.*
The only variable significantly related to "Earnings" was "Length of Employment." It is certainly not unreasonable to expect that the longer an agent survives in the life insurance business, the greater his earnings will normally be, because of renewal commissions, even if he produces the same amount of premiums each year.

It is not completely clear why none of the other variables were significantly related to "Earnings," especially since "Earnings" are closely related to "Premiums" when the respondent companies all operate under the laws of the same state of domicile and must necessarily have roughly similar commission scales. The best regression equation in the study was developed with "Premiums" as the dependent variable. However, earnings data was available for only 72 agents, 22 of whom were non-randomly selected. Thus, the limitation that the results for "Earnings" cannot be said to be representative should be restated at this time. This was indicated in chapter four, and appears to be the most logical explanation for the divergent results for this variable.

With respect to the other findings, it is felt that, because of the size and method of selecting the sample, they have considerable relevance to the nation as a whole and definitely justify further research in the area. While the respondent companies were all Texas companies, their agency forces were composed of agents from virtually
every state in the union. A national sample of companies could conceivably afford an opportunity for a more comprehensive study. However, the most frustrating problem will surely be that of attempting to obtain a considerable number of independent variables from a sufficient number of companies.

Findings from Testing the Secondary Hypothesis

**Males**

1. An hypothesis that the respondent companies tend to hire men who are taller and heavier on the average than are found in the general population was supported without qualification by the results of this study. The findings of Burtt\(^8\) that salesmen on the whole are taller and heavier than members of the general male population were supported, as well as the study by Kurtz\(^9\) ("the bigger they are the better!"), and the conviction of Stevens\(^10\) that many sales managers really believe taller men are better salesmen. The findings in this study were significant beyond the .001 level, with the men in the insurance sample over two and a half pounds heavier than the national sample of U. S. males Perhaps this hiring practice can be attributed in part to the fairly prevalent image of the "tall Texan."

**Females**

2. An hypothesis that the respondent companies tend to hire women who are taller (by 1.4 inches) and lighter (by nearly eight pounds) than  

\(^8\)Harold E. Burtt, *op. cit.*  
\(^9\)David L. Kurtz, *op. cit.*  
\(^10\)Robert E. Stevens, *op. cit.*
women in the national sample can also be supported by the findings of this study (p<.001). Here, the waters are largely uncharted. Percentage-wise, there are not many women in life insurance sales, and there do not appear to be any studies of female agents as such in the literature. This would seem to be an excellent area for future research if the anticipated influx of women into the field should occur. The women in the insurance sample are obviously trimmer, perhaps more feminine, than members of the general female population. The studies cited Chapter Two indicate that both men and women tend to agree on definitions of femininity, generally preferring the mesomorphic or classic female form, with some instances in which the ectomorph or thin type of female form was preferred by young females themselves. Nevertheless, no studies were encountered which really dealt directly with the hiring of women into sales forces. Much remains to be begun.

Incidental Findings of Significance

**Stature**

Most of the studies in the literature are concerned with the problems of obesity. The sample of insurance agents in this study is not a sample of "obese persons." With a mean height of almost 5' 11" and mean weight of 181 pounds for men and almost 5' 4 1/2", 134 pounds for women, the men may be taller and heavier than the national average, but they are certainly not obese. The women are actually lighter than the national average. Both could qualify for so-called "preferred risk" policies from most

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11 Ellington Darden, *op. cit.*

12 See, for example, Sheila R. Caskey and Donald W. Felker, *op. cit.*
life insurance companies, based on height and weight alone. The mean Ponderal Index for males was 12.55, almost perfectly symmetrical, with 12.500 being commonly accepted as an ideal index figure. The mean Ponderal Index for females was 12.65, which would be considered slightly more on the "slender" side. The overall sample mean was 12.56, which would certainly suggest that applicants who more nearly approach their "ideal" statures receive preferential treatment in hiring, even though the lack of index figures from the national sample made comparisons impossible.

Males vs. Females

Surprisingly, there were no statistically significant differences between males and females in the sample, except that the males were taller and heavier, as expected. There were only 22 women in the insurance sample, who comprised about 8.6% of the total number of agents. This is roughly similar to the percentage of women in the industry at the time this study began. No one knows exactly why more women have not entered the life insurance sales field; certainly the nature of the business is such

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14 Ibid.
that there have been few, if any, barriers to entry. The next decade could well see an increase in the number of female life insurance agents.  

Marital Status

With respect to marital status, some significant differences did arise between single agents and both married and divorced agents at the .01 level with respect to "Age." The single agents, who comprised 14.4% of the sample (as opposed to the fact that single adults over age 14 comprise 25.3% of the U. S. population) were considerably younger, as might be expected. Many companies feel that single agents, perhaps because of youthful immaturity and inexperience, are not as productive as married agents, as is reflected in higher turnover rates, etc.  

This study would tend to further confirm this finding, since the mean length of employment for single agents was 281 days versus 477 days for the married agents in the sample. This difference of 196 days in the means was significant at the .05 level.


17 See, for example, Wayne K. Kirchner, Carolyn S. McElwain, and Marvin D. Dunnette, "A Note on the Relationship Between Age and Sales Effectiveness," Journal of Applied Psychology, XLIV (1960), 92-93.
Slightly over 3% of the agents in the sample fell into the category of "Divorced," which appears to be in line with nationwide figures on marital status found in the general population. In 1970, 3.3% of the adults over age 14 in the U. S. population gave their status as "divorced." Approximately 82.4% of the insurance sample were married, suggesting that the greater stability purported to accompany marriage was perceived to be an advantage by those making the hiring decisions.

It was not possible to monitor the sample to the extent that changes in marital status after appointment could be considered any more than changes in height and/or weight, if any, could be determined. Admittedly, the impact of marital status, age, sex, height, weight, etc, at time of appointment is of paramount importance, but it would also be desirable to ascertain if any changes in performance occur with changes in marital status (married to divorced or single to married, for example) or gains or losses in weight. Such changes are relatively common place in our society today, and any impact they may have on performance would be a topic for future research.

**Differences Between Companies**

There were some significant differences between several of the respondent companies in regard to "Earnings,"

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"Age," and "Length of Employment." As suggested earlier, the figures for Earnings are probably subject to question, except for Company Number Two, which gave data for all agents in the study. Insofar as age was concerned, Company Number Two (mean age = 27.64 years) and Company Number Five ($\bar{X} = 30.94$) with younger average ages differed from the others in the sample with older sales forces. Some significant differences developed with respect to Length of Employment because of the considerable variation in mean days employed: Company Number One ($\bar{X} = 874.25$) was high, with Company Number Four ($\bar{X} = 267.17$) inexplicably having the highest mean age ($\bar{X} = 37.29$) and the lowest mean number of days of employment by its agency force.\textsuperscript{19} Company Number Three differed from these two extremes with its mean of 523.35 days.

These findings no doubt have the greatest interest value for the insurance companies in the sample. It was hoped that there might be significant differences to be observed in the hiring practices of small versus large companies with respect to height, weight, or stature, but such differences did not arise. There does appear to be some potential for this general method of developing

\textsuperscript{19} Although this position may be changing, many companies tend to hire between the ages of 25 and 45. See, for example, Kirchner, McElwain, and Dunnette, \textit{op. cit.}.
"Company profiles" and comparing different companies on a number of variables, almost without limit. For example, Company Number Two, with the lowest mean age ($\bar{X} = 27.64$), had the tallest ($\bar{X} = 71.28$ inches) and heaviest ($\bar{X} = 183.54$ pounds) agents, with a Ponderal Index of 12.59, indicating a trim, or mesomorphic type of sales force. Mean Length of Employment was 520.64 days, yet mean earnings were $330 per month, which would have to be considered rather low, it seems. Thus, the greatest promise from the results of subjecting the data to analysis of variance may be in what these results could tell sales managers about themselves and their competitors.

Conclusions

There is much in the literature to suggest that persons who are taller, heavier, and well-proportioned are perceived more favorably by society than those less favorably endowed in a physical sense. The literature suggests that those who are perceived more favorably in turn develop a more favorable self-concept, a very necessary and vital element in successful selling. These two factors should interact to enable persons possessing other essential qualities to become more successful salesmen. The findings of this study of life insurance salesmen gave only limited confirmation and only with respect to weight when related to volume and premiums.
The literature suggests very strongly that in our society, many sales managers tend to believe that taller, heavier, and well-proportioned salesmen are better performers. They consequently tend to hire such persons for sales positions.

The results of this study supported these findings for males. The companies in this study tended also to hire women who were taller, but who were lighter than women in the general U. S. population.

There are a number of far-reaching implications for the life insurance industry from this study. The results have hinted that weight might, under some circumstances, be a factor worthy of consideration in agent selection. Realistically, however, these results have not established weight as a predictor of success in selling life insurance.

If that be true, then how can the obvious tendency toward hiring applicants whose heights and weights differ significantly from the norm be justified? If this practice is a general one, it should be justified or discontinued; otherwise, it could conceivably subject the embattled insurance industry to further problems. Under the provisions of the Civil Rights Act of 1964 as amended, it is not too unrealistic to contemplate that militant organizations of persons who differ in stature in some material respect might agitate strongly and successfully for an end to this type of discrimination in hiring, much as women are doing at the present time in many sectors of society.
Further research is certainly indicated by the results of this study. This research should take two forms. First, a national sample with as many of the selection variables as can be obtained should be studied, no matter how difficult it may be to obtain such data. If a stronger case can be made for the several aspects of stature as predictors of success, so much the better. If not, such a study would serve to dispel what many believe to be the "folklore" of height, weight, and stature with respect to this facet of life in our society, and to prepare the companies for an overhauling of selection practices where indicated.

Secondly, it is quite possible that there may be differences from one sales force to another. Some aspect of stature may be a factor in productivity for one company, and not for another. Thus, it is strongly recommended that each company with a sales force of any size determine for itself whether or not stature is a defensible factor in sales productivity, and proceed in accordance with its findings. If it cannot be shown that hiring on the basis of stature, consciously or unconsciously, is a defensible practice, then the practice should be changed, or never begun, as the case may be. A little foresight may prevent costly litigation and unfavorable publicity at some later date, not to mention the matter of equitable treatment for all sales applicants.
A number of topics for investigation can be incorporated into the above research. Female agents comprised less than 10% of the sample studied, and this seems to be true industry-wide. The fact that the results of this study showed no significant differences between male and female productivity could strengthen the demands of women for a higher percentage of sales openings, if they chose to seek them. The matter of female productivity is an area worth further investigation.

Another area for exploration would seem to have great potential even beyond questions pertaining to stature. Should there be an influx of women into the life insurance business, would they be more effective in selling to men or to women? When men attempt to sell to women, what are the appeals that are most effective? Past studies, as previously mentioned, have shown that men tend to admire muscularity in other men, while women tend to prefer more slender types. This type of investigation could extend into the whole nebulous area of personal appearance and beyond.

The value of this type study for an individual company in developing a "profile" of its sales force has already been cited. It would also be interesting, where more than one company is involved, to see if there are any significant differences in agency forces with respect to the stature of applicants hired as well as sales production.
In those companies where it is felt that stature is meaningful job factor, the "Ponderal Index" encountered in the literature would seem to have practical possibilities for those who make the hiring decisions.

Finally, future studies should attempt to monitor changes in stature (especially the weight factor) and marital status after appointment to see how performance may be affected. This information is very difficult to obtain for an investigator outside a company, or at least more complicated where ready access to files and ample clerical assistance are not available. A few more computations are needed, but the extra effort would certainly make for a more meaningful study, when it is possible to have this information. One would think that in this day of modern computer technology, most large and progressive companies would have a wealth of data readily available on the sales personnel who are responsible for their very existence, but unfortunately, this is not the case.

Perhaps the major contribution of this study has been that it has probed into some new areas and some "new-old" areas, and though it has posed more questions than it has answered, has nevertheless laid the groundwork for more extensive investigations in the future.
APPENDIX
Dear

Thank you very much for your recent offer to cooperate with me in a dissertation project at North Texas State University.

I would like the following information for each agent employed by your company during the last calendar quarter of 1970 and the first calendar quarter of 1971. We would like to follow the volume, earnings, and annualized premiums for these agents through the calendar quarter ending March 31, 1974.

We do not need names or specific addresses of agents. Complete anonymity of agents and companies will be maintained in the total sample.

For each agent, please submit as much of the following data as you have:

(1) Age at time of appointment
(2) Sex
(3) Height - (in inches if so shown in your records) at time of appointment
(4) Weight in pounds, at time of appointment
(5) State of birth
(6) Marital Status - single, married, widowed, divorced, separated
(7) Highest Education level obtained

(8) Previous sales experience? Yes, No?
   (a) Life insurance sales?
      (1) If yes, how many months?
   (b) Retailing experience?
      (1) Type?

(9) Financed by company?

(10) Dependents? (number)

(ii) Wife work? Yes, No?

(12) Test scores, if available.
   (a) Name & type of test
   (b) Cut off score used by company
   (c) Agents scores

If agents' height or weight known to have changed appreciably (10% or more) during the three year period, please note. (This information might be available if company requires annual physical examination.)
For each agent, please show (1) new life insurance delivered (dollar volume), (2) annualized premiums, and (3) annual earnings for each full calendar year as reflected in your records. (Please show these items for each month or to the date of termination for each agent who does not complete any one of the three years -- 1971, 1972, 1973, or the first three months of 1974.)

In the event you have questions, please do not hesitate to call me at 817-788-2311, Ext 31, or 817-387-6942. I sincerely appreciate the cooperation of your company, and will be happy to assist personally in any way possible.

Joe H. Murrey, Jr., C.L.U.
Teaching Fellow &
Ph.D. candidate
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Dissertations


**Letter**

Letter to author from Robert E. Stevens, Department of Marketing, University of Southern Mississippi, Hattiesburg, Mississippi.

**Unpublished Papers**

Newspaper