MULTIVARIATE PREDICTION OF EXECUTIVE SUCCESS

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Titworth, William L., Multivariate Prediction of Executive Success. Master of Science (Psychology), December, 1970, 34 pp., 3 tables, references, 44 titles.

The principal purpose of this study was the assessment of the relationships of five personality traits, achievement motive, decisiveness, need for power, initiative, and self-assurance, to a criterion of executive success in business. Three other personal variables, age, sex, and level of education, and five situational variables, Company 1, Company 2, Company 3, Company 4, and Company 5 were statistically controlled in the analysis of these relationships. A second purpose of the present study was the construction of a regression equation for the prediction of executive success.

The introduction included a definition of the problem and a review of some of the personality traits commonly thought to be able to distinguish successful from unsuccessful executives. Research findings which support or conflict with these postulations were cited. Reference was also made to research results which support the hypothesis that there is a complex interrelationship between the criterion and predictor variables. The value of a multiple correlational analysis in such a situation is discussed.

The methodology began with the selection of a random sample of 50 companies from the New York and American Stock
Exchanges. These companies were contacted and asked to participate in the study. Five complied. The Self-Description Inventory and a questionnaire were distributed via mail to 565 managers above the level of first line supervisors. Two hundred-fifty (44%) usable responses were received. A residualized criterion of executive success (a function of percentage salary increase and tenure) was calculated and all possible combinations of the criterion and predictor variables were correlated. The variance in this matrix of intercorrelations due to the predictor variables was removed through residualization. The partial rs representing the relationship between the criterion and each of the personality trait variables with the effects of the situational and other personal variables removed were calculated. Regression equations to predict the success criterion in raw and z score form were constructed.

Results indicated that the partial r of -.14 for the decisiveness scale was the only one significantly different from 0 at $\alpha = .05$. The residual variance was 90%. The multiple $R$ of .32 was significant at $\alpha = .05$. Discussion included the possible value of the regression equation to executive selection, possible limits to the value of this study, ways future research of this type could be improved beyond this study, possible limits to the value of this type of study, and an overall evaluation of this study.
MULTIVARIATE PREDICTION OF EXECUTIVE SUCCESS

THESIS

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

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Denton, Texas
December, 1970
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The distinguishing characteristics of the successful business executive have been the subject of much research and conjecture for several decades. This is not surprising, for at least two reasons.

First, it has been observed that some people who have been successful in one endeavor or position continue to be successful in different situations or positions; conversely, others who are less than successful in one situation do not improve appreciably when their environment is changed. A logical hypothesis to explain these observations is that there is something about these persons which cause their success or lack of success. There is some research which supports this hypothesis. Clark (1956), for instance, found that a particular temperament was characteristic of self-made company presidents.

Another reason for the continuing search for these distinguishing traits is their potential value. By nature of its definition, an executive position carries with it a considerable amount of responsibility or power to damage the organization's functioning. An incompetent executive can negate the contribution of all his subordinates, no matter how effective they are, by directing their efforts away from, or against, the best interest of the company.
If a reliable and valid difference could be found between successful and unsuccessful executives, both the selection and training of executives could be made more efficient, reducing losses due to executive inefficiency. The people responsible for selecting an executive could reduce the probability of selecting someone who would fail and waste much of the organization's resources. The persons who operate executive training programs could focus their efforts on developing the valuable traits or eliminating the costly ones.

One of the traits most often attributed to business executives is a need for achievement. Gardner (1948) and Henry (1949) found TAT measures of "achievement desires" to be essential to executive success. Cummin (1967) found a significant relationship between need for achievement (McClelland, Atkinson, Clark, & Lowell, 1953) and salary. Grant, Katkovsky, and Bray (1967) found ratings on achievement motive to be valid predictors of salary progress.

Decisiveness is another trait Gardner (1948) and Henry (1949) agree is a prerequisite for success. Gaudet and Carli (1957) found that the inability to make decisions was the fifth most frequently cited reason for executive failures.

Cummin (1967) also found that salary was significantly and positively related to a need for power. Ghiselli (1968b), however, found no significant relation between ratings of success and a scale developed empirically from a forced-choice adjective checklist to measure the need for power. Wilson
(1956) suggested that an executive "... should want to have power and authority over people [p. 229]."

Self-assurance is another trait many authorities believe is related to executive success (Ghiselli, 1959, 1963b). Grant et al. (1967) found ratings of self-confidence were significantly and positively related to salary progress. Porter and Ghiselli (1957) found that top managers see themselves as self-reliant, willing to take action on faith in themselves and confident that their decisions will lead to success. Guilford (1952) found freedom from inferiority feelings to be related to ratings of success while at the same time differentiating the executive group from the supervisor group. On the other hand, several sources have found executives to have a deep-seated fear of failure behind a facade of optimism and self-confidence (Gardner, 1948; Henry, 1949; Miner & Culver, 1955; Rosen, 1959).

Another trait which is often observed as part of a successful executive's personality is his strong self-structure (Henry, 1949), his self-control (Rosen, 1959), or his control over the expression of emotions (Argyris, 1953; Meyer & Pressel, 1954).

A higher rate of activity might be a prerequisite for executive success. Gardner (1948), Henry (1949), and Porter and Ghiselli (1957) each made this observation. Gaudet and Carli (1957) found a lack of drive to be responsible for many executive failures.
The question of whether a successful executive is conforming or individualistic is another source of conflicting opinion. Fleishman and Peters (1962) found a negative relation between conformity and success. Ghiselli (1963b) argues that the ultimate source of a manager's success lies in his individuality and his desire for self-realization through creative activity. These opinions are quite contrary to the picture of "the organization man" which Whyte (1956) paints.

The social attitudes of executives have been the source of considerable study. Guilford (1952) found sociability and cooperativeness to be positively related to ratings of job success and to be significantly more characteristic of executives than supervisors. Rosen (1959) observed that executives are extroverted by nature and possess a highly positive attitude toward people. Wilson (1956) noted an understanding of, and interest in, people. Henry (1949) and Gardner (1948) surmised a lack of deep concern for subordinates. Meyer and Pressel (1954) found that a social dominance score increased significantly as the organizational level of the subjects increased. Porter and Ghiselli (1957) found indications that successful executives were candid and straightforward, whereas Rosen (1959) observed "marked defensiveness."

One trait on which there is general agreement is the high tolerance for frustration (Argyris, 1953; Rosen, 1959). Porter and Ghiselli (1957) also observed that the successful
executive was not easily discouraged. Gaudet and Carli (1957) found that a lack of perseverance was a frequently cited reason for executive failures.

The proper placement of successful executives on the dependency-self-reliance continuum is another source of disagreement among authorities. Porter and Ghiselli (1957) found self-reliance to be an asset. Grant et al. (1967) found a negative relationship between dependency and success. Miner and Culver (1955) found evidence that executives were less dependent than carefully matched controls.

One of the most agreed on distinguishing traits of a successful executive is that he is more intelligent than the average (Ghiselli, 1959, 1963a, 1963b; Rosen, 1959; Wilson, 1956). Specific aspects of intelligence purported to be particularly important include organizing ability (Gardner, 1948) and verbal ability or ability to communicate (Kurliloff, 1967). Korman (1968), however, found that verbal ability was not a good predictor of higher level manager performance.

Another common observation is that successful executives are likely to be better "adjusted" (Grant et al., 1967; Meyer & Pressel, 1954) or more healthy mentally (Rosen, 1959) or less likely to manifest mental ailments (Gardner, 1948).

The preceding references seem to cover the most common and controversial characteristics postulated to distinguish between successful and unsuccessful executives; however, they by no means exhaust the literature on the subject. Other
proposed predictors are as diverse as biographical data (Scollay, 1957), Rorschach responses (Otis, 1959; Piotrowski & Rock, 1963), socio-economic origin (Porter, 1965), former professors' ratings (Porter, 1962b), vocational interests (Nash, 1965), student-elected offices held in college and grades on elective courses (Williams & Harrell, 1964).

One possible weakness inherent to most of the previously cited inquiries is that they ignore situational variables. The assumption is that a trait will be just as valuable to the executive in the middle levels of a small insurance company or at the top of a large motor company. There is considerable evidence against this presumption. Ghiselli (1959, 1963b) and Porter and Ghiselli (1957) found that the population of managers at different organizational levels differed significantly in personality trait scores. Crockett (1962) observed that the need for achievement was positively related to upward occupational mobility only if the subject was reared in a low social strata. Andrews (1967) found that in a company with a more traditional or authoritarian climate, a need for power was an asset while a need for achievement was a liability. In a comparable company with a more progressive or democratic atmosphere, the need for achievement was valuable for achieving success while a need for power was a handicap. Porter (1962a) observed that a masculinity-femininity scale was positively related to success in a small company, and negatively related in a large organization. Huttner, Levy,
Rosen, and Stopol (1959) found that traits of a successful executive vary from one occupational group—engineering, accounting, sales, production, administrative, and research and development—to another. Ghiselli (1968a) found that the relationship between his measures of supervisory ability and success was significantly stronger for managers who were weak in desires for job security and self-actualization. At the same time, the strength of the relation between success and self-assurance was greater if the managers were weak in desires for high financial reward or self-actualization or strong in desires for job security or power.

It can be seen from the above that the distinguishing traits of an executive could depend upon the particular level in the managerial hierarchy, the type of position the executive occupies, the climate of the organization, the size of the organization, and such personal variables as the executive's socio-economic origin and his motives. It seems likely that there will be many more personal and situational variables which would effect the relationships of any or all of the other variables with the success criterion. This situation would not be amenable to study by use of the simple, one-predictor, one-criterion type correlation. What is required to allow for all the interrelations among the predictor variables, or to consider the situation more as a whole, is a multiple correlational analysis.
Obviously, there is a considerable amount of conflicting findings in the studies cited. Of course, some of the conflicts are more apparent than real. The different researchers often used different criteria for measuring the same constructs, or perhaps some were using samples quite different in nature from those of otherwise comparable studies.

This study proposes a method designed to avoid, or at least alleviate to some extent, the problems of incomparable samples (by obtaining a random sample of all North American business executives) and of contaminating situational and personal variables (by statistical control). This method will yield a partial correlation coefficient which will more accurately evaluate any simple distinguishing traits which do exist and are considered. It will also provide a prediction of how successful a given executive candidate will be—considering all the past experience one cares to quantify and include.

Method

Fifty companies (Cs) were randomly selected from the 2,594 listings on the New York and American Stock Exchanges in the March 12, 1970, edition of the Dallas Times Herald. The selection was made in accordance with a table of random numbers and the instructions for its use (Hodgman, 1959). The C indicated by a selected listing was included in the sample if it was (a) the first or only listing for that C.
(b) a North American company, and (c) not indicated by the 1970 Standard and Poors to be a part of a larger company also listed. The idea was to obtain a sample of companies which was representative of American big business.

Several Cs in this sample were smaller in production volume and number of employees than many Cs not listed on either the American or New York exchanges. However, few, if any, companies which could be said to have a major influence on our economy were not part of the sampled population. The 50 Cs so selected were divided into seven a priori categories, as shown in Table 1.

**TABLE 1**

**TYPES OF COMPANIES**

<table>
<thead>
<tr>
<th>Type of company</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public utilities</td>
<td>4</td>
</tr>
<tr>
<td>Transportation industries</td>
<td>3</td>
</tr>
<tr>
<td>Banking or financial concerns</td>
<td>2</td>
</tr>
<tr>
<td>Natural resources concerns</td>
<td>4</td>
</tr>
<tr>
<td>Producers of goods or services primarily for public consumption</td>
<td>14</td>
</tr>
<tr>
<td>Producers of goods or services primarily for industrial or government consumption</td>
<td>22</td>
</tr>
<tr>
<td>Conglomerate</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
</tr>
</tbody>
</table>

From information in Standard and Poors (1970) and Moody's Manual of Investments (1970), the algebraic sum of the net incomes, net profits, or net losses for these companies for fiscal year 1968, amounted to $1,133,899,398 (mean, $22,677,788).
The estimated number of people employed by these companies at the end of that year was more than 1,686,900 (mean, 33,738).

The chief executive or president of each of the Cs in the sample (as indicated in the current issue of Standard and Poors, as of April, 1970) was mailed a form letter explaining the nature and scope of this study (see Appendix I). Each was asked to participate in the study by (a) allowing a sample of his C's managers who were at least one organizational level above first line supervisors to receive data packets, and (b) suggesting improvements to the experimental methodology or data-gathering forms. The first request was to advise the researcher of the approximate size of the C's executive population, and to agree either to provide a mailing list of a randomly selected sample of his C's executives or to distribute data packets to such a sample.

The size of this sample was indicated to be a function of (a) the statistical technique to be employed on the experimental data, and (b) the sum of the executive population of the participating Cs. Only five Cs, or 10%, agreed to participate. Because of the large sample required by a multiple correlational analysis, and because this response was less than had been anticipated, data packets were distributed to each executive rather than a proportioned random sample of same. A food store chain (C₁) with approximately 8,000 employees distributed 127 packets; a manufacturing C (C₂) of about 1,200 employees used 41 packets; another food store
chain ($C_3$) of 2,500 employees used 100 packets; a public utility ($C_4$) with 3,000 employees distributed 200 packets; and a broadcasting company ($C_5$) of about 1,200 workers provided a mailing list for 97 executives.

**Subjects.** Usable responses were received from 250 subjects (Ss) in time to be included in the analysis. The total number returned was 44% of the 565 packets distributed. A breakdown of responses by companies is presented in Table 2.

**TABLE 2**

**QUESTIONNAIRE RESPONSES**

<table>
<thead>
<tr>
<th>Company</th>
<th>Number mailed</th>
<th>Number of usable returns</th>
<th>Percentage of total mailed</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C_1$</td>
<td>127</td>
<td>63</td>
<td>50</td>
</tr>
<tr>
<td>$C_2$</td>
<td>41</td>
<td>27</td>
<td>66</td>
</tr>
<tr>
<td>$C_3$</td>
<td>100</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>$C_4$</td>
<td>200</td>
<td>87</td>
<td>44</td>
</tr>
<tr>
<td>$C_5$</td>
<td>97</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>Total</td>
<td>565</td>
<td>250</td>
<td>44</td>
</tr>
</tbody>
</table>

Six responses which were complete were not usable because the S had not been with his C long enough to receive a raise and establish a criterion score.

There were 5 females and 245 males in the sample. The Ss' tenure ranged from 3 months to 44 years, 4 months. The mean number of months the executives had been with their
companies was 163.444 ($\sigma = 117.5474$), or 13 years, 8 months. The mean percentage salary increase for the sample was 388.3598 ($\sigma = 595.4738$). The means and standard deviations for the sample on the 14 variables which were analyzed are presented in Table 3.

Each S was assigned to one of the following ten a priori categories according to his response to questionnaire item 4 (see Appendix IV). There were 80 food store managers, 12 broadcast managers, 19 Ss working primarily in accounting or finance, 12 Ss working as engineers, 11 manufacturing or operations or service managers, 2 attorneys, 15 Ss involved primarily with sales, 1 research director, 4 personnel officers, and 93 administrative managers. This last group included Ss who had responsibility in more than one category and those who did not fit into any other category.

Variables. The data packets consisted of (a) a cover sheet explaining the purpose of the inquiry, promising anonymity, and offering some feedback of results (see Appendix II), (b) the Self-Description Inventory, developed by Ghiselli (1954), as shown in Appendix III, (c) a one-page questionnaire (see Appendix IV), and (d) a stamped envelope preaddressed to the researcher.

The criterion of success used was a function of the percentage an executive’s salary increased over his starting salary with that company (see footnote to Appendix IV) and months of service with the company (item 11, Appendix IV).
A correlation ratio between these two variables computed for the first 175 usable responses ($\gamma = .746$) was significantly greater (at the .001 level) than the linear correlation coefficient ($r = .386$). A plot of the common logarithms of these variables for each S who returned a usable response approximated a line with a positive slope of about +2. This indicated the relationship between these variables could be approximated by a positively accelerated parabolic curve of the form:

$$Y = ax^b \text{ or } Y = \log^{-1} \left[ \log a + b \log X \right]$$

where $a$ and $b$ are constants (Lewis, 1960). Computations were done on the whole sample of 250 Ss and the value of $a$ was established at .308; $b$ was established at 1.32. This means that Equation 1 would predict that a normal executive would increase his salary by the amount of his starting salary after 6.7, 11.3, 15.3, 19.0, 22.5, 25.9, 29.1, 32.2, 35.2, 38.1, 40.9, 43.8, 46.4, and 49.2 years. Equation 1 was used to predict a percentage salary increase for each S. This predicted value was subtracted from the S's reported percentage salary increase to yield the residualized criterion of success. The desired effect of these operations was to provide an index by which the rate of salary progress for executives of different tenure could be compared. Theoretically, this is a continuous criterion which has had the effects of time, including the progressive inflation characteristic of our
economy, removed from it statistically. The magnitude of the statistic indicates how much the S's rate of salary progress deviates from normal.

The first five predictor variables used in this study are scores of achievement motivation, decisiveness, initiative, need for power, and self-assurance from the Self-Description Inventory (SDI, see Appendix III). This form is a forced-choice checklist of 64 pairs of adjectives matched for social desirability (Ghiselli, 1954). Among the first 32 pairs of socially desirable adjectives the S was instructed to check the one he felt better described himself. In the second part, consisting of 32 socially undesirable adjectives the S indicated the trait he thought to be least descriptive of himself. The scores on the different scales are the sum of weights assigned to the different responses based on how well an item analysis showed each one to discriminate between criterion groups judged high and low on the traits involved.

The SDI was selected for this study for several reasons. First, the scales, or at least the constructs for the scales, used have been purported to be valid predictors of executive success. Secondly, validity data was available. Other advantages to using this instrument are the ease and economy with which it is administered and scored. Also, the theory behind an empirically validated forced-choice checklist and the use of self-perception profiles as personality trait measures is not without appeal (Ghiselli, 1954).
The other personal variables included in the analysis were age, sex, and level of education (items 1 through 3 of the questionnaire, Appendix IV). The only situational variable included was the different organizations. Before the packets were sent to the Ss or Cs, each one was coded to indicate which C was involved (see upper right hand corner of Appendix IV). For purposes of the statistical analysis this variable was treated as five different dichotomies, or as a pseudovariable [Lane, 1965. Instructions for coding are presented in Appendix IV(1)].

The matrix of Pearsonian intercorrelations was computed for all of the above mentioned predictor variables and the criterion. In these calculations, the dichotomies were treated as if they were continuous. The mean and standard deviation were also computed for each variable. The multiple $R$, partial $r_s$, and regression equations for predicting the criterion variable in standard score and raw score forms were calculated according to the method prescribed by DuBois and Manning (1960). The significance of the $R$ was tested at the .05 level of confidence with an $F$ ratio, and the residual variance was computed. The partial $r_s$ calculated represent the relationship between the criterion and each of the SDI trait variables, with the effects of the education level, sex and the different organizations removed. These coefficients were treated as simple $r_s$ in the $t$ test of significance at the .05 level.
Results and Discussion

The residual variance, or the variance in the criterion not due to the predictor variables was calculated at 89.52%. The multiple correlation coefficient (R) was equal to .32. Results of other calculations are presented in Table 3.

The partial r analysis failed to confirm that the scores for achievement motive, initiative, need for power and self-assurance are significantly related to executive success when the effects of the particular organization, age, sex, and level of education are statistically controlled. The nature of the relationship between decisiveness and executive success was found to be opposite to what has been generally postulated (Gardner, 1948; Henry, 1949; Gaudet & Carli, 1957). It is thus found that the Cs in this study reward cautious, carefully planned decision-making with their salary increases.

Instructions for using the β and R regression weights to predict a particular candidate's success in one of the different Cs involved in this study are given in Appendix V. If a validation study can confirm that the weighted sum of the predictor variables (the predicted success criterion) is related to success by as much as the multiple R would indicate (.32), then the regression equation could be a valuable selection device. In the hypothetical case where five candidates--each equally acceptable by past standards--are being considered for a particular position (selection ratio = 1/5 = .20) which has been satisfactorily filled by one half its
### TABLE 3

**VARIABLE MEANS, STANDARD DEVIATIONS, REGRESSION WEIGHTS AND PARTIAL CORRELATIONS COEFFICIENTS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>$\sigma$</th>
<th>$\beta$ weight</th>
<th>$B$ weight</th>
<th>Partial $r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement motivation</td>
<td>39.120</td>
<td>9.6801</td>
<td>-.0394</td>
<td>- 1.7865</td>
<td>-.06</td>
</tr>
<tr>
<td>Decisiveness</td>
<td>20.248</td>
<td>5.0247</td>
<td>-.1382</td>
<td>- 12.0721</td>
<td>-.14**</td>
</tr>
<tr>
<td>Initiative</td>
<td>33.908</td>
<td>6.8233</td>
<td>-.1182</td>
<td>7.6034</td>
<td>.02</td>
</tr>
<tr>
<td>Need for power</td>
<td>11.396</td>
<td>2.3040</td>
<td>-.0184</td>
<td>- 3.5053</td>
<td>-.01</td>
</tr>
<tr>
<td>Self-assurance</td>
<td>28.120</td>
<td>6.4833</td>
<td>-.0562</td>
<td>- 3.8047</td>
<td>-.06</td>
</tr>
<tr>
<td>Age</td>
<td>41.288</td>
<td>10.4553</td>
<td>.1373</td>
<td>5.7639</td>
<td>.02</td>
</tr>
<tr>
<td>Sex</td>
<td>.020</td>
<td>.1403</td>
<td>-.0677</td>
<td>-211.7949</td>
<td>.02</td>
</tr>
<tr>
<td>Education level</td>
<td>3.964</td>
<td>1.0113</td>
<td>-.0540</td>
<td>- 23.4368</td>
<td>.02</td>
</tr>
<tr>
<td>Company 1 (C₁)</td>
<td>.252</td>
<td>.4350</td>
<td>.3090</td>
<td>311.7840</td>
<td>.02</td>
</tr>
<tr>
<td>Company 2 (C₂)</td>
<td>.108</td>
<td>.3110</td>
<td>.2718</td>
<td>383.5956</td>
<td>.02</td>
</tr>
<tr>
<td>Company 3 (C₃)</td>
<td>.096</td>
<td>.2952</td>
<td>.2714</td>
<td>403.5321</td>
<td>.02</td>
</tr>
<tr>
<td>Company 4 (C₄)</td>
<td>.348</td>
<td>.4773</td>
<td>.5620</td>
<td>516.8083</td>
<td>.02</td>
</tr>
<tr>
<td>Company 5 (C₅)</td>
<td>.196</td>
<td>.3978</td>
<td>.4351</td>
<td>480.0748</td>
<td>.02</td>
</tr>
<tr>
<td>Success criterion</td>
<td>144.281</td>
<td>438.9192</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.**—See Appendix V for use of the above data in the construction of regression equations to predict the executive success criterion.

**Significant at $\alpha = .05$.**

Previous occupants (proportion of employees considered satisfactory = .50), the probability of selecting an unsatisfactory executive can be reduced from .50 to less than .34 by selecting the candidate with the highest passing predicted success score (Taylor & Russell, 1939). This probability of a type I error would be more dramatically reduced in situations where the selection ratio is lower or the proportion of employees considered successful is higher (Taylor & Russell, 1939).
There are several factors which are possibly operating to limit the value of this study. First is the question of the generalizability of the study, or the extent to which the sample obtained is representative of the population of American "big business" executives. The confidence placed in such a generalization is reduced because the sample was twice subjected to self-selection bias: first by the officials of the Cs who decided to participate or not to participate, then by the Ss when they decided to respond or to not respond.

In an effort to reduce the attrition of the sample by these decisions, the Cs and Ss were offered feedback, anonymity, and the possibility of contributing to the improvement of their company or the body of personnel research (see Appendixes I and II).

The 44% response by the Ss was considered good in view of the time required to fill out the forms, and the personal nature of the information requested. It seems noteworthy that 200 of the 250 Ss did request feedback. Also, almost 50 responses were received too late to be included in the analysis. One thing which may have restricted the responses of the Ss' was an error in the footnote of the executive questionnaire (see Appendix IV). The note instructed the S to subtract his present salary (item 9) from his starting salary (item 10), instead of the converse, to figure his percentage salary increase. Many Ss figured the statistic
correctly in spite of the error. However, at least one S was lost to the sample because of this error.

One possible cause for poor response of the Cs may have been the nature of the request for participation. It seems plausible that a request to distribute "X" number of data packets rather than "an amount to be advised later" (see Appendix I) would have reduced the official's fear of over-committing himself or his company. This is turn would have increased the probability the official would respond positively.

A presumption which should be considered when generalizing the results of this study is that the data packets were distributed only to employees above the level of first line supervisors. This criterion was accepted as the operational definition of executive on the basis of Ghiselli's (1959) findings which suggest a distinction between top-middle management and lower management-worker groups.

The other thing to consider about this criterion is that it is a function of salary. Lawler and Porter (1966) have these words of caution for the use of such criteria:

... a manager's salary is likely to be determined by many factors, some of which, such as company size and type of position, don't appear to be performance related. Thus, great caution should be exercised before it is assumed that salary is a good measure of the quality of a manager's job performance or even of his success in the firm [p. 371].

Nevertheless, if the sample is large enough, it is reasonable
to assume that a manager who makes a higher salary than another is probably also more valuable to his company.

There are two aspects of the criterion of success which should be considered when interpreting the results of this study. First, the distribution of these scores is positively skewed to a moderate degree. The $z$ score of the median value is $-.23$. This means that about 60% of these scores can be expected to have a value of less than the mean. Before this criterion is used in another study it might pay to consider some transformation of the criterion, the distribution of which more closely approximates normality.

Another possible limitation is errors in scoring the SDI. This was the only manual operation which was not double checked. The computation of the criterion, the matrix of intercorrelations, the means and standard deviations were done at the North Texas State University Computer Center (project number 9999-2135). These results were spot checked or graphically spot checked.

All the immediate checks were done in the residualization process; and the final order $\beta$ check was made. The $B$ weights and partial $r$s were computed two separate times.

One way to improve the value of this type of study is to find more numerous and more valid predictors; of course, the more predictors involved the larger the sample required (the rule of thumb is 20 Ss for each variable in the
intercorrelation matrix). It seems likely that, from the infinite number of ways one executive candidate differs from another, including the personal and situational variables discussed in the introduction, there would be a multitude of highly valid predictors of executive success. The use of more valid predictors would, of course, enhance the validity of the prediction from the regression equation.

Another limit to the value of this type of study is the construct validity of the variables or the accuracy with which they are quantified. As illustrated in connection with the criterion, it is difficult to establish a value which will allow it to be said that one executive is more successful than another. The best which can be hoped for is a value which indicates which one is probably more successful than the other, and an accurate estimate of that probability.

There are a number of limits to the value of this type study which should be kept in mind when interpreting the results. First, any prediction based on past experience presumes a stable environment. In terms of this study, this means that the validity of the predicted success criterion is limited by the extent the traits which were valuable to the executive in the past will be valuable to executives in the future. Perhaps being decisive was an asset to a manager in the past, but as the nature of the worker population changed, and as technology began to increase the complexity
of operations, it may well be that this trait actually became an impediment to effective functioning.

One limitation of all correlational studies is that they consider only linear relationships. Ghiselli (1963b) has found evidence that the relationship between intelligence and success is curvilinear. Up to about the 96th percentile of ratings on the success of top managers, the greater the amount of intelligence, the greater the probability of success in a managerial position. Beyond that point success probability begins to drop. No way is yet available to analyze a multiplex of such curvilinear relations.

Two final words of caution seem to be in order about interpreting these results. First, if tests of this kind, or of any quantitative sort are used in selecting personnel, they should complement, not replace the established selection procedures. Many authorities believe (Ghiselli, 1963b; Korman, 1968) that no data system yet devised by man can approach the balance of speed, accuracy and number of variables considered which a well-trained intelligent mind can offer. The other suggestion is that no cause-and-effect relationship can be inferred from findings of this or another correlational study. The hypothesis that decisiveness leads to failure and that failure leads to decisiveness were not tested.

Despite the possible sources of contamination, this study seems quite worthwhile. Even if a validation study
reveals that the predicted success criterion is not significantly related to executive success, at least, it should have eliminated a number of predictor variables or a criterion from those to be considered for future research of this type.
Appendix I

*Introductory Letter to Chief Executives*

Your company is one of fifty selected randomly from the New York and American stock exchanges. I would like your help in preparing my master's thesis. I propose to investigate the relationships of some motivational, personal and positional conditions with executive success. Hopefully, this research will be of benefit not only to myself but to your organization and the business community as a whole. One result will be a regression equation which can be used with a simple, quick personality test to predict how successful a given applicant would be in a particular executive position.

What I would like for you to do is this: (a) to advise me of the approximate number of managers in your entire organization above the level of first line supervisors, and (b) to agree either to distribute data packets to a randomly selected sample of these managers or to provide a mailing list for such a sample. The exact number of packets to be distributed in your company would depend on several considerations. I plan to distribute forty data packets for every variable in the study (at present thirteen have been tentatively selected). The number sent to each responding company will be in proportion to the size of its executive population relative to the total population.
There is another way in which you might aid me. Enclosed is a copy of the questionnaire to be included in the data packets and a description of the variables presently under consideration. If you can think of any other conditions which might affect how successful a particular person would be in a given executive position; or, if you think there is a better way to measure any of the variables, I would appreciate your advice. Also, if you can suggest any changes to the forms which might increase the probability that the executives who receive packets will participate, I would be much obliged.

Perhaps this study would provide you with some useful information about your company's executives. If you would like, a few items can be added to the questionnaires sent to the subjects in your company. I will be happy to provide you (at cost) with all data and findings of this research which would not jeopardize the anonymity of the individuals or companies involved. If you have any questions, please contact me.

Thank you,

Bill Titsworth

Bill Titsworth
P. O. Box 8381
North Texas State University
Denton, Texas 76203
Phone: 817-387-6889
Appendix II

Data Packet Cover Sheet

The purpose of the attached forms is to gather data for a master's thesis study. Please fill them out and return them in the enclosed envelope. Your NAME will NOT be REQUIRED. However, if you would like to be confidentially advised of your relative standing on four measures of traits generally regarded as being valuable to executives, put your name or a pseudonym and address on the bottom of this cover page. Let me assure you that your specific scores or questionnaire responses will not be related to anyone in your company or anywhere else. If you do not sign your name, no attempt will be made to identify you with your responses. Only summary data and findings, which hopefully will be of value to your company or to the business community as a whole, will be revealed. Your participation and immediate response will be appreciated.

Yours truly,

Bill Titsworth

Bill Titsworth

Send relative scores on four executive motives for this form to:

Name or Pseudonym: ________________________________

Street or P. O. Box: ________________________________

City, State, Zip: ________________________________
1. Age. ______
2. Sex (circle one) M F
3. Highest educational level completed (grade or degree). ______
4. Type position (short description or descriptive title).
5. Maximum number of organizational levels above first line supervisor. ______

Considering your own present situation, indicate your feelings on the following three statements by circling a number at, or somewhere between, the two extremes.

6. My subordinates need to be told what to do.

<table>
<thead>
<tr>
<th>very true or true all the time</th>
<th>equally true and false</th>
<th>very false or false all the time</th>
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<td>1</td>
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7. My superiors delegate much decision-making authority.

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<th>very false or false all the time</th>
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8. The prevailing attitudes and values of this company are best described as . . .

stable
traditional
flexible
progressive

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* 9. _______ Present monthly salary.

*10. _______ Starting monthly salary (with present company).

*11. _______ Number of months with company.

* If you would prefer not to give this information, you may still participate in this study by subtracting item (9) from item (10).
Appendix III

Self-Description Inventory

## SELF-DESCRIPTION INVENTORY

The purpose of this inventory is to obtain a picture of the traits you believe you possess and to see how you describe yourself. There are no right or wrong answers. Just describe yourself as accurately and honestly as you can. You are to blacken in the space between the two dotted lines for one word in each of the pairs of words below check the one you think most describes you.

###traits

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<th>Last Name</th>
<th>First Name</th>
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<th></th>
<th>energetic</th>
<th>industrious</th>
<th>kind</th>
<th>jolly</th>
<th>affectionate</th>
<th>poised</th>
<th>ingenious</th>
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###Traits of the pairs of words below check the one you think most describes you:

|      | immature | conceited | tense | irritable | careless | weak | opinionat...
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|      |          |          |       |           |          |      |                |

|      |          |          |       |           |          |      |                |

###BE SURE YOUR MARKS ARE HEAVY AND BLACK.

###ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.
Appendix V

Predicting Executive Success from Data in Table 3

1. Determine a candidate's raw score on each predictor variable using the following point scheme. Score sex "0" for males and "1" for females. Code education level according to the following system: "1" if the highest grade completed was below high school level; "2" if some high school work was completed; "3" if high school diploma was received; "4" if some college work was completed; "5" if bachelor's degree was received; and "6" if some graduate degree was awarded. Give the company involved a code of "1" and score the other four companies "0." For example, a S in company 3 would be scored as follows: C_1 = 0, C_2 = 0, C_3 = 1, C_4 = 0, and C_5 = 0.

2. Convert the raw scores to standard or z scores if prediction of a z score on the criterion is desired. Subtract the mean for each variable from the candidate's raw score on that variable and divide this difference by the corresponding standard deviation (σ).

3. Sum the products of a candidate's z scores and the β weight for each variable to obtain his predicted z score on the success criterion. The equation is as follows:

\[ \hat{z}_0 = z_1\beta_1 + z_2\beta_2 + \cdots + z_6\beta_6 \]
4. Sum the products of the $B$ weights and the candidate's raw scores for each variable and subtract 265.7982 to obtain the predicted raw score on the success criterion.

$$\hat{X}_0 = X_1B_1 + X_2B_2 + \cdots + X_3B_3 - 265.7982 \quad [3]$$

5. To predict a new employee's monthly salary from his predicted raw score on the success criterion ($\hat{X}_0$), use the following formula, where $\overline{P}_p =$ predicted monthly salary, $P_s =$ starting monthly salary, and $M =$ months with company.

$$\overline{P}_p = \left(\frac{P_s}{100}\right) \hat{X}_0 + 100 + \log^{-1} \left[1.3202728 M - .51101945\right] \quad [4]$$

6. To determine the expected salary of a normal executive after $M$, substitute the mean value of the success criterion (104.281) for $\hat{X}_0$ in Formula 4 above.

7. If data is not available for all the variables for a candidate, substitute the mean of that (those) variable(s) for the raw score(s) or the value "0" for the $z$ score(s). Of course, these operations reduce the value of the prediction.
References


Dallas Times Herald, March 12, 1970.


Ghiselli, E. E. Intelligence and managerial success. Psychological Reports, 1963, 12, 898. (a)


Guilford, J. S. Temperament traits of executives and supervisors measured by the Guilford Personality Inventories. *Journal of Applied Psychology*, 1952, **36**, 228-233.


Lane, N. E. Correlation analysis of qualitative data. U. S. Naval School of Aviation Medicine, 1965.


Porter, A. Effect of organization size on validity of masculinity-femininity score. *Journal of Applied Psychology*, 1962, 46, 228-229. (a)

Porter, A. Personality ratings by faculty as predictors of executive success for graduate business school alumni. *Occupational Psychology*, 1962, 36, 146-151. (b)


Wilson, V. W. Some personality characteristics of industrial executives. *Occupational Psychology*, 1956, **30**, 228-231.