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A study of traits related to performance of route salesmen in the baking industry

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A STUDY OF TRAITS RELATED
TO PERFORMANCE OF ROUTE SALESMEN
IN THE BAKING INDUSTRY

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A Thesis
Presented to the Faculty of the
Department of Psychology
Municipal University of Omaha

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In partial fulfillment of the requirements
for the degree Master of Arts

* * * * *

Raold R. Amundson

July, 1951

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A STUDY OF TRAITS RELATED TO PERFORMANCE OF ROUTE SALESMEN IN THE BAKING INDUSTRY

PURPOSE OF THIS RESEARCH

The purpose of this research was to determine whether or not there are any traits measurable by psychological test whereby successful route salesmen in the baking industry can be differentiated from unsuccessful route salesmen. If significant differences in trait standings can be found which are associated with significant differences in degree of success attained as route salesmen, there is the possibility that such traits are associated casually with the differences in degree of success attained.

BACKGROUND FOR THIS RESEARCH

During the past twenty-five years there have been various research projects carried on to determine patterns of traits whereby probabilities of success after training and experience could be predicted in advance of, or at the time of, employment of the applicant. It is our purpose here to review some of these approaches which appear to be relevant to the purposes of the present research, and to indicate what some of the outcomes of previous research have been. One of the major focal points for research directed toward predicting success of salesmen has been the application blank. The application blank gives facts and personal history data concerning the individual. The insurance companies, particularly, have applied actuarial statistical methods to the application blank to determine which, if any, personal data items have prognostic significance. However, the insurance companies are

not the only organizations which have tried this approach. Typical of the research directed toward the setting up of a weighted application blank is that performed by the following: McMurray (10), Russell (14), Cope (6), Manson (9), Steward (15), Goldsmith (7), Swatz (16), Andrews (1), Rosenstein (13), and Kurtz (8). In some of the studies reported by these authors, it is claimed that high discrimination values have been found for certain items. However, the items which are significant in one study do not possess the same degree of significance in another study where different criteria of success have been used. Some of the items have been found to possess discriminating value in all of the experiments. Examples of these significant items are age, education, marital status, number of previous jobs held, years of experience in sales work, number of clubs or social organizations to which the individual belongs, and the number of offices held in such organizations.

The method in these studies, in general, has been to determine the relationship between standings in a particular category of an item (age, for example) relate this to standings in some criterion of sales success, and upon the basis of the degree of association found, to assign numerical weights to standings in the personal data factor. After scatter-diagrams and correlations have been obtained, those items have been selected which show some degree of association and numerical weights assigned proportionate to discriminating powers for differential standings in item category. Then, each individual in the experimental sample has been assigned a total weighted score. This total weighted score is derived from numerical weights received in each of the separate items. These total weighted scores have then been scatter-

diagramed, and the trend noted. Correlations have been run to determine the precise degree of association between total weighted scores and criterion of success. Some studies (those in which fair-sized correlations have been found) show that regression equations have been run and prediction tables set up. These prediction tables show, for every total weighted score it is possible to obtain in the personal history items, the most probable standing in the criterion. Some studies have resulted in charted profiles which show the median or average standing in each item for successful salesmen, and the charted limits within which an individual can vary and still approximate the general pattern of the successful individual. By these prediction-table and profile-chart methods, it has been claimed by some organizations that they have been able to pick twice as many successes as failures from the available applicants. Others (8) have claimed that an individual who possesses the profile pattern which characterizes the successful salesman has four times the probability of success as does an individual who does not match the profile pattern.

Another type of approach is represented by research to determine whether or not there are certain interest patterns or personality trait patterns by which potentially successful salesmen could be spotted. Marion Bills (3) and Otis (11) found that the Strong Vocational Interest Blank measures the degree to which an individual possesses interests which are similar to those of individuals successfully engaged in various fields at the professional level. However, these same authors found that it does not tell whether or not the individual has the personality traits and abilities to be successful in the work itself. In both of the researches just mentioned, neither Bills nor Otis found that the

Bernreuter Personality Inventory traits were associated with degree of success in sales work. Bills found that a Name and Number Checking Test, the measure of Dominance on the Bernreuter, the measure of Extroversion on the Bernreuter, and the temperament traits measured by the Humm-Wadsworth Temperament Scale were not predictive of sales success in the particular study reported. This does not necessarily mean that personality and temperament traits are not associated with success in sales work. It could mean several things. For example, it could mean that the criterion of sales success used was not one which is related to or dependent upon these particular personality and temperament traits. It could mean that differences which might have shown up between extremely successful and extremely unsuccessful sales people in personality traits did not show up when a range of salesmen representing all grades from very poor to excellent was used.

In view of the results reported by Bills, it should be noted that in a book by J. L. Rosenstein (13), "Scientific Selection of Salesmen", the following statement is made on Pages 161-162: "The personality test recommended is the Personality Inventory by Robert G. Bernreuter. Four factors described and considered by this questionnaire have been found to be of value in the selection of salesmen. These are termed Extroversion, Dominance, Self-Confidence, and Social Independence or Self-Sufficiency." Though the book by Rosenstein purports to bring together into one volume the significant research, methods, and techniques of value in selecting salesmen, he does not present the evidence to support the statement just quoted. On Page 162 of the book, Rosenstein says, "According to the research of A. F. Dodge, ten personality traits are characteristic of the successful sales person. They are, Emotional

Stability, Self-Confidence, Self-Sufficiency, Aggressiveness, Sociability, Non-Self-Consciousness, Little Tendency to Talk About Self, Lack of Resentfulness Toward Criticism, A Tendency to be Radical and Unconventional, and Willingness to Take Responsibility."

After summarizing and evaluating all of the methods, principles, and techniques which have been developed up to 1944 in the selection of salesmen, Rosenstein recommends the following tests as predictive of sales ability: the Otis Self-Administering Test of Mental Ability, the Bernreuter Personality Inventory, the Detroit Selling Inventory, and the Moss Social Intelligence Test.

A third approach to the problem of selecting salesmen has been through the use of rating scales (4). The situation here is pretty much the same as it is with respect to the use of personality inventories. It is difficult to make cross-comparisons between different studies because different criteria of sales success were used. In addition, the representativeness of samples differed from one piece of research to another, groups widely enough different in ability were not selected, or particularly in the use of the rating scales, opinion and judgments which are qualitative in character were used as the criteria of success, without an analysis of actual sales records in terms of dollar volume. Noticeable in some of these studies is a lack of adherence to scientific methodology and procedures. There is evidence that proper control of criteria used was not exercised. Therefore, when these factors are considered, it is not surprising that there are conflicting results reported, and that the same personality, interest, or temperament measures do not show the same degree of predictability from one study to another.

In addition to the approaches just noted, there have been dozens of so-called "systems" dealing with differences in head structure, facial features, and bodily build. They all come under the category of physiognomy. Research on the claims for these systems has persistently and consistently shown that, in actuality, there is little if any association between physiognomic characteristics and behavior manifestations, especially so far as predicting occupational success is concerned. Typical research evaluating the claims of these systems is that done by Paterson and Ludgate (12) and Cleeton and Knight (5). To the extent that the principles of control necessary in scientific research are not followed, there will be invalidation of the results of such studies. At present we are interested only in those research projects which have defined, isolated and measured, by use of the instruments giving the greatest approach to objectivity, the traits which have been determined from actual job analysis to be associated with differences in degree of performance on the job.

Background for Methods Used

Thompson (17) has made several studies which seem to provide a methodology which could be followed in the present study. Though these studies were directed at determining the characteristics and traits which differentiate good from poor executives, the methods and procedures are thought to be those which would be most productive in determining the differences, if any, between very poor and excellent salesmen. The purpose of the Thompson research was to determine what contribution psychological tests could make to executive personnel procurement procedures in one of the five largest management engineering firms in the United States. This firm was interested in the scientific selection of its own executives and in better selection of executives for its

client firms. The research centered in the management engineering concern itself. There were 135 executives in this organization, who, on the basis of their present duties and responsibilities and their past records, could be considered as top-flight executives.

The criterion was established through interviews held with partners, account managers, department managers, account supervisors, and with staff men. These interviews had the following aims: 1. to get the consensus concerning demands made on staff men by the work of the firm; 2. to determine the abilities, personal characteristics, and accomplishments considered necessary for success with the firm. After this was done, the seven partners of the firm were asked to analyze the 135 men and to select those men who were the best and those men who were the worst on the following basis: 1. Those men whose performance records and unanimous partner evaluations (independently obtained) placed them as "superior" constituted one group. There were fifteen men in this group. 2. Those men whose performance records and unanimous partner evaluations placed them at the bottom of the 135 men were called the "low" men. There were ten men in this group who were clearly at the bottom of the 135. Therefore, out of the 135 men, it was possible to isolate twenty-five men who stood at the extremes, fifteen at one extreme and ten at the other. To be noted is that the criterion consisted of performance records on jobs done and consensus of partner-evaluations combined (by identical standings in both criteria) into a single criterion expressed as "superior" or "inferior". The criterion so obtained is a two-category variable which does not arrange the men in rank order. Therefore, it did not readily lend itself to the statistical technique of correlation. However, group comparisons could be made which brought out clearly any

differences on the tests between the two groups of men who stand at the extremes. Eight separate tests, comprising thirty-four different measures, were administered to the 135 staff men of the management engineering concern. The means, standard deviations, and "critical ratios" (M/S_M) for all tests were determined by comparison between the top fifteen men and the bottom ten men. Significant differences, based on the critical ratios, were found on twelve of the thirty-four measures. It was also found that in five of the remaining twenty-two measures both groups were significantly above the averages of the test norms, though the two groups did not differ significantly between themselves. This means that in these five measures, all of the men were distinctly above the average of the general population. It was found that the superior group average was above the population average in sixteen of the seventeen measures and average in one. The inferior group average was above average in thirteen of the seventeen measures, average in three, and below average in one. The superior group had higher percentile standings than the inferior group on thirteen of the seventeen measures. The personnel procurement methods of this firm, it is to be noted, have been effective enough to select even "inferior" men for the firm who were superior to the population at large in the traits noted.

The above study is reported in some detail because it is characteristic of the approach which has been made to the problems of selecting executives and supervisors. It was thought that this approach was the one which was likely to prove more fruitful for purposes of the present investigation.

THE CRITERION

This research was carried out in twelve plants of a bakery chain. These plants are located in Illinois, Indiana, Michigan, Ohio, Connecticut, North Carolina, and Florida. The plant set-up, the operations, and the work to be done are very similar throughout this organization of twelve plants.

With the aid of top management, the entire sales organization for each plant was thoroughly analyzed. This was done to find out exactly of what the job of route salesmen consisted. In a group conference with the plant manager, sales manager, and sales supervisors, the sales records and abilities of the individual members of the sales force were discussed. In this way it was possible to determine which men constituted the top route salesmen and which men constituted the bottom route salesmen in each plant. The sales records provided a quantitative criterion. The conference with the plant manager, sales manager and sales supervisors led to a consensus of agreement which, in effect, is a qualitative criterion.

In the twelve plants there were 275 route salesmen altogether. Out of this group it was possible to select forty-five men who, by both qualitative and quantitative criteria, stood at the top. It was also possible to pick the forty-five men who, on the basis of both qualitative and quantitative criteria, were lowest. The only question of disagreement came in the exact placement of a man in the group. By additional conference and information, this difficulty was corrected. For the purposes of this study, the forty-five top men and the forty-five bottom men were those who were so placed unanimously by the criterion method used.

STATISTICAL METHODS

When N is very large (over 500), the t values of 1.96 and 2.576 correspond to the 95 and 99 per cent levels of significance; but when N is 100, the critical t values must be 1.98 and 2.63; not very much larger, but appreciably so. The reason for this is that whereas the normal distribution applies to t ratios when N is large, when N is small, Student's distribution, which is somewhat platykurtic, applies. When N is 10, the t 's must be 2.26 and 3.25. It is when N falls below 20 that the change in t 's become marked in order to maintain the same probability in odds. A "significant" deviation from the true mean is one that occurs only once in 20 times, and a "very significant" deviation is one that occurs once in 100 times.

Table III shows raw scores and standard deviations of high and low salesmen. Table IV presents the t ratios and chances in 100 that differences in means are significant. White lines in Figure 3 represent the high salesmen and red lines the low salesmen. The mean standings and standard deviation limits in certain traits for the two groups of salesmen are graphically portrayed in Figures 1-3 inclusive. The white lines in each figure represent the mean and standard deviation limits in percentiles for the high salesman. The red lines represent the low salesman. The mean is represented by an "X" on the vertical lines showing percentile limits within which approximately two-thirds of a group of salesmen fall. The mean standings and standard deviation limits in certain traits for the two groups measured are presented in percentiles in Tables I and II.

METHOD AND PROCEDURE

Based upon the analysis of the operations of this company and previous studies made in this field, the following tests were selected to be administered to the salesmen in this organization: The Personal Audit; The Bernreuter Personality Inventory; The Johnson Temperament Analysis; The Personality Index; The Personnel Test by Wonderlic. The specific traits measured by all these tests are shown in figures 1-3 inclusive. These tests were administered to the salesmen in each plant. The tests were then scored, and the means and standard deviations on all sub-tests for the two groups were then obtained. The t values were obtained to determine whether or not there were any significant differences in test performance between the two groups.

Analysis of Results

The traits (Table I and Figure 1) in which significant differences occur between the two groups are to be found in the Johnson Temperament Analysis and the Personal Audit. Before discussing these traits, a statement should be made concerning what are considered to be the "normal" ranges for personality traits as these are usually defined in personality inventories. Percentiles between 25 and 75 are usually called the "normal" range. Percentiles between 75 and 90 in one direction show the existence of a trait to a strong degree in whatever direction is being described. Percentile standings between 90 and 100 show the possession of a trait to a very strong degree in whatever direction is being described. Percentile standings between 25 and 10 show the possession of a trait to a strong degree in the opposite direction as described. Percentiles between 10 and 1 show the possession of a trait to a very strong degree in the opposite direction as described. The rationale for this can be seen by study of

the relationship between a percentile scale and the normal probability curve. A percentile distribution is rectangular. The normal probability curve is not rectangular. Therefore, the percentile scales which have been used in Figures 1, 2 and 3 inclusive, show the actual distances between adjacent percentiles based upon the normal probability curve. It is to be noted that the distances between one and 10 percentile and between 90 and 100 percentile are equal. However, reference to the graphs will show that, actually, the distance between 40 percentile and 60 percentile is not very great. This means that differences at the mean are considerably smaller than differences at the extremes in whatever human trait is measured. This is partly a function of the fact that the frequency of occurrence decreases as one goes from the central tendency point in a normal probability curve toward either extreme. The frequency with which a deviation from the measure of central tendency occurs partly reflects the extent of the rarity of whatever is being measured as a function of the deviation from the measure of central tendency. The difference between an individual who stands at the 90th percentile and one who stands at the 100th percentile is greater than the difference between the 25th and 75th percentiles in a normal distribution. The same is true of the difference between zero and 10 percentile as contrasted to the distance between the 25th and 75th percentiles. Therefore, particularly in personality measurement, the broad range between 25 and 75 percentile is called "normal." If one were discussing abilities or aptitudes, the term would be "average."

Previous studies by Thompson (17) and Arms (2) show that ordinarily one may expect means in trait standings which are at the 75th percentile and beyond from the 50th percentile mark to constitute significant or near-significant

differences from population norms in whatever trait is being measured. For these reasons, those traits were suspected as showing significant differences in which the group means were at or beyond 25 percentile or 75 percentile.

As will be seen from Figures 1-3 inclusive, these expectations are born out when the actual t values were obtained. It also indicates that a projection in a personality trait to the 75th percentile or beyond in one direction or to the 25th percentile or beyond in the other direction constitutes a significant deviation from "normal."

It has been previously stated (page 11, paragraph 2) that all of the personality traits which revealed significant differences between the two groups were found on the Johnson Temperament Analysis, and Personal Audit. There were six of these traits. These traits were Nervous-Composed; Depressive-Gay-hearted; Subjective-Objective; Cordial-Cold; Self-mastery-Impulsive; and Emotionality-Steadiness. Reference to the profile sheet for the Johnson Temperament Analysis (see Appendix) shows that the author of this inventory does not set up his zones called Excellent, Acceptable, Improvement Desirable, and Improvement Urgent on the basis of the percentile ranges which were previously discussed as showing normal, strong, and very strong projections. In this respect, the Johnson Temperament Analysis does not follow the standards stated as they occur in most other personality inventories. However, the zones set up in the Johnson Temperament Analysis are based upon experimental groups which were psychiatric cases. Therefore, this does not invalidate the arguments for significance presented here.

It is to be noted that in order for a difference to be statistically significant, it is not necessary that the standing of the two groups be as

widely separated as the distance between 25 and 75 percentile. This is illustrated by the first trait on the Johnson Temperament Analysis (Nervous-Composed) which shows significant differences. Here, the high salesmen average 33 percentile, with a range from -1σ to $+1\sigma$ of 13-52 percentile. The low salesmen average 43 percentile, with a standard deviation range from -1σ to $+1\sigma$ of 23-64 percentile. The t value is 2.48, showing less than 3 chances in 100 that the obtained difference between means is not a true difference.

The trait Nervous-Composed is a measure of the extent to which an individual operates under inner nervous strain or tension. Both these groups of salesmen are less inclined than the average person to operate under such inner nervous strain or tension or to be given to fidgeting, tics, tremors, apprehensiveness, etc. However, the top salesmen are still less inclined than the low salesmen to operate under nervous tension.

The top salesmen are less inclined than either the average person or the low salesmen to be given to swings in mood and to periods of gloominess and discouragement (Depressive-Gay-hearted). This means that they recover rather quickly from discouragement and can take turn-downs more easily than either the average person or the low salesmen.

The top salesmen are less inclined than the average person or the low salesmen to be self-centered in their approach to the problems of everyday life (Subjective-Objective) as contrasted to objective and impersonal.

The top salesmen are more Cordial (Cordial-Cold) than the average individual, and significantly so, but it is interesting to note that they are significantly less cordial than are the low salesmen. Anyhow, both the high and the low sales groups are definitely more cordial or expressively warm-hearted in their approach to people than is true or characteristic

of the average individual. However, the low salesmen, with respect to this trait, reverse the usual direction. The top salesmen are strongly inclined toward Self-mastery (Self-mastery-Impulsive), which means that they are inclined to operate on the basis of planfulness rather than on the basis of impulse. The low salesmen are also more inclined in this direction than is true of the average person. However, the top salesmen are significantly higher than the low salesmen with respect to this trait.

The top sales group is better able to stand routine work in which the opportunities for self-expression, creativity, and individuality are not particularly great (Emotionality-Steadiness trait on The Personal Audit). The low salesmen are average in this respect. Though in the case of neither group is it shown that highly individualistic, creative, varied work is required, (standing toward the Emotionality end of the scale indicated the need for individualistic, creative work, and "prima donna" tendencies) the top salesmen are better able to stand a pattern of work activity in which there is not tremendous variety.

Table II and Figure 2 present those traits in which there are no significant differences between the two groups. There were 25 of these traits. Both groups are below the average of the population upon whom the Wonderlic Personnel Test was standardized, thus indicating that high mental ability is not necessarily a requirement for effective sales performance as sales performance is defined by the work in which these men are engaged. However, the high sales group has an average percentile standing in mental ability, which is seven points higher than that of the low sales group. The Wonderlic Personnel Test does not directly give an intelligence quotient. However, reference to the Wonderlic Personnel

Test Manual shows that it is possible to transmute raw scores on the twelve-minute Personnel Test into terms of the most probable score which would have been obtained on the thirty-minute Otis S-A test of Mental Ability. Making this comparison shows that the high salesmen average 103 in intelligence quotient and the low sales group averages 99 in intelligence quotient. This indicates that both groups are average in intelligence, but that the high sales group averages somewhat higher than the low sales group. This finding would seem to indicate that average or normal intelligence is all that is required for effective performance, so far as mental ability alone is concerned. Therefore, one can conjecture that the personality factors are considerably more important for success than the factor of intelligence, provided that the individual possesses average intelligence.

The traits measured by The Bernreuter Personality Inventory are:

Emotionally Stable-Emotionally Unstable, Self-Sufficient-Non-Self-Sufficient, Extroversion-Introversion, Dominant-Submissive, Self-Confident-Self-Conscious, Social-Non-Social.

None of these traits showed a significant difference between the two groups. Both groups are emotionally stable and well-adjusted to life in general. Both groups are inclined to be non-self sufficient. Both groups are more extroverted than is true of the average person. Both groups are inclined to be dominant (dominant meaning to assume the lead role in face-to-face contacts). Both groups are inclined toward wholesome self-confidence. Both groups are more sociable than is true of the average person.

The Personal Audit showed that in eight traits out of nine all means were in the normal range as far as industrial norms are concerned and showed

no significant differences between the two groups. Irritability-Tranquility, as measured by the Personal Audit, did not show significant differences. Indecision-Firmness, as measured by the Personal Audit, did not show significant differences. Evasion-Frankness, as measured by the Personal Audit, did not show significant differences. Instability-Stability, as measured by the Personal Audit, did not show significant differences. Intolerance-Tolerance, as measured by the Personal Audit, did not show significant differences. Fluctuation-Persistence, as measured by the Personal Audit, did not show significant differences. Worry-Contentment, as measured by the Personal Audit, did not show significant differences. The Johnson Temperament Analysis showed four traits in which there were no significant differences between the two groups. Active-Quiet, as measured by the Johnson Temperament Analysis, shows that both groups are ready to undertake a variety of new tasks. Sympathetic-Hard-boiled, as measured by the Johnson Temperament Analysis, shows that both groups are sensitive to and sympathetic toward the feelings and problems of other people. Critical-Appreciative, as measured by the Johnson Temperament Analysis, shows both groups in the average range. Aggressive-Submissive, as measured by the Johnson Temperament Analysis, shows that both groups are more aggressive than the population upon which the Temperament Analysis was standardized.

Another test used was the Personality Index. There are six traits measured by this test. These six traits are as follows: Job Interest (a measure of the extent to which an individual can lose himself in or become absorbed in a job to be done); Social Intelligence (a measure of the extent to which an individual has the know-how in social relationships to get along harmoniously with others); Leadership (specifically, in this test meaning

the extent to which an individual has developed supervisory leadership potential at the present time); Planning (a measure of the extent to which the individual plans and organizes work activities); Drive (the extent to which an individual has pep or push and will drive himself rather than others); Follow-Through (the extent to which an individual can handle an assignment with attention to details without the necessity for close supervision). This test was so standardized that the items and the categories mentioned are applicable to jobs of a supervisory character. There is, then, despite the seeming a priori relevance of the test based upon trait names alone, no real reason to be surprised that none of the six traits measured by this test showed significant differences between the two groups. Both of the groups are around the average on all of the six traits. Neither group deviates much below average in any of the six traits. Therefore, it would not be a legitimate assumption that absence of these six traits would be conducive to success as salesmen, but the most legitimate assumption from the data presented in Table II appears to be that an average amount of the six traits in question is all that is necessary so far as the demands of the type of work which we are investigating are concerned.

Table V represents the traits in which the sales groups differ from test norms. It is to be noted that in 14 traits both sales groups deviate from test norms in the same direction. These traits are (Stable Emotionally-Unstable Emotionally) from the Bernreuter Personality Inventory, (Sufficient-Non-Self Sufficient) from the Bernreuter Personality Inventory, (Extroversion-Introversion) from the Bernreuter Personality Inventory, (Dominant-Submissive) from the Bernreuter Personality Inventory,

(Self-Confident-Self-Conscious) from the Bernreuter Personality Inventory, (Social-Non-Social) from the Bernreuter Personality Inventory, (Firmness-Indecision) from the Personal Audit, (Stability-Instability) from the Personal Audit, (Active-Quiet) from the Johnson Temperament Analysis, (Cordial-Cold) from the Johnson Temperament Analysis, (Sympathetic-Hard-boiled) from the Johnson Temperament Analysis, (Subjective-Objective) from the Johnson Temperament Analysis, (Aggressive-Submissive) from the Johnson Temperament Analysis, and (Self-Mastery-Impulsive) as measured by the Johnson Temperament Analysis. In five traits the high sales group differed from test norms. These traits were (Evasion-Frankness) from the Personal Audit, (Intolerance-Tolerance) from the Personal Audit, (Emotionality-Steadiness) from the Personal Audit, (Nervous-Composed) as measured by the Johnson Temperament Analysis, and (Depressive-Gay-hearted) as measured by the Johnson Temperament Analysis. The scores can be found in Table V of the above mentioned traits.

INTERPRETATION OF TEST RESULTS FOR HIGH AND LOW SALESMEN

The high and low salesmen are average in intelligence as measured by the Wonderlic Personnel Test. The high and low salesmen are emotionally highly stable and well-adjusted to life in general as measured by the trait Emotionally Stable-Emotionally Unstable from the Bernreuter Personality

Inventory. The high and low salesmen will often seek advice and encouragement, and are happier when working in a group. This is measured by the trait Self-Sufficient-Non-Self-Sufficient from the Bernreuter Personality Inventory. The high and low salesmen rarely worry, seldom suffer emotional upsets, and are able to meet people easily as measured by the trait Extroversion-Introversion from the Bernreuter Personality Inventory. The high and low salesmen tend to dominate others in face-to-face contacts as measured by the trait Dominant-Submissive from the Bernreuter Personality Inventory. The high and low salesmen tend to be self-confident and well-adjusted to their environment as measured by the trait Self-Confident-Self-Conscious from the Bernreuter Personality Inventory. The high and low salesmen tend to be sociable and to seek and to enjoy the company of others as measured by the trait Social-Non-Social from the Bernreuter Personality Inventory. The high and low salesmen are average in the trait Seriousness-Impulsive from the Personal Audit. The high and low salesmen tend to have trouble in making and maintaining decisions independently as measured by the trait Firmness-Indecision from the Personal Audit. The high and low salesmen are average in the trait Tranquility-Irritability from the Personal Audit. The high and low salesmen are average in the trait Frankness-Evasion from the Personal Audit. Both the high and low sales groups are somewhat less inclined

than the average person to assume readily additional and demanding responsibilities. This is measured by the trait Stability-Instability from the Personal Audit. The low salesmen are average in tolerance, but the high salesmen tend to be intolerant as measured by the trait Tolerance-Intolerance from the Personal Audit. The high and low salesmen tend to be happily married and generally well-adjusted as measured by the trait Steadiness-Emotionality from the Personal Audit. The high and low salesmen are average in the trait Persistence-Fluctuation from the Personal Audit. The high and low salesmen are average in the trait Contentment-Worry from the Personal Audit. The high and low salesmen tend to be free from inner nervous strain and tension as measured by the trait Nervous-Composed from the Johnson Temperament Analysis. The high and low salesmen tend to be free from rapid changes in moods as measured by the trait Depressive-Gay-hearted from the Johnson Temperament Analysis. The high and low salesmen tend to be active and energetic in undertaking new tasks as measured by the trait Active-Quiet from the Johnson Temperament Analysis. The high and low salesmen tend to be cordial and warm-hearted in their approach to people as measured by the trait Cordial-Cold from the Johnson Temperament Analysis. The high and low salesmen tend to be sympathetic as measured by the trait Sympathetic-Cold-hearted from the Johnson Temperament Analysis. The high

and low salesmen are objective as measured by the trait Subjective-Objective from the Johnson Temperament Analysis. The high and low salesmen tend to be aggressive as measured by the trait Aggressive-Submissive from the Johnson Temperament Analysis. The high and low salesmen are average in the trait Critical-Appreciative from the Johnson Temperament Analysis. The high and low salesmen tend to have self-mastery or self-control as measured by the trait Self-Mastery-Impulsive from the Johnson Temperament Analysis. The high and low salesmen are average in job interest as measured by the trait Job Interest from the Personality Index. The high and low salesmen are average in social intelligence as measured by the trait Social Intelligence from the Personality Index. The high and low salesmen are average in planning as measured by the trait Planning from the Personality Index. The high and low salesmen are average in drive as measured by the trait Drive from the Personality Index. The high and low salesmen are average in the follow through as measured by the trait Follow Through from the Personality Index.

SUMMARY

This research was carried out in a chain of twelve bakeries. Two-hundred-seventy-five route salesmen were tested. From this larger group, 90 were selected who represented the extremes; 45 were in the high group, and 45 were in the low group of salesmen.

The following tests were administered: The Personal Audit, The Bernreuter Personality Inventory, The Johnson Temperament Analysis, The Personality Index, The Personnel Test by Wonderlic.

The t values were obtained to determine whether or not there were any significant differences in test performance between the two groups. Table I and Figure 1 present the six traits which show significant differences between the two groups. These traits are Nervous-Composed, Depressive-Gay-hearted, Subjective-Objective, Cordial-Cold, Self-Mastery-Impulsive, from the Johnson Temperament Analysis, and Emotionality-Steadiness from the Personal Audit.

The traits which showed significant differences between the groups were:

- 1 - Nervous Composed - The high group operates under less inner nervous strain or tension, and is less given to fidgeting tics, tremors, and apprehensions than the low group.
- 2 - Depressive-Gay-hearted - The high group is less inclined to be given to swings in mood or to periods of gloominess and discouragement than the low salesmen.
- 3 - Subjective-Objective - The high group is less inclined to be self-centered in approach to the problems of everyday life than the low salesmen.
- 4 - Cordial-Cold - The high group is inclined to be less cordial or expressively warm-hearted in its approach to people than the low group

(but is still above average in this trait). 5 - Self-Mastery-Impulsive - The high group is strongly inclined toward self-mastery, and is inclined to operate on the basis of planfulness rather than on the basis of impulse. The low group is inclined to operate in the same direction, but not to such a strong degree. 6 - Emotionality-Steadiness - The high group is better able to stand routine work in which the opportunities for self-expression, creativity and individuality are not particularly great.

MAJOR CONCLUSIONS

Were future research to show the same results as were found here, one might say that the typical route salesman in the baking industry can be described as follows compared to norms on the tests used:

Emotionally stable and generally well-adjusted; rather strongly lacking in self-reliance, preferring to operate as an organization or team member rather than "solo"; rather strongly extroverted, given to action rather than analysis; somewhat inclined to assume the lead role in personal contacts; fairly strongly self-confident and free from feelings of personal inadequacy and self-questioning; extremely sociable, seeking and enjoying the company of people; somewhat less decisive than the average person; somewhat less inclined than the average person to assume demanding responsibilities; undertakes variety of new activities more readily than the average person; strongly cordial or expressively warm-hearted on first contact with people; fairly strongly sympathetic toward people and their problems; tends to be self-centered; tends to have fairly strong urge to push ahead of people; has more self-control than the average individual.

The successful route salesman, as compared with the distinctly less successful one, differs significantly as follows: He is even more free from nervous tendencies, and distinctly superior to the average person in this respect; is not given to wide swings or ups-and-downs in mood; is somewhat above average in cordiality, but not strongly cordial, in contrast to the not-so-successful route salesman; is somewhat self-centered, whereas the low salesman is below average in this trait; is

strongly self-controlled, operating planfully rather than impulsively;
strongly free from need for creativity and originality in activities and
able to stand routine well.

SUGGESTIONS FOR FURTHER RESEARCH

1. Analysis of application blank items against criteria to determine whether or not personal history data have prognostic significance.
2. Make a thorough item analysis of all test questions, combine the items of highest differentiating power into a new omnibus test which would do the same job as the hundreds of test items used in this study.
3. Based on thorough analysis of the job of route salesman, set up situational performance tests and compare two extreme groups of very good and very poor salesmen in these "practical" tests.
4. Administer a complete battery of tests to 200 consecutive applicants, hire disregarding tests, file test results, collect criterion data, then analyze data by follow-up method to determine which trait measures on the tests would have predicted performance.
5. Compare relative efficacy of tests and personal history data in differentiating between highly successful and unsuccessful salesmen.

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MANUAL FOR TRAIT INTERPRETATION OF
THE PERSONALITY INVENTORY

1. ~~Emotionally adjusted-Emotionally maladjusted.~~ A measure of neurotic tendency. Persons scoring high on this scale tend to be emotionally unstable. Those scoring above the 98 percentile would probably benefit from psychiatric or medical advice. Those scoring low tend to be very well balanced emotionally.
2. ~~Self-sufficient-Non-self-sufficient.~~ A measure of self-sufficiency. Persons scoring high on this scale prefer to be alone, rarely ask for sympathy or encouragement, and tend to ignore the advice of others. Those scoring low dislike solitude and often seek advice and encouragement.
3. ~~Introversion-Extroversion.~~ A measure of introversion-extroversion. Persons scoring high on this scale tend to be introverted; that is, they are imaginative and tend to live within themselves. Scores above the 98 percentile bear the same significance as do similar scores on the emotionally adjusted-emotionally maladjusted scale. Those scoring low are extroverted; that is, they rarely worry, seldom suffer emotional upsets, and rarely substitute daydreaming for action.
4. ~~Dominant-Submissive.~~ A measure of dominance-submission. Persons scoring high on this scale tend to dominate others in face-to-face situations. Those scoring low tend to be submissive.
5. ~~Self-confident-Self-conscious.~~ A measure of confidence in oneself. Persons scoring high on this scale tend to be hamperingly self-conscious and to have feelings of inferiority; those scoring above the 98 percentile would probably benefit from psychiatric or medical advice. Those scoring low tend to be wholesomely self-confident and to be very well adjusted to their environment.

6. ~~Social-Non-Social~~. A measure of sociability. Persons scoring high on this scale tend to be nonsocial, solitary, or independent. Those scoring low tend to be sociable and gregarious.

MANUAL FOR TRAIT INTERPRETATION OF
THE JOHNSON TEMPERAMENT ANALYSIS

1. Nervous-Composed. Nervous is a trait so well known as to call for little description here. Restlessness, fidgeting, tenseness, sleeplessness, tendency to worry, and faulty muscular control are typical symptoms. It is well worth measuring even though more variable in its manifestations than most of the traits. With nervousness high, any of the other traits are worsened, so that improvement in this trait often improves several of them. It is well to note that when nervousness is high, it may be a temporary condition brought on by the onset of much worry, fatigue, stress, conflict, or blow to self esteem, or a more constant condition. The trait is negatively correlated (high when the other is low) with self-mastery but is sufficiently independent to need separate measurement. Any percentile above 60 is poor and should cause concern. It lowers one's social acceptability and increases fatigue from a given amount of effort.
2. Depressive-Gay-hearted. Depressive is the best known of all the traits and is properly included in most temperament tests and classifications. Since it is sometimes helped by health improvement, especially by raising a low basal metabolism by thyroid extract or sex hormones, medical examination is in order when the score is high. It is also sometimes the result of the climacteric (period around the cessation of the menstrual periods) again calling for medical treatment. Percentiles from 60 up are too high to tolerate without an effort to improve. It is correlated positively with nervousness and improvement of either usually helps the other. It damages severely the wellbeing of the individual and lowers his effectiveness socially and in nearly all occupations. It may change in waves, alternating with a lesser degree or less frequently with the active trait to be discussed next. This condition is called cycloid. In an extreme case of depression accompanied by this cycloid condition

with very high activity and very low self-mastery, the attention of a psychiatrist is indicated.

3. Active-Quiet. Active is the trait that is shown in the dynamic, lively, hustling, life-of-the-party, "peppy" persons well known to all. The fairly wide range of 10-95 is permissible without serious concern. Where the score is higher, difficulty comes from over-doing with the resultant fatigue, which is often so disturbing in many ways. There is also in the high scores so strong a drive as to make temper manifestation a danger. It is in courtship that the trait is of special significance, since persons with high scores tend to be chosen over more approvable persons. On the other hand, greater marriage stability is found with moderate scores. It is highly dependent on physiological conditions. When the percentile is 1 or 2 there is probably a health condition calling for attention. While the highly active may drop down to depressive spells at intervals, a high level is maintained by most persons. It is much more common for the fluctuations to be minor, than to get the strong alternations so many expect to find.

4. Cordial-Cold. Cordial is expressive warm-heartedness. It has usually been included with active under the name manic, but is here separately measured, because a score in each is needed for the best counseling. It is a trait of the highest value in courtship and marriage and in promoting good social relations. It is also allied to sympathetic, but shows itself more in expression than does the sympathetic. Percentiles of 40-95 indicate a desirable status. It is a component in that which is usually called extrovert and is of great value in sales and entertainment occupations. Where the percentiles are 5 or below there is usually a deficiency in either thyroid or sex hormones.

5. The Sympathetic-Hard Boiled trait undoubtedly arose as a biological necessity to insure the adequate care of children. Like the cordial trait, its greatest use is in producing good parenthood, courtship and marriage. It has a better usefulness in the service occupations than in competitive business. A range of 40-95 are desirable percentiles. When above 95 there is a danger of being made a "sucker" or "easy mark".

6. Subjective-Objective is the trait of being highly self-centered. It may go so far that the individual interprets many things as related to himself, although there may be no real relationship. It is one of three principal subdivisions of introvert; the other two being introspective and shy. From these, subjective was chosen for this test as being the one of these which seriously affects social relationships. Shyness may be tolerated, but the subjective is resented. It is often met in the aggressive and critical. The trait seriously impairs courtship, marriage, and vocational efficiency; makes poor parents, and alienates other people. The best percentiles are 12 to 60. Its upper extreme is found in one of the commonest insanities, schizophrenia or dementia praecox.

7. Aggressive-Submissive is the trait which causes people to be pushful, ruthless, ambitious, conceited, persistent and determined. It is notably higher in men than in women.

Aggressive with the traits, critical and subjective, make the paranoid combination. Aggressive is best within the 8-60 percentile although higher degrees are useful in war and competitive business. Higher percentiles than 60 are at the expense of the family to which excessive aggressiveness is harmful. It is seldom measured, yet it seems to be one of the most damaging in marriage. In addition to the relationship above, it is also related to active. When aggressive is very low, active is usually also very low and the remarks about hormone deficiencies in the low active apply here also, especially in reference to androgen (male hormone). When critical and subjective are both high, and aggressive much lower, a less energetic type of paranoid is found which is less harmful.

8. Critical-Appreciative is named very naturally. Its damage in the family is great. Whereas the aggressive differs between the sexes, this is less true of the critical. This is one reason for separating these traits usually combined as paranoid. The extreme of this paranoid combination is found in another insanity, paranoid schizophrenia. The very highest scores indicate disagreeable, disliked people. The best scores lie between 10 and 60 percentile.

9. Self-mastery-Impulsive is the tendency to make plans and carry them through relatively undeflected by impulse and caprice. It is nearly the opposite of impulsive and capricious. It involves a capacity to inhibit but also

involves an ability to decide when and how much to inhibit and act accordingly. It is very low in all the insane tested. This trait is considered to be best within the 65-97 percentiles. This applies to marriage, parenthood, and most occupations. In the entertainment field where spontaneity and expressiveness are of greater moment probably 35-75 would constitute a better zone. The trait should give concern below 10 percentile. Self-mastery should always be considered in weighing the degree of any other trait. Thus a degree of "critical" that would be harmful at 30 percentile in self-mastery might not be so considered at 80 percentile of self-mastery. Self-mastery above 97 tends to an impractical perfectionism that may be harmful in itself and damage social relationships, including marriage.

THE PERSONAL AUDIT

1. Seriousness-Impulsiveness. High scores indicate a serious disposition characterized by quietness, ambition, and studiousness. Usually interests are specialized and stable resembling those of successful draftsmen, engineers, mathematicians, and chemists. Cautiousness is often present to some degree. Socializing tends to be confined to close friends. Agreeableness and cooperation may be present. Low scores indicate pronounced sociability (or the need for it), aggressiveness, and dominance. Although interests

are broad and resemble those of successful personnel and executive office managers, they tend to fluctuate. Talkativeness and impulsiveness, accompanied by a carefree attitude are often present, coupled at times with a disregard for the rights of others.

2. Firmness-Indecision. High scores indicate positiveness and conscientiousness. The individual tends to be cooperative, poised, and confident. Ability to make a decision based upon facts is usually present, and issue may be taken with a person, even a superior, when he is believed to be wrong. Concentration and evaluation are easy and recreational activities tend to be wholesome and worth while.

Low scores indicate a tendency to accept momentarily and impulsively suggestions of others. Frequently this leads to an inability to make or maintain a decision. Concentration and evaluation are often difficult, sometimes resulting in depression. Boredom may be present; recreational activities tend to be light and frivolous.

3. Tranquillity-Irritability. High scores indicate evenness of temperament and lack of irritability. There is little tendency to "fly off the handle" or become impatient. Work is ordinarily performed at a steady methodical rate without friction. Getting along well with associates, the individual is usually tranquil and confident of his abilities.

Low scores indicate readiness and unevenness of response, often accompanied by annoyance and fault-finding toward subordinates. Interests show some resemblance to those of successful purchasing agents and inspectors. Temperament may be erratic and peevish, and associated with marital unhappiness. Although great ambition may be present, slow advancement creates dissatisfaction.

4. Frankness-Evasion. High scores indicate dependability, frankness, and truthfulness. Work is ordinarily performed conscientiously. Relationships with associates are usually harmonious. There is willingness to accept responsibility and expectation that others will do likewise. Rarely depressed, the individual is stable and cooperative. Scores at this level are usually associated with happiness in work and marriage.

Low scores indicate unwillingness to face reality and inability to take responsibilities. "Passing the buck" and projecting blame on others are often present. Exaggeration, phantasy, and lying are sometimes shown. Often depressed and usually unpredictable, the individual may lack dependability and find it difficult to cooperate with others. Marital unhappiness is often found.

5. Stability-Instability. High scores indicate pronounced confidence in self and willingness to carry responsibilities. Interests resemble those of aviators, engineers, and chemists. Usually stable and carefree, the person may

appear bold to associates. Able to work alone or with others, self-sufficiency and dominance are usually present. High scores are more often associated with occupational success and marital happiness than is true of low scores.

Low scores indicate a lack of self-confidence accompanied by feelings of inferiority. The individual is frequently unstable, shy, and fearful. Preferring to work with others rather than by himself, he is oftentimes depressed and subject to sudden changes in mood. Although often lacking self-sufficiency, he may seem withdrawn. Rarely evincing qualities of leadership, he is most likely to be working at routine or clerical tasks.

6. Tolerance-Intolerance. High scores indicate broad-minded, easygoing attitudes. Standards and ideals tend to be flexible, practical, and realistic. Working relationships are usually objective, but pleasant and harmonious. Temperament tends to be stable, confident, and smooth.

Low scores indicate strong attitudes, usually unfavorable, toward others. Intolerance and prejudice, often disguised as "high" standards and ideals, may be present. Purchasing agents, inspectors, and persons in other vocations where maintenance of fixed standards is important, often score at this level. Inferiority, peevishness, and instability are frequently found.

7. Steadiness-Emotionality. High scores indicate normal ways of thinking. Feelings are not intense. Persons whose work requires objectivity and courage, such as surgeons and military leaders, score at about this level. Ordinarily not repressed, the individual is not disagreeable nor hypercritical. Happily married people and generally well-adjusted persons, especially women, are often found here.

Low scores indicate that the individual is atypical. Usually sensitive, feelings are volatile and deepseated. Interests in writing, drama, arts, and literature are often found. Writers, actors, and actresses frequently score at this level. Individualistic, creative work is preferred and the person may appear temperamental or eccentric to others. Intense and usually not too well-adjusted, marriage may not prove too satisfactory. Repression and sexual conflicts are not uncommon.

8. Persistence-Fluctuation. High scores indicate stable attitudes and interests with little likelihood of pronounced changes occurring after age 25. Mature people tend to score at this level. They are usually satisfied with their environment, and interests and attitudes resemble those of successful cost accountants, bank cashiers, and purchasing agents. Ordinarily desirable, they should be questioned when accompanied by low percentile scores on Parts 4 (Frankness) and 5 (Stability). Extremely high scores are not

favorable when earned by persons under age 20; they may be indicative of inflexibility.

Low scores indicate that interests and attitudes are in a state of flux. Such changes are usually undesirable after the age of 25 and may show bewilderment and uncertainty. For persons above the age of 30, it is usually undesirable for low to extremely low scores to be present. Suggestive of immaturity, scores at this level may go with frequent job changes. Adaptable initially to a new job, a desire for change may soon appear.

9. Contentment-Worry. High scores indicate few unsolved problems and absence of worry about them if they do exist. The person is usually stable, cooperative, and well-adjusted to his work and social life. Happily married persons often score at about this level. When accompanied by average to high percentile scores on Parts 4 (Frankness), 6 (Tolerance), and 7 (Steadiness), such a person is usually a very good employment risk.

Low scores indicate worry, uneasiness, and indecision brought about by unsolved problems. Lacking confidence, the individual is usually uncertain and beset by conflicts often revolving around adjustments to the opposite sex. Scores at this level should be regarded more seriously for adults than for young people, and more seriously for married than for single people.

THE PERSONALITY INDEX

<u>Quality</u>	<u>Meaning when high</u>	<u>Meaning when low</u>
Job Interest (JI)	Interested in work and not in self.	Little interest in work or high interest in self
Intelligence (IQ)	Suited to tasks requiring use of reasoning.	Qualified for more routine tasks not involving thinking.
Social Intelligence (SI)	Well controlled. Will get along well with others.	Poor control and is apt to cause friction if working with others, or the public.
Leadership (LE)	Likable character. A good leader.	Weak character and will not lead well.
Planning (PL)	Good organizer. Plans work well.	Needs close detailed supervision on all but routine jobs.
Drive (DR)	A pusher, will drive self hard and others moderately.	Lacking in energy or pep, will need pushing.
Follow Through (FT)	Completes well and handles all details.	Requires close checking. Will miss details.

TABLE I

TRAITS IN WHICH THERE ARE SIGNIFICANT DIFFERENCES
REPRESENTED IN TESTS PERCENTILE SCORES

TRAITS	Mean of High Salesmen	Mean of Low Salesmen	+ 1 Sigma From Mean of High Group	- 1 Sigma From Mean of High Group	+ 1 Sigma From Mean of Low Group	- 1 Sigma From Mean of Low Group	T	Chances of Significant Difference
Nervous-Composed	33	43	13 - 52	23 - 64	2.484	2.484	99	
Depressive-Gay-hearted	34	49	11 - 56	22 - 70	3.065	3.065	99	
Cordial-Cold	69	81	45 - 89	58 - 96	2.46	2.46	99	
Subjective-Objective	44	63	22 - 66	40 - 81	3.687	3.687	99	
Self-Mastery-Impulsive	81	68	54 - 97	40 - 91	2.23	2.23	97	
Emotionality-Steadiness	63	47	30 - 94	16 - 83	2.69	2.69	99	

TABLE II
MEANS AND STANDARD DEVIATIONS EXPRESSED IN PERCENTILE
FOR BOTH GROUPS

MENTAL ABILITY HIGH				
MENTAL ABILITY LOW	40	32	18-67	13-58
EMOTIONALLY ADJUSTED				
EMOTIONALLY MAL-ADJUSTED	29	25	4-59	5-54
SELF SUFFICIENT				
NON-SELF SUFFICIENT	33	28	43-59	48-53
EXTROVERT				
INTROVERT	24	26	5-50	5-50
DOMINANT				
SUBMISSIVE	65	68	35-88	46-86
CONFIDENT				
SELF-CONSCIOUS	37	35	14-67	9-71
SOCIAL				
NON-SOCIAL	15	12	4-39	4-36
SERIOUSNESS				
IMPULSIVENESS	48	55	13-88	16-90
FIRMNESS				
INDECISION	37	43	18-83	9-80
TRANQUILLITY				
IRRITABILITY	62	62	22-87	18-90
FRANKNESS				
EVASION	48	62	9-90	14-97
STABILITY				
INSTABILITY	40	25	13-68	9-75
TOLERANCE				
INTOLERANCE	50	60	1-82	1-91
PERSISTENCE				
FLUCTUATION	42	42	13-78	9-77
CONTENTMENT				
WORRY	56	60	12-83	18-91
ACTIVE				
QUIET	68	73	31-92	39-93
SYMPATHETIC				
HARD-BOILED	73	66	33-95	39-91
AGGRESSIVE				
SUBMISSIVE	80	68	44-97	39-96
CRITICAL				
APPRECIATIVE	52	59	26-66	38-73
JOB INTEREST HIGH				
JOB INTEREST LOW	44	48	24-70	28-68
SOCIAL INTELLIGENCE HIGH				
SOCIAL INTELLIGENCE LOW	42	46	19-68	27-67
LEADERSHIP HIGH				
LEADERSHIP LOW	62	60	42-80	42-75
PLANNING HIGH				
PLANNING LOW	40	42	22-62	18-68
STRONG DRIVE				
WEAK DRIVE	40	38	25-60	14-63
STRONG FOLLOW THROUGH				
WEAK FOLLOW THROUGH	38	36	17-66	15-64
	Mean High Group	Mean Low Group	S.D. of High Group	S.D. of Low Group

TABLE III
T SCORES AND RAW SCORES FOR ALL TRAITS MEASURED

MENTAL ABILITY HIGH				
MENTAL ABILITY LOW	-20.31	18.53	6.98	6.2
EMOTIONALLY ADJUSTED				
EMOTIONALLY MALADJUSTED	-116	-125	64.3	58.9
SELF SUFFICIENT				
NON-SELF SUFFICIENT	12.27	3.2	34.9	34
INTROVERTED				
EXTROVERTED	-68.2	-69.51	34.8	36
DOMINANT				
SUBMISSIVE	78.68	81.93	48.7	48
CONFIDENT				
SELF-CONSCIOUS	-84.24	-89.04	56.7	72.7
SOCIAL				
NON-SOCIAL	-55.1	-60.2	34.2	59.9
SERIOUS				
IMPULSIVE	85.78	83.15	21.9	20.7
FIRMNESS				
INDECISION	47.13	45.3	14.1	11.7
TRANQUILLITY				
IRRITABILITY	87.53	87.87	21.4	24.4
FRANKNESS				
EVASION	59.53	58.36	15.6	13.9
STABILITY				
INSTABILITY	50.27	60	22.8	27.2
TOLERANCE				
INTOLERANCE	100.9	94.84	21.4	26.3
STEADINESS				
EMOTIONALITY	20.44	26.25	10.2	11.34
PERSISTANCE				
FLUCTUATION	37.35	38.67	19.9	21.1
CONTENTMENT				
WORRY	70.78	68.8	25.9	22.65
NERVOUS				
COMPOSED	65.98	69.31	5.75	6.7
DEPRESSIVE				
GAY-HEARTED	64.04	68.2	5.77	7.00
ACTIVE				
QUIET	76.61	78.07	7.77	6.83
CORDIAL				
COLD	98.22	101.62	6.43	6.63
SYMPATHETIC				
HARD-BOILED	89.73	89.18	4.2	3.92
SUBJECTIVE				
OBJECTIVE	71.49	76.11	5.6	6.14
AGGRESSIVE				
SUBMISSIVE	80.64	79.33	5.5	5.49
CRITICAL				
APPRECIATIVE	68.53	70.87	7.06	6.9
	Mean	Mean	S.D.	S.D.
Traits	of High	of Low	of High	of Low
	Salesmen	Salesmen	Salesmen	Salesmen

TABLE III (Continued)

SELF-MASTERY	'	'	'	'
IMPULSIVE	'	99.67	'	96.04
JOB INTEREST HIGH	'	'	'	'
JOB INTEREST LOW	'	73.7	'	74.04
SOCIAL INTELLIGENCE	'	'	'	'
HIGH OR LOW	'	92.8	'	96.1
LEADERSHIP HIGH	'	'	'	'
LEADERSHIP LOW	'	58.7	'	57.5
PLANNING HIGH	'	'	'	'
PLANNING LOW	'	50.1	'	50.8
STRONG DRIVE	'	'	'	'
WEAK DRIVE	'	72.2	'	70.1
STRONG FOLLOW THROUGH	'	'	'	'
WEAK FOLLOW THROUGH	'	71.3	'	69.84
	'	'	'	'
	'	Mean	'	Mean
	'	of High	'	of Low
Traits	'	Salesmen	'	Salesmen
	'	'	'	'
	'		'	S.D.
	'		'	of High
	'		'	Salesmen
	'		'	'
	'		'	S.D.
	'		'	of Low
	'		'	Salesmen
	'		'	'

TABLE IV

SUMMARY OF t SCORES FOR ALL TRAITS MEASURED

	t Score	Chances in 100 of True Difference
MENTAL ABILITY	1.28	81
EMOTIONALLY ADJUSTED	.5389	41
SELF-SUFFICIENT	1.245	79
EXTROVERT	.177	22
DOMINANT	.3155	25
SELF-CONFIDENT	.3468	27
SOCIAL	.6998	51
SERIOUSNESS	.589	24
FIRMNESS	.476	33
TRANQUILLITY	.0702	5
FRANKNESS	.119	9
STABILITY	1.891	94
TOLERANCE	1.202	77
STEADINESS	2.69	99
PERSISTANCE	.305	24
CONTENTMENT	.387	29
NERVOUS	2.484	99
DEPRESSIVE	3.065	99
ACTIVE	.877	62
CORDIAL	2.46	99
SYMPATHETIC	.859	47
SUBJECTIVE	3.687	99
AGGRESSIVE	1.12	73

TABLE IV (Continued)

	t Score	Chances in 100 of True Difference
CRITICAL	1.59	89
SELF-MASTERY	2.23	97
JOB INTEREST	.33	25
SOCIAL INTELLIGENCE	.964	66
LEADERSHIP HIGH		
LEADERSHIP LOW	.603	45
PLANNING HIGH		
PLANNING LOW	.357	28
WEAK DRIVE		
STRONG DRIVE	.461	35
WEAK FOLLOW THROUGH		
STRONG FOLLOW THROUGH	.999	64

TABLE VI

WONDERLIC PERSONNEL TEST-RAW SCORES AND t VALUES
FOR THE TRAIT HIGH INTELLIGENCE-LOW INTELLIGENCE

High Salesman	Low Salesman
32	32
32	31
32	29
31	28
31	28
30	27
30	26
29	24
28	23
27	22
27	22
26	22
26	22
23	21
22	21
22	21
22	21
21	20
21	19
21	19
21	19
21	19
20	19
20	18
20	18
19	18
19	17
18	17
18	16
17	16
17	16
15	15
14	15
14	15
14	15
13	14
13	13
13	13
13	12
12	11
12	11
10	8
10	8
9	7
9	6

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	20.31	2142
Low	45	44	18.53	1704
	Sum = 88	Diff.	1.78	SX ² 3846

$$s^2 = \frac{3846}{88} = 43.7$$

$$s_x = \sqrt{\frac{2(43.74)}{45}} = 1.39$$

$$t = \frac{1.78}{1.39} = 1.28$$

TABLE VII

BERNREUTER PERSONALITY INVENTORY-RAW SCORES AND t VALUES
FOR THE TRAIT - EMOTIONALLY ADJUSTED-EMOTIONALLY MALADJUSTED

High Salesman	Low Salesman
60	49
50	4
40	-16
-35	-30
-50	-34
-50	-50
-60	-75
-70	-78
-70	-85
-70	-89
-75	-90
-80	-92
-85	-95
-85	-95
-90	-100
-95	-100
-100	-103
-100	-105
-110	-109
-120	-114
-120	-123
-125	-133
-130	-134
-130	-138
-132	-140
-140	-145
-140	-149
-140	-150
-140	-156
-145	-158
-150	-158
-160	-160
-165	-162
-170	-164
-173	-165
-175	-168
-177	-170
-178	-171
-183	-177
-185	-183
-185	-187
-187	-199
-195	-204
-195	-210
-205	-225

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	-116	180639
Low	45	44	-123	152623
Sum	88		Diff. 7.00	2×333262

$$s^2 = \frac{333262}{88} = 3787.04$$

$$s_x = \sqrt{\frac{2(3787.04)}{45}} = 12.99$$

$$t = \frac{7.00}{12.99} = .5389$$

TABLE VIII

BERNREUTER PERSONALITY INVENTORY-RAW SCORES AND t VALUES
FOR THE TRAIT SELF SUFFICIENT - NON-SELF SUFFICIENT

High Salesman	Low Salesman
-3	95
-3	83
-10	66
-12	65
-13	50
-15	39
-15	39
-20	35
-25	23
-35	22
-40	21
-45	20
-50	19
-70	15
-80	15
5	11
15	11
20	9
20	8
20	6
20	4
20	2
20	2
24	1
25	0
25	-2
25	-2
30	-6
30	-6
30	-7
30	-12
33	-13
35	-14
35	-16
38	-18
39	-24
39	-25
40	-26
45	-26
45	-42
50	-45
50	-46
50	-56
50	-65
50	-66

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	12.27	52564
Low	45	44	3.2	55329
Sum =	88		Diff. 9.07	BY2107893

$$s^2 = \frac{107893}{88} = 1226$$

$$s_x = \sqrt{\frac{2(1226)}{45}} = 7.38$$

$$t = \frac{9.07}{7.38} = 1.23$$

TABLE IX

BERNREUTER PERSONALITY INVENTORY-RAW SCORES AND t
VALUES FOR THE TRAIT INTROVERTED - EXTROVERTED

High Salesman	Low Salesman
60	19
20	5
10	2
-20	-6
-30	-14
-30	-30
-30	-32
-40	-45
-40	-45
-40	-55
-45	-55
-50	-55
-55	-56
-55	-57
-55	-59
-60	-60
-65	-60
-65	-61
-66	-62
-70	-64
-70	-69
-70	-71
-70	-71
-75	-72
-75	-74
-80	-76
-85	-80
-86	-81
-90	-81
-90	-85
-90	-89
-90	-90
-90	-93
-92	-94
-97	-94
-100	-94
-100	-95
-100	-96
-102	-97
-105	-111
-108	-115
-110	-115
-110	-129
-115	-132
-150	-134

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	-68.2	64956
Low	45	44	-69.51	54479
Sum =	88		Diff. 1.31	119435

$$s^2 = \frac{119435}{88} = 1357.30$$

$$s_x = \sqrt{\frac{2(1357.30)}{45}} = 7.77$$

$$t = \frac{1.31}{7.50} = .17$$

TABLE X

BERNREUTER PERSONALITY INVENTORY-RAW SCORES
AND t VALUE FOR TRAIT DOMINANT - SUBMISSIVE

High Salesman	Low Salesman
-80	-29
-50	-13
1	-10
3	- 8
25	20
35	23
45	26
50	28
50	31
50	35
55	38
55	39
60	50
65	59
65	60
66	60
70	66
75	73
75	75
75	86
80	89
80	91
80	92
85	93
90	94
90	97
90	104
90	105
92	107
100	108
100	110
105	110
105	115
107	121
108	121
110	125
115	125
122	126
130	130
130	130
135	134
135	139
137	162
160	175
175	175

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	78.68	103732
Low	45	44	81.93	109718
Sum =	88	Diff.	3.25	5X2213450

$$s^2 = \frac{213450}{88} = 2425.6$$

$$s_x = \sqrt{\frac{2(2425.6)}{45}} = 10.3$$

$$t = \frac{3.25}{10.3} = .31$$

TABLE XI

BERNREUTER PERSONALITY INVENTORY-RAW SCORES AND t
VALUE FOR TRAIT SELF CONFIDENT - SELF CONSCIOUS

High Salesman	Low Salesman
165	80
125	74
5	29
-3	28
-3	25
-7	14
-10	-28
-25	-36
-25	-44
-25	-47
-25	-50
-50	-50
-55	-50
-60	-55
-65	-56
-65	-61
-65	-78
-75	-82
-80	-86
-85	-87
-95	-91
-95	-96
-105	-100
-105	-100
-108	-100
-108	-115
-120	-116
-120	-120
-120	-126
-120	-128
-125	-130
-135	-130
-140	-137
-140	-142
-141	-146
-145	-151
-145	-154
-150	-155
-155	-155
-155	-159
-156	-160
-165	-165
-165	-167
-170	-195
-180	-209

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	-84.24	201439
Low	45	44	-89.04	232989
Sum =	88	Diff.	4.80	$SS = 434428$

$$s^2 = \frac{434428}{88} = 4936.7$$

$$s_x = \sqrt{\frac{2(4936.7)}{45}} = 14.9$$

$$t = \frac{4.80}{14.9} = .32$$

TABLE XII

BERNREUTER PERSONALITY INVENTORY-RAW SCORES
AND t VALUE FOR TRAIT SOCIAL - NON-SOCIAL

High Salesman	Low Salesman
10	48
-2	10
-3	6
-3	-13
-6	-14
-13	-25
-19	-27
-20	-29
-30	-31
-31	-31
-31	-33
-35	-40
-35	-44
-40	-46
-40	-49
-45	-50
-45	-55
-45	-55
-49	-56
-50	-60
-50	-60
-50	-62
-50	-63
-50	-65
-50	-67
-55	-67
-55	-68
-55	-68
-55	-70
-58	-70
-65	-70
-75	-76
-76	-80
-81	-81
-85	-84
-85	-85
-85	-85
-90	-88
-93	-92
-95	-105
-95	-117
-115	-120
-120	-120
-125	-125
-126	-130

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	-55.1	59748
Low	45	44	-60.2	60092
Sum	88	Diff.	5.1	8X=119840

$$s^2 = \frac{119840}{88} = 1361.8$$

$$s_x = \sqrt{\frac{2(1361.8)}{45}} = 7.7$$

$$t = \frac{5.1}{7.7} = .662$$

TABLE XIII

PERSONAL AUDIT-RAW SCORES AND t
VALUE FOR TRAIT SERIOUS-IMPULSIVE

High Salesman	Low Salesman
125	137
119	114
118	112
118	109
115	109
113	102
109	102
106	101
106	100
103	100
101	98
98	97
97	96
97	95
96	93
92	92
92	89
91	89
91	89
90	86
89	86
89	86
88	85
87	83
86	83
86	82
82	82
81	81
80	77
80	76
79	76
78	74
77	74
73	73
73	73
73	72
73	72
71	61
66	58
64	56
52	52
50	49
47	44
34	40
25	37

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	85.76	21208
Low	45	44	83.15	18933
	Sum = 88	Diff. 2.63		$SX^2 = 40141$

$$s^2 = \frac{40141}{88} = 455$$

$$s_x = \sqrt{\frac{2(455)}{45}} = 4.49$$

$$t = \frac{2.63}{4.49} = .585$$

TABLE XIV

PERSONAL AUDIT-RAW SCORES AND t
VALUE FOR TRAIT FIRMNNESS-INDECISION

High Salesman	Low Salesman
77	82
74	67
74	65
73	61
63	60
62	55
62	53
61	53
61	53
60	52
60	51
57	51
56	50
55	50
53	50
53	49
52	48
50	47
50	47
49	47
47	47
45	46
44	46
44	46
44	45
44	45
43	45
42	44
42	43
41	43
41	41
41	40
38	40
36	40
36	36
36	36
34	34
32	34
32	33
30	33
30	30
27	30
25	30
23	24
22	16

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	47.13	8774
Low	45	44	45.3	5990
Sum	= 88	Diff.	1.83	SX ² 14764

$$s^2 = \frac{14764}{88} = 187.8$$

$$SX = \sqrt{\frac{2(187.8)}{45}} = 2.89$$

$$t = \frac{1.83}{2.89} = .634$$

TABLE XV

PERSONAL AUDIT-RAW SCORES AND t VALUE
FOR TRAIT TRANQUILITY - IRRITABILITY

High Salesman	Low Salesman
146	149
136	125
117	123
115	116
114	115
113	113
111	112
104	109
104	108
101	106
100	105
100	102
100	101
100	100
96	98
95	97
95	97
93	96
92	95
90	93
89	93
88	91
87	91
85	89
84	87
83	86
82	85
81	84
80	84
80	82
79	81
79	81
77	80
76	77
75	73
74	73
73	70
68	65
66	65
65	54
61	53
57	46
44	42
42	34
41	28

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	87.53	21096
Low	45	44	87.87	26410
Sum =	88		Diff. .34	$8X^2$ 47506

$$s^2 = \frac{47506}{88} = 539.8$$

$$s_x = \sqrt{\frac{2(539.8)}{45}} = 4.89$$

$$t = \frac{.34}{4.89} = .07$$

TABLE XVI

PERSONAL AUDIT-RAW SCORES AND t
VALUE FOR TRAIT FRANKNESS-EVASION

High Salesman	Low Salesman
93	94
86	88
86	84
80	78
80	77
80	76
77	75
74	74
74	71
72	70
71	68
71	68
70	67
70	66
69	66
69	64
67	64
62	61
61	59
60	58
60	58
59	55
58	55
57	55
56	54
56	53
56	53
55	53
54	52
53	51
52	50
52	50
52	50
51	49
51	48
51	48
47	47
42	47
38	46
36	45
36	40
36	40
35	39
34	38
30	22

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	59.53	10637
Low	45	44	58.36	9242
	Sum = 88	Diff.	1.17	SX^2 19879

$$s^2 = \frac{19879}{88} = 225.8$$

$$SX = \sqrt{\frac{2(225.8)}{45}} = 3.12$$

$$t = \frac{1.17}{3.12} = .316$$

TABLE XVII

PERSONAL AUDIT-RAW SCORES AND t
VALUE FOR TRAIT STABILITY-INSTABILITY

High Salesmen	Low Salesman
102	131
91	117
91	111
88	107
84	99
80	96
80	90
75	85
74	84
72	81
68	79
68	74
64	72
62	72
61	70
60	67
58	65
56	65
51	62
49	62
48	61
48	60
47	60
41	57
41	56
41	54
39	51
39	50
37	50
36	48
36	47
35	41
33	41
33	39
32	35
31	35
30	33
28	29
28	27
28	27
27	26
23	26
22	20
14	20
9	18

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	50.22	22878
Low	45	44	60.00	33724
	Sum =	88	Diff. 9.78	9X2 56602

$$s^2 = \frac{56602}{88} = 643.3$$

$$s_x = \sqrt{\frac{2(643.3)}{45}} = 5.35$$

$$t = \frac{9.78}{5.35} = 1.82$$

TABLE XVIII

PERSONAL AUDIT-RAW SCORES AND t VALUE
FOR TRAIT TOLERANCE - INTOLERANCE

High Salesman	Low Salesman
136	144
128	135
126	127
126	127
125	125
125	125
123	125
121	122
120	122
117	119
116	119
116	117
114	114
114	112
113	108
112	108
112	107
111	106
111	105
109	103
107	102
107	101
105	96
103	94
102	94
100	90
99	88
98	87
97	86
96	84
93	84
91	82
90	81
88	81
88	80
87	80
85	77
84	69
82	67
81	66
64	58
62	57
60	52
52	38
42	10

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	100.9	20621
Low	45	44	94.84	32412
Sum	88	Diff.	6.06	52433

$$s^2 = \frac{52433}{88} = 595.8$$

$$s_x = \sqrt{\frac{2(595.8)}{45}} = 5.14$$

$$t = \frac{6.06}{5.14} = 1.18$$

TABLE XIX

PERSONAL AUDIT-RAW SCORES AND t VALUE
FOR TRAIT STEADINESS-EMOTIONALITY

High Salesman	Low Salesman
45	47
40	45
39	45
35	41
33	40
32	39
31	39
30	37
30	37
29	37
28	35
28	34
26	34
26	34
25	33
23	33
23	31
22	31
21	31
21	30
21	29
21	29
20	28
20	26
19	26
18	24
17	23
17	23
17	22
17	20
16	20
16	18
15	18
14	18
13	18
13	16
12	16
12	15
11	13
8	10
7	10
5	10
5	6
2	6
1	6

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	20.44	4592
Low	45	44	26.25	5641
Sum	89	Diff.	5.81	10233

$$s^2 = \frac{10233}{88} = 116.3$$

$$s_x = \sqrt{\frac{2(116.3)}{45}} = 2.271$$

$$t = \frac{5.81}{2.271} = 2.56$$

TABLE XX

PERSONAL AUDIT-RAW SCORES AND t
VALUE FOR TRAIT PERSISTENCE-FLUCTUATION

High Salesman	Low Salesman
76	94
70	90
68	69
68	65
66	63
65	61
65	57
64	56
62	56
57	55
55	52
52	52
50	52
50	51
48	48
47	47
47	45
46	44
46	44
42	43
39	42
37	41
36	40
32	40
31	36
30	35
30	34
30	32
29	31
28	31
24	31
24	30
21	27
20	25
19	24
19	23
15	23
15	20
15	11
12	9
10	7
8	2
6	1
5	1
2	0

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	37.35	17535
Low	45	44	38.67	20625
	Sum = 89	Diff.	1.32	$89^2 = 38160$

$$s^2 = \frac{38160}{89} = 433.63$$

$$s_x = \sqrt{\frac{2(433.63)}{45}} = 4.39$$

$$t = \frac{1.32}{4.33} = .3$$

TABLE XXI

PERSONAL AUDIT-RAW SCORES AND t
VALUE FOR TRAIT CONTENTMENT-WORRY

High Salesman	Low Salesman
141	115
126	109
115	109
110	105
110	98
103	92
100	91
92	89
89	88
88	87
88	87
85	83
85	82
83	81
82	81
80	78
78	78
76	77
76	77
71	76
69	76
68	72
66	69
66	69
66	68
62	67
59	66
59	64
58	60
58	58
58	57
57	54
56	52
55	50
52	48
51	48
51	47
48	46
42	45
42	40
42	37
37	33
33	32
29	28
23	27

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	70.78	29460
Low	45	44	68.8	22529
Sum -	88	Diff.	1.98	SX^2 51989

$$s^2 = \frac{51989}{88} = 590.8$$

$$SX = \sqrt{\frac{2(590.8)}{45}} = 5.12$$

$$t = \frac{1.98}{5.12} = .387$$

TABLE XXII

JOHNSON TEMPERAMENT ANALYSIS-RAW SCORES
AND t SCORES FOR TRAIT NERVOUS-COMPOSED

High Salesman	Low Salesman
80	83
76	82
75	80
75	79
75	79
73	78
73	78
73	78
72	76
72	76
71	76
71	75
70	74
70	74
68	73
68	71
67	71
66	70
66	70
66	70
66	70
65	69
65	69
64	68
64	68
63	67
63	67
63	67
63	66
63	66
62	66
62	65
62	65
62	64
62	64
62	62
61	62
60	61
60	61
59	60
59	60
59	60
58	59
58	59
57	59

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	65.98	1453
Low	45	44	69.31	2082
Sum -	88	DIFF.	3.33	529

$$s^2 = \frac{529}{88} = 40.17$$

$$s_x = \sqrt{\frac{2(40.17)}{45}} = 1.34$$

$$t = \frac{3.33}{1.34} = 2.484$$

TABLE XXIII

JOHNSON TEMPERAMENT ANALYSIS-RAW SCORES
AND t SCORES FOR TRAIT DEPRESSIVE-GAY-HEARTED

High Salesman	Low Salesman
75	81
75	80
74	78
73	78
73	78
72	78
72	77
71	77
71	76
70	76
70	74
70	74
68	72
67	70
65	70
65	70
65	70
64	70
64	69
64	69
63	69
63	68
63	68
63	68
62	67
62	67
62	67
62	67
61	66
61	66
60	65
60	64
60	64
60	63
60	63
60	62
59	62
59	60
59	59
59	59
58	59
58	58
57	58
56	57
55	57
54	56

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	64.04	1452
Low	45	44	67.98	2158
	Sum =	88	Diff. 3.94	5X ² 3620

$$s^2 = \frac{3620}{88} = 41.14$$

$$s_x = \sqrt{\frac{2(41.14)}{45}} = 1.36$$

$$t = \frac{3.94}{1.36} = 2.91$$

TABLE XXIV

JOHNSON TEMPERAMENT ANALYSIS-RAW SCORES
AND t VALUE FOR TRAIT ACTIVE - QUIET

High Salesman	Low Salesman
89	96
89	92
88	88
88	87
88	87
86	87
85	86
85	85
84	84
84	84
84	84
84	84
82	84
82	82
82	82
82	81
80	81
80	81
79	80
79	80
78	79
78	79
78	78
78	77
78	77
77	77
76	76
75	76
75	75
75	75
73	75
73	74
72	74
71	73
70	72
70	72
69	72
69	71
68	70
68	69
67	69
67	69
64	69
64	69
63	69
60	66

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	76.61	2655
Low	45	44	78.07	2052
Sum =	88	Diff.	1.36	$s^2 = 4707$

$$s^2 = \frac{4707}{88} = 53.37$$

$$s_x = \sqrt{\frac{2(53.07)}{45}} = 1.55$$

$$t = \frac{1.36}{1.55} = .877$$

TABLE XXV

JOHNSON TEMPERAMENT ANALYSIS-RAW SCORES
AND t VALUE FOR TRAIT CORDIAL-COLD

High Salesman	Low Salesman
107	113
107	113
105	112
104	111
104	110
103	109
103	109
103	109
103	108
103	107
103	107
102	106
102	106
102	106
101	106
101	105
101	104
101	104
101	104
101	104
100	103
100	103
100	102
100	101
100	100
100	100
99	100
98	100
98	99
97	99
96	98
95	98
95	98
94	96
94	96
94	95
94	95
93	95
93	94
91	93
90	93
90	92
88	92
87	89
71	89

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	98.22	1818
Low	45	44	101.62	1937
Sum =	88	Diff.	3.40	$8X^2$ 3755

$$s^2 = \frac{3755}{88} = 42.78$$

$$s_x = \sqrt{\frac{2(42.44)}{45}} = 1.388$$

$$t = \frac{3.40}{1.388} = 2.46$$

TABLE XXVI

JOHNSON TEMPERAMENT ANALYSIS-RAW SCORES
AND t VALUE FOR TRAIT SYMPATHETIC-HARD BOILED

High Salesman	Low Salesman
100	96
96	96
96	96
95	95
95	94
95	94
95	94
95	94
94	94
93	93
93	92
93	92
92	92
92	92
91	91
91	91
91	91
91	91
90	90
90	90
90	90
90	89
90	89
89	89
89	89
89	89
89	89
88	88
88	88
88	88
88	88
87	87
87	87
87	87
86	86
86	86
86	85
86	85
86	84
86	84
85	84
85	83
85	83
82	83
80	81

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	89.73	758
Low	45	44	89.18	678
Sum -	88	Diff.	.55	1436

$$s^2 = \frac{1436}{88} = 16.32$$

$$s_x = \sqrt{\frac{2(16.32)}{45}} = .854$$

$$t = \frac{.550}{.854} = .64$$

TABLE XXVII

JOHNSON TEMPERAMENT ANALYSIS—RAW SCORES
AND t VALUE FOR TRAIT SUBJECTIVE-OBJECTIVE

High Salesman	Low Salesman
86	92
78	85
78	84
78	84
78	83
78	83
77	83
77	82
77	81
77	81
76	81
76	80
76	80
76	80
74	79
74	79
73	79
73	78
73	78
73	78
73	77
73	76
72	76
72	76
72	76
72	75
71	75
71	74
71	74
71	74
69	74
69	73
69	73
68	73
68	73
68	72
67	71
66	70
65	68
65	67
62	67
60	66
59	65
58	64
58	63

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	71.49	1578
Low	45	44	76.11	1702
Sum	88	Diff.	4.62	$8X^2$ 3084

$$s^2 = \frac{3084}{88} = 35.00$$

$$s_x = \sqrt{\frac{2(35.00)}{45}} = 1.253$$

$$t = \frac{4.62}{1.253} = 3.687$$

TABLE XXVIII

JOHNSON TEMPERAMENT ANALYSIS-RAW SCORES AND
t VALUE FOR TRAIT AGGRESSIVE - SUBMISSIVE

High Salesman	Low Salesman
93	94
90	87
89	86
89	86
88	86
88	85
86	84
86	84
86	84
85	84
85	84
85	83
84	82
83	82
83	82
82	82
82	81
82	81
82	81
82	81
82	80
82	80
81	80
81	80
80	80
80	79
79	78
79	77
79	77
78	77
77	76
77	76
77	76
77	75
77	75
76	75
76	74
74	74
74	74
73	74
73	73
73	73
73	70
72	67
69	66

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	80.64	1329
Low	45	44	79.33	1324
Sum =	88	Diff.	1.31	8X2 2653

$$s^2 = \frac{2653}{88} = 30.147$$

$$s_x = \sqrt{\frac{2(30.147)}{45}} = 1.16$$

$$t = \frac{1.31}{1.16} = 1.13$$

TABLE XXIX

JOHNSON TEMPERAMENT ANALYSIS-RAW SCORES AND
t VALUE FOR TRAIT CRITICAL - APPRECIATIVE

High Salesman	Low Salesman
86	91
81	88
80	85
80	81
79	78
78	78
76	77
75	77
74	75
74	75
73	75
72	74
72	74
72	74
72	74
72	73
71	73
71	72
70	72
70	71
70	71
69	71
68	71
67	70
67	69
67	69
67	69
67	69
65	68
65	68
65	68
64	67
63	67
63	66
62	66
61	65
61	65
61	65
61	65
60	64
59	64
58	63
57	61
55	58
55	55

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	68.33	2152
Low	45	44	70.91	2106
	Sum =	88	Diff. = 2.58	SX ² 4303

$$s^2 = \frac{4303}{88} = 48.9$$

$$s_x = \sqrt{\frac{2(48.9)}{45}} = 1.49$$

$$t = \frac{2.53}{1.49} = 1.69$$

TABLE XXX

JOHNSON TEMPERAMENT ANALYSIS-RAW SCORES AND
t VALUE FOR TRAIT SELF-MASTERY - IMPULSIVE

High Salesman	Low Salesman
110	107
110	107
110	106
110	105
110	104
110	104
107	104
107	103
107	103
105	103
105	103
104	102
104	102
104	102
104	102
104	102
104	102
104	102
104	101
103	100
102	100
101	100
101	100
101	98
99	98
99	98
99	96
98	96
98	96
98	96
98	95
98	95
97	93
97	91
97	90
96	89
96	89
96	88
95	88
94	87
90	87
89	87
89	86
87	86
86	81
84	78
82	74

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	99.67	2355
Low	45	44	96.04	2866
	Sum = 88	Diff.	3.63	SX ² 5221

$$s^2 = \frac{5221}{88} = 59.33$$

$$s_x = \sqrt{\frac{2(59.33)}{45}} = 1.629$$

$$t = \frac{3.63}{1.629} = 2.23$$

TABLE XXXI

PERSONALITY INDEX-RAW SCORES AND
t VALUE FOR TRAIT JOB INTEREST

High Salesman	Low Salesman
91	100
90	95
87	94
87	92
86	91
84	85
84	82
84	82
84	81
84	80
82	80
82	79
81	79
81	78
80	78
79	77
79	76
79	76
77	75
76	74
75	73
75	73
75	72
73	72
73	72
73	72
73	71
73	71
72	70
72	69
71	69
70	69
68	68
68	68
67	67
66	67
66	67
64	67
63	67
61	65
59	65
55	65
55	60
50	60
43	57

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	73.7	5041
Low	45	44	74.44	3969
Sum	88		.74	9010

$$s^2 = \frac{9010}{88} = 102.3$$

$$s_x = \sqrt{\frac{2(102.3)}{45}} = 2.13$$

$$t = \frac{.74}{2.13} = .35$$

TABLE XXXII

PERSONALITY INDEX-RAW SCORES AND t
VALUE FOR TRAIT SOCIAL INTELLIGENCE

High Salesman	Low Salesman
123	120
121	117
117	116
116	114
111	113
111	113
111	113
109	107
108	107
108	106
107	106
106	106
105	106
105	105
101	103
101	103
101	103
99	103
98	101
98	101
97	100
97	99
97	98
95	98
94	97
93	95
91	94
91	94
89	92
88	92
87	91
87	89
85	89
84	87
83	87
81	84
80	82
80	82
76	81
75	80
71	78
70	75
52	72
48	66
28	62

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	92.8	15901
Low	45	44	96.1	8487
Sum	86	DIFF.	3.3	24388

$$s^2 = \frac{24388}{88} = 277.17$$

$$s_x = \sqrt{\frac{2(277.17)}{45}} = 3.51$$

$$t = \frac{3.3}{3.51} = .94$$

TABLE XXXIII

PERSONALITY INDEX-RAW SCORES AND t
VALUE FOR TRAIT LEADERSHIP

High Salesman	Low Salesman
82	79
79	74
73	72
72	71
71	70
71	67
69	67
69	66
68	66
67	66
65	65
65	65
64	65
64	63
64	62
64	62
63	61
63	59
60	59
59	58
59	57
59	57
59	57
58	57
58	57
57	56
57	56
57	56
56	56
55	54
55	54
55	54
55	53
54	51
53	51
53	50
52	48
52	47
50	46
50	46
49	45
45	45
42	42
33	39
27	36

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	58.93	4861
Low	45	44	57.5	4023
	Sum = 88	Diff.	1.43	Sum of Squares = 8884

$$s^2 = \frac{8884}{88} = 101$$

$$s_x = \sqrt{\frac{2(101)}{45}} = 2.1$$

$$t = \frac{1.43}{2.1} = .68$$

TABLE XXXIV

PERSONALITY INDEX-RAW SCORES AND
t VALUE FOR TRAIT PLANNING

High Salesman	Low Salesman
67	83
66	67
63	65
61	65
61	64
60	64
59	63
56	61
56	58
55	57
53	57
54	56
54	56
54	55
53	55
53	54
53	54
53	53
52	53
52	53
51	53
51	52
51	52
50	51
49	49
48	48
48	48
48	48
48	46
48	46
47	46
47	46
46	45
45	44
45	41
43	41
43	39
42	39
42	39
37	38
34	34
34	34
33	32
33	28

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	50.1	2970
Low	45	44	50.8	4884
	Sum = 88	Diff. = .7		Sum of Squares = 7854

$$s^2 = \frac{7854}{88} = 89.3$$

$$s_x = \sqrt{\frac{2(89.3)}{45}} = 1.99$$

$$t = \frac{.700}{1.99} = .352$$

TABLE XXXV
 PERSONALITY INDEX-RAW SCORES
 AND t VALUE FOR TRAIT DRIVE

High Salesman	Low Salesman
94	98
89	97
88	90
85	87
84	86
83	83
83	82
82	82
81	82
80	81
80	81
80	81
79	80
79	78
79	77
78	76
77	75
77	75
77	74
75	74
74	70
73	70
73	69
71	69
71	69
70	68
70	68
70	67
68	67
67	67
67	66
66	65
66	64
65	64
65	63
65	62
61	61
61	61
61	61
58	57
58	55
57	55
56	41
54	30
53	28

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	72.2	4130
Low	45	44	70.1	8980
	Sum = 88	Diff.	2.1	Sum of Squares = 13110

$$s^2 = \frac{13110}{88} = 148.97$$

$$s_x = \sqrt{\frac{2(148.97)}{45}} = 2.58$$

$$t = \frac{2.10}{2.58} = .814$$

TABLE XXXVI

PERSONALITY INDEX-RAW SCORES AND
t VALUE FOR TRAIT FOLLOW-THROUGH

High Salesman	Low Salesman
97	85
94	85
88	85
88	85
88	81
86	81
85	80
80	79
79	79
79	79
78	79
78	78
77	78
77	78
76	77
76	75
76	74
75	74
75	73
74	73
74	72
73	72
73	72
72	72
72	71
72	71
71	70
71	70
68	69
68	68
67	68
66	67
66	66
65	65
65	65
63	63
63	62
60	62
58	61
55	61
55	60
54	54
51	53
43	41
40	10

	No. in Group	N-1	Mean	Sum of Squares
High	45	44	71.3	6528
Low	45	44	69.84	7409
Sum =	88	Diff.	1.46	$5X^2$ 13027

$$s^2 = \frac{13027}{88} = 148.6$$

$$s_x = \sqrt{\frac{2(148.6)}{45}} = 2.57$$

$$t = \frac{1.46}{2.57} = .568$$

FIGURE I

Showing means and standard deviations of traits in which the two groups differed significantly from one another.

Red - Low Salesmen

White - High Salesmen

X - Mean Percentile Score

FIGURE I

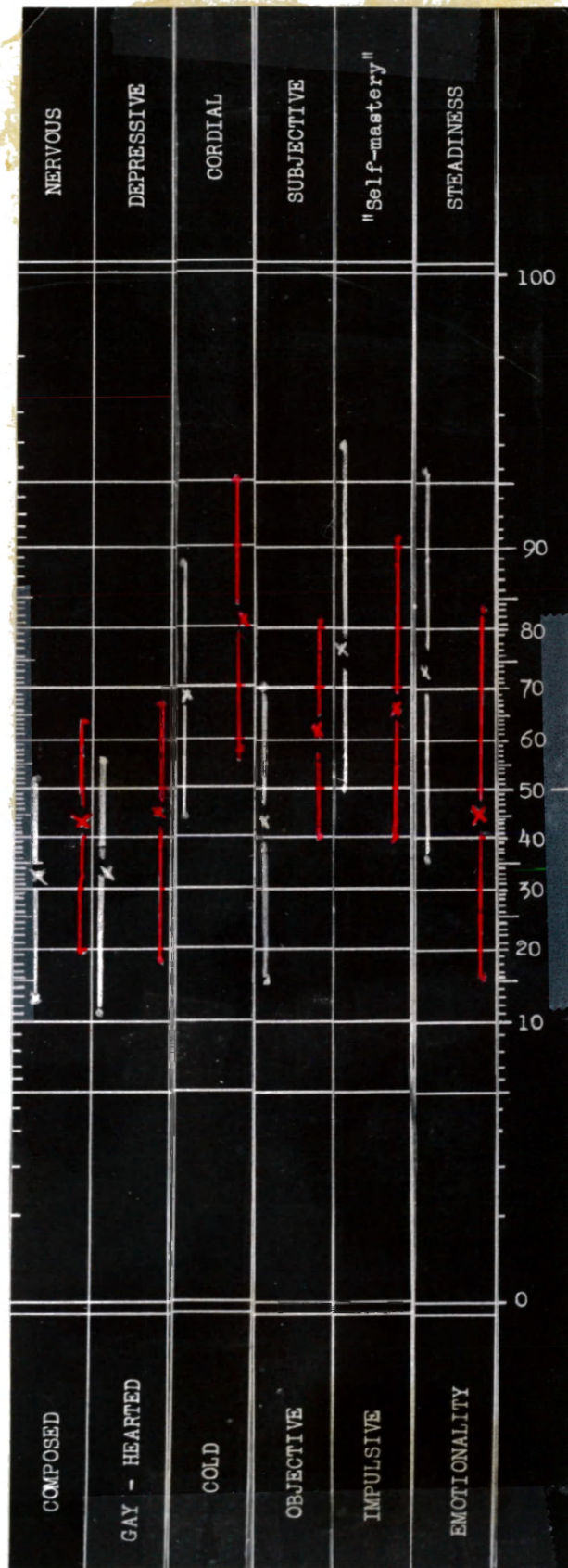


FIGURE II

Showing means and standard deviations of traits in which there were no significant differences between the two groups.

Red - Low Salesmen

White - High Salesmen

X - Mean Percentile Score

FIGURE II

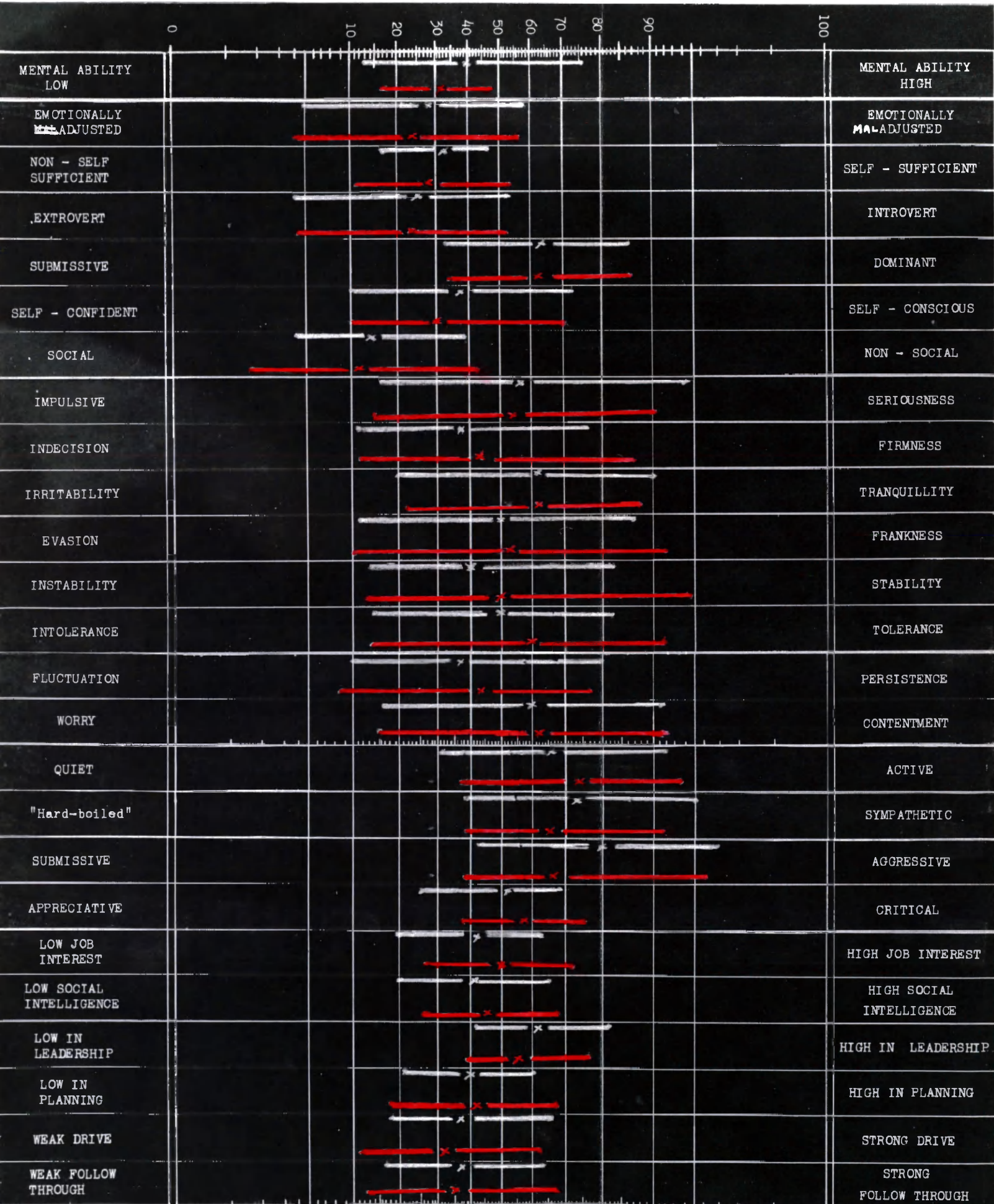


FIGURE III

**Showing mean percentile scores in all traits for
high and low salesmen.**

Red - Low Salesmen

White - High Salesmen

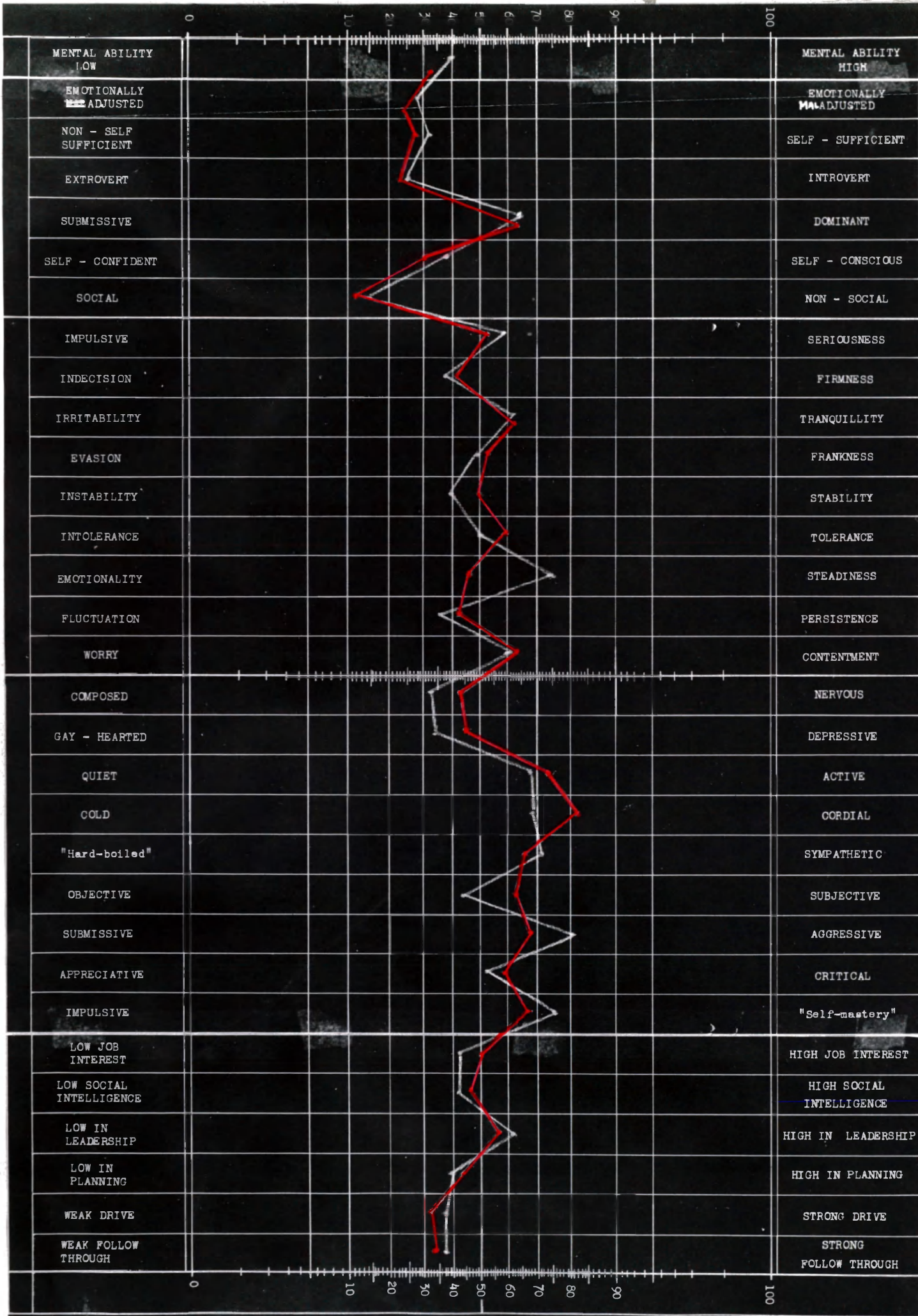


FIGURE III