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NORMAN FREDERIKSEN

Office of Naval Research Contract Nonr-2338(00)
Project Designation NR 151-182
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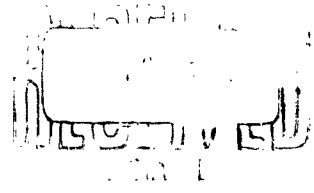

Educational Testing Service
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Studying behavior in real life is usually unsatisfactory as a scientific method because of the lack of experimental control. Therefore the usual procedure is to take the problem into the laboratory, where an experiment is designed in which the important independent variables are under the control of the experimenter and where the experimenter can designate which subjects are to receive the experimental treatments. Such laboratory methods ordinarily involve a great deal of simplification.

In studying certain kinds of problems, however, it may be necessary to preserve a considerable degree of complexity. If one wisnes to deal experimentally with a variable such as a social climate, for example, the laboratory setting cannot be simple. Or in situations where the behavior could easily be produced voluntarily but we wish to know to what extent it will occur spontaneously, we may need a rather complex laboratory situation. Such situations are likely to arise especially in the study of attitudes, personality, and social behavior. The use of simulation provides a way to retain an adequate amount of complexity and realism in an experimental situation while still permitting the experimenter to control conditions rigorously and to assign treatments to subjects in a manner consistent with the design of his experiment.

In a sense, any controlled psychological experiment involves an attempt to simulate an aspect of the natural environment. But the term simulation is usually applied to those instances in which one attempts to build a laboratory model of a natural or real-life phenomenon of considerable complexity (Guetzkow, 1962). For example, simulation has been employed in studying reactions to bureaucratic authority (Evan & Zelditch, 1961), performance of school administrators (Hemphill, Griffiths, & Frederiksen, 1962), inter-nation relations (Guetzkow, 1959), business decision-making (Cohen, et al., 1960), and operation of an air-defense direction center (Chapman, et al., 1962).

Any aspect of behavior is a legitimate subject of psychological inquiry, even if it is never observed outside the laboratory. Study of behavior in a simulated situation might similarly be of some scientific interest even if it had no known relationships to performance in real life. But simulation is usually employed in research as a method of overcoming the disadvantages of real life as a setting for scientific observation and with the hope of discovering generalizations which will hold in the real world. Therefore the question of the validity of the simulation arises. Although the need for validation in this sense has been recognized (Dawson, 1962; Zelditch & Evan, 1962), there has been little work specifically aimed at validation of a simulation technique.

One kind of evidence of validity would be a demonstration of the same relationships in the real world as are found in the simulated situation. But such evidence cannot easily be obtained; there would be no reason for simulation if the relationships could readily be

observed in real life. Another kind of evidence of validity would be a demonstration that the dependent variables obtained in the simulated situation are related in logically sensible ways to measures obtained through use of other kinds of instrumentation and in a variety of situations. The finding that performance in the simulated situation is not laboratory bound, that it is consistent with performance in real-life situations and with scores obtained from tests, inventories, and questionnaires would make more plausible the judgment that findings from experiments using simulation have some generality. The purpose of the present study is to investigate the validity, in this sense, of a situational test which simulates certain aspects of the job of an administrator. The situational test is the Bureau of Business In-Basket Test (Frederiksen, 1962). Positive findings would suggest the desirability of using in-basket test scores as dependent variables in social-psychological experiments.

The term validation usually implies the correlation of a test with a criterion. But criteria which possess intrinsic validity (Gulliksen, 1950a) are rare, especially in such fields as social behavior and personality. Measures of personality are perhaps as much in need of validation as are scores derived from simulation. Correlations of scores derived from simulated situations with scores on personality inventories may throw light on the validity of the inventory as well as on the situational test.

An in-basket test is a rather elaborate, realistic situational test which simulates certain aspects of the job of an administrator.

It consists of the letters, memoranda, records of in-coming telephone calls, and other materials which have supposedly collected in the in-basket of an administrative officer. The examinee is given appropriate background information concerning the administrative unit he is supposed to head and appropriate office materials, such as memo pads, letterheads, paper clips, and pencils. He is told that he is the incumbent of the administrative job and that he is to respond to the materials in his in-basket as though he were actually on the job, by writing letters and memoranda, preparing agenda for meetings, writing notes or reminders to himself, or anything else that he deems appropriate. Scoring methods have been developed which yield reasonably reliable scores on a number of psychologically meaningful variables (Hemphill, Griffiths, & Frederiksen, 1962).

A recent monograph (Frederiksen, 1962) describes the results of a factor analysis of scores from the Bureau of Business In-Basket Test. This test uses the "Bureau of Business" as a setting; little technical training or specific job knowledge is required. The factor analysis yielded eight primary factors and three second-order factors which are interpretable as dimensions of administrative behavior. The factor analysis was based on intercorrelations of in-basket scores obtained from 335 people, including students, businessmen, army officers, and government administrative officers. The largest of these groups was composed of 155 federal government administrators.

A variety of other information was available for some of the members of this group of government administrators, including biographical data and scores on tests of cognitive abilities, attitudes,

interests, and personality. The purpose of the present study is to investigate the relationships of in-basket scores and the primary and second-order in-basket factors to these other variables.

Procedure

In addition to the 155 who had been included in the factor study, the Bureau of Business In-Basket was administered to 53 more administrators employed in the federal government. All these people represented a rather wide variety of professional fields, including economics, agriculture, physical sciences, and engineering, and also included supervisors of people in mechanical and technical areas. In-basket scores were available through the administration of the Bureau of Business In-Basket in connection with a management training course. Of the total of 208 government administrators who were given the in-basket tests, 115 had complete data on the additional variables described in the next section. Biographical data were obtained from personnel records. The tests and inventories were administered as a part of the routine procedures for selection and assignment; they had been administered anywhere from several years to a few weeks prior to the in-basket test.

In the earlier factor analytic study, 335 subjects were used, and the analysis was based on 40 variables, all but one of which were in-basket scores. Ten factors were extracted and rotated, of which eight were retained and interpreted. Three second-order factors were extracted. This sample of 335 cases will be called Sample A.

Sample B includes the 115 cases for whom additional data were available, about half of whom were also in Sample A. Members of Sample B had

scores on 77 variables, 33 of which were in-basket scores common to Sample A. These 33 variables were chosen to include all the in-basket scores which had substantial loadings on any of the eight factors. The remaining 44 variables are the biographical data and scores on tests and inventories to be described in the next section.

The purpose of the study is to investigate the relationships of in-basket scores and the primary and second-order factors to scores on the 44 other measures.

The procedure for investigating the relationship between in-basket scores and other variables was merely to compute the intercorrelations of the 77 variables for Sample B.

The problem is more complicated when we wish to find the relationships of the in-basket factors to the other variables, since we wish to use the factors as defined in the analysis of Sample A with its much larger N. The solution which was employed required, first, the estimation for Sample A of the correlations of the 33 common in-basket scores with the additional 44 variables, assuming explicit multivariate selection on the 33 common variables (Gulliksen, 1950b); and then to obtain for Sample A the estimated loadings of the 44 additional variables on the eight factors, using a factor extension procedure.

Ledyard R Tucker provided the solution to the problem. The estimated correlations of common variables with additional variables for Sample A is given by the following formula:

$$\hat{r}_{XY} = D_X^{-\frac{1}{2}} C_{XY} D_Y^{-\frac{1}{2}}$$

where

D_X = a diagonal matrix of variances of X

D_Y = a diagonal matrix of variances of Y

$C_{XY} = C_{XX}C_{xx}^{-1}C_{xy}$

$C_{YY} = C_{yy} + C_{yx}C_{xx}^{-1}(C_{XY} - C_{xy})$

x = common variables for Sample B

X = common variables for Sample A

y = additional variables for Sample B

Y = additional variables for Sample A

The estimated rotated factor loadings of the additional variables for Sample A are given by

$$V_Y = \hat{r}_{XY}V_c\beta^{-\frac{1}{2}}\Lambda$$

where

V_c = the eigen vectors for the 40 variable factor analysis of Sample A

β = the eigen roots

Λ = the transformation matrix

The estimated saturations of additional variables on second-order factors are given by

$$r_{Yg} = V_Y\Psi_{pg}$$

where Ψ represents the correlations of primary factors with second-order factors.

Descriptions of the Variables

In-Basket Measures.

In-Basket Scores. Thirty-three in-basket scores which had been used in the factor analysis were employed in the present study; they include all the scores which were found to have substantial loadings on any of the in-basket factors. The names of the scoring categories are shown in Table 2. A description of these scores may be found in Hemphill, Griffiths, and Frederiksen (1962).

In-Basket Factors. The eight primary factors identified in the factor analysis of Bureau of Business In-Basket scores are as follows:

A. Acting in Compliance with Suggestions. Factor A is characterized especially by making concluding decisions and taking final actions on the basis of suggestions made by others, both subordinates and superiors. Persons who are high on Factor A get a lot of work done--they write a lot, attempt many items, and involve many people in their actions.

B. Preparing for Action by Becoming Informed. Those high on Factor B characteristically take steps which are preliminary to reaching decisions and taking final actions, particularly asking for information or advice.

C. Concern with Public Relations. Those who are high on Factor C show concern about people outside the office of the Bureau of Business, such as members and potential members of the Bureau; their actions are in accord with the Bureau of Business' basic mission of public relations.

D. Procrastinating. Factor D is characterized by delaying or postponing action on problems presented. Even preparatory actions tend to be postponed, although some planning may be done.

E. Concern with Superiors. Those high on Factor E frequently involve their superiors in their responses to in-basket items; they refer things to superiors, follow suggestions made by superiors, and arrange to discuss problems with their superiors.

F. Informality. Factor F involves informality in dealing with others, both subordinates and superiors, by employing colloquial language and using first names.

G. Directing Subordinates. Those high on Factor G show that they are aware of poor work on the part of subordinates and are likely to involve their subordinates in work by such means as giving directions and suggestions and by assigning duties.

H. Discussing. This factor is characterized by planning to have many discussions, particularly with subordinates but also with superiors and outsiders.

The second-order factors, which are orthogonal, are as follows:

X. Preparing for Action. In terms of primary factors, Factor X is composed primarily of Factor B (Preparing for Action by Becoming Informed); it has smaller loadings on D (Procrastinating), H (Discussing), and F (Informality). Thus Factor X, like Factor B, has to do with preparation for decision and action, but it involves a greater variety of activities.

Y. Amount of Work. The primary factors most involved in Factor Y are A (Acting in Compliance with Suggestions), G (Directing Subordinates), C (Concern with Public Relations), and F (Informality). It is characterized by writing a great deal, making many decisions, attempting many items, and involving many people.

Z. Seeking Guidance. This factor is much smaller and less well-defined than the other two. In terms of primary factors, it is mainly composed of E (Concern with Superiors), H (Discussing), and D (Procrastinating). Those who are high on Factor Z seem to be anxious to please the boss, but they are a little vague as to what is wanted and are trying to find out what to do.

Other Variables.

Content Scores. Two additional in-basket scores which had not been used in the factor analysis were included among the 44 additional variables. These are the so-called content scores. Content scores are based on records, made by scorers, of the courses of action taken by in-basket examinees, rather than on examination of the protocols (Frederiksen, 1962). The two content scores are as follows:

Imaginativeness. This score is the number of courses of action taken by an examinee which were keyed as being "good ideas," imaginative ways of dealing with a problem.

Organizational change. This score is the number of courses of action taken which involved making a permanent change in personnel, procedures, or assignment of duties.

Biographical Data. The biographical data used in the analysis are as follows:

Age

GS^2 level, coded as follows:

1 GS 11 and below
2 GS 12
3 GS 13
4 GS 14
5 GS 15 and above

Educational level, coded as follows:
1 Attended high school
2 High school graduate
3 Attended college
4 College graduate
5 Graduate degree

Supervisory duties, coded as follows:
0 No supervisory responsibility
1 Has supervisory responsibility

Chosen for advanced training, coded as follows:
0 Not chosen for training
1 Chosen for training

Cognitive Tests. Scores were available on four tests of cognitive abilities:

Interpretation of Data. In this test several sets of data are presented in the form of charts or graphs, or in words. Each set of data is followed by a series of statements which represent possible interpretations. The task is to indicate on a five-point scale the extent to which each statement is justified by the data.

Matrices. The items of this test are somewhat similar to those in Raven's Progressive Matrices.

Vocabulary. This is the vocabulary section of the Cooperative English Test: Reading Comprehension, administered with a separate time limit.

Reading Comprehension. This score is based on the Cooperative English Test: Reading Comprehension, and was administered with a separate time limit.

Work Preference Schedule. This instrument requires the subject to indicate on a five-point scale the extent to which he considers each of 100 statements about a job as desirable or undesirable. It yields scores

for 12 attitudes. There is no item overlap among the scales. A high score indicates that the examinee considers the attribute to be undesirable as an aspect of his job. The 12 scores are as follows:

Dislikes training
Dislikes physical hazards
Dislikes judging and persuading people
Dislikes discomfort
Dislikes lack of recognition
Dislikes social responsibility
Dislikes supervising work
Dislikes being supervised
Dislikes separation from friends
Dislikes collaboration with incompetents
Dislikes assignments demanding initiative and resourcefulness
Dislikes irregularity of working conditions

An item from the Work Preference Schedule might be as follows: "A job which requires a great deal of initiative." The subject would choose one of the following responses: 1. Highly desirable; exactly what I would want. 2. Desirable. 3. Neutral; it makes little difference one way or another. 4. Undesirable. 5. Highly undesirable; I would probably refuse the job. The schedule is thus susceptible to response sets toward acquiescence and social desirability, especially since it was administered under conditions leading to the expectation that scores might be used for administrative purposes. Those who use the test have learned to think of some of the scales as measures of "eagerness."

Vocational Interest Blank for Men. The following 14 scales were used in the analysis:

Psychologist
Physician
Mathematician

Production manager
Policeman
Forest service man
Personnel director
Public administrator
YMCA secretary
Accountant
Sales manager
Life insurance salesman
Lawyer
President, manufacturing concern

Thurstone Temperament Schedule. The scores used for the Thurstone Temperament Schedule are based on a revision of the published scoring keys. The revision resulted from an attempt to recombine items into new scales which would be more independent and internally consistent than the published scales. The six scales are as follows:

1. Active. The items in this scale emphasize speed; words like "fast" or "quickly" (or their opposites) appear in almost every item. Those who score high on this scale tend to move and work fast and are impatient to complete (but not necessarily start) activities.
2. Vigorous. The content of this scale has to do with liking for and participation in vigorous outdoor sports and physical activity.
3. Sociable. High scores indicate spontaneity and facility in social activities which involve informal face-to-face contacts with others.
4. Dominant. A person high on this scale sees himself as the leader or central figure of a group.

5. Calm and confident. High scores are obtained by men who see themselves as calm, even-tempered, and self-confident.
6. Solitary. Those who score high prefer to spend their time in solitary activities rather than with others; the scale appears to measure social introversion.
7. Question score. In addition to scores on the six scales, the number of times "?" was chosen as a response was included as a seventh score.

Intercorrelations of Other Variables

The means, standard deviations, and intercorrelations of the biographical data items and scores on ability tests, the Work Preference Schedule, Strong Vocational Interest Blank, and Thurstone Temperament Schedule are shown in Table 1.[3] A detailed examination of this table would yield a better understanding of the measures and would be helpful in attempting to interpret the correlations with in-basket scores. However, in this discussion we will limit ourselves to a few observations which seem especially relevant to later discussions.

Insert Table 1 about here

The typical subject was about 41 years old, held a job at a GS 13 or GS 14 level, and was a college graduate. Three-fourths of the subjects had supervisory responsibilities. The means and standard deviations of all the variables except the biographical items are based on stanine scales for a larger sample of government employees. Thus it can be seen

that the subjects in this study were on the average slightly below the norms group in ability, they were more inclined to favor jobs requiring supervising others and less inclined to favor jobs involving personal discomfort, and they were relatively more like public administrators and less like mathematicians and physicians than the norms group.

Age and GS level are substantially correlated ($r = .48$). Ability measures are negatively correlated with age (perhaps because of changes in recruiting and employment practices) and positively correlated with educational level. Amount of education is associated positively with resemblance to psychologists and lawyers and negatively with resemblance to production managers and policemen as measured by scores on the Strong Vocational Interest Blank. Ability measures have somewhat similar correlations with the SVIB. We can perhaps think of these Strong scales as reflecting occupational level as well as interest in certain content areas.

The salient fact about the intercorrelations of the Work Preference Schedule scores is that they are almost all positive. Even scales which might logically be expected to have negative correlations, such as dislikes supervising work and dislikes being supervised, have zero correlations. The reason for the positive correlations may be the susceptibility of the WPS to a bias toward giving socially-desirable responses. Such a bias may also contribute to the high correlations between a number of the WPS and Thurstone Temperament Schedule scores.

Correlations of Variables with In-Basket Scores

Correlations of In-Basket Scores with Biographical Data

The correlations of the 35 scores from the in-basket test with the items of biographical data are shown in Table 2. Age is not significantly associated with any of the in-basket scores, and the lack of correlation is interesting in view of the correlation of age with GS level, which does have many significant correlations with in-basket variables. Level in the government service hierarchy is significantly associated with 18 of the 35 in-basket measures. Those subjects with higher GS levels tend to be productive (communicates by writing, r = .36; number of words written, r = .33); to involve many other people (number of subordinates involved, r =.36; number of outsiders involved, r = .27; number of superiors involved, r = .24); and to control subordinates (gives directions, r = .38; initiates new structure, r = .27; organizational change, r = .22). All this characterizes the high level government administrator but not necessarily the older one, in spite of the correlation of .48 between GS level and age.

Insert Table 2 about here

Educational level is significantly related to a number of in-basket scores which overlap only slightly with those for GS level. The more highly educated subjects tend to be productive (number of items attempted, r = .27; number of words written, r = .21), but the relationships are less marked than for GS level. Those of high educational level tend to seek advice and information (relates to background information, r = .25;

leading action, r = .24; asks subordinates for information or opinion, r = .19) and to depend upon subordinates (number of subordinates involved, r = .29; follows lead by subordinates, r = .21).

The dichotomy involving presence or absence of supervisory duties has slight but suggestive correlation with only three in-basket scores. These correlations (significant at the 5% level) suggest that those with supervisory duties tend not to follow leads of subordinates, tend to show awareness of poor work on the part of subordinates, and tend to involve their superiors in problems.

Being chosen for advanced training is not significantly correlated with any of the in-basket scores. Inspection of the correlations with all the rest of the 77 variables in the study reveals no highly significant relationships. Presumably this dichotomy contains very little predictable variance, probably because of low reliability of the judgments involved in choosing employees for advanced training.

Correlations of In-Basket Scores with Ability Test Scores

Of the four cognitive ability tests, Vocabulary is most highly correlated with in-basket test scores, as is apparent in Table 3. High vocabulary score is especially associated with imaginativeness (r = .41). This relationship is of particular interest because none of the other cognitive ability tests is significantly related to this score. Vocabulary is also related to number of subordinates involved (r = .32), number of words written (r = .30), organizational change (r = .29), aware of poor work (r = .29), requires further information (r = .27), follows lead of superiors (r = .25), and number of outsiders involved (r = .25), to name those significant at the 1% level. No doubt these correlations are

in part due to general productivity; as will be seen later, vocabulary is correlated with the second-order factor Amount of Work.

Insert Table 3 about here

Interpretation of Data score is most closely related to work scheduled for same or next day ($r = .32$). The most common reason for scoring an in-basket response as work scheduled for same or next day is that the subject asked for a meeting with one or more of his associates to discuss a problem. Since other significant correlations (at the 5% level) are with asks subordinate for information, leading action, and requires further information, it would appear that those with high Data Interpretation test scores are likely to seek information and advice before taking action. The Data Interpretation test and these in-basket categories all seem to reflect use of information in the process of solving problems.

The Matrices test had only three significant correlations with in-basket scores and those only at the 5% level. The three correlations were with aware of poor work, requires further information, and number of superiors involved. Reading Comprehension also was significantly correlated (5% level) with only three categories: aware of poor work, requires further information, and asks subordinates for information.

Only one in-basket score, requires further information, was significantly correlated with all four tests. Aware of poor work was correlated with three tests and leading action and asks subordinates for information were correlated with two. Thus there is little tendency for the four cognitive tests to

share the same relationships with measures of performance in the in-basket situation.

Correlations of In-Basket Scores with Scores from the Work Preference Schedule

Table 4 presents the correlations of in-basket scores with the 12 scores from the Work Preference Schedule. In trying to interpret these correlations, it will be wise to keep in mind that low scores on the WPS should perhaps be interpreted as reflecting an effort to put oneself in a good light. Scores on dislikes hazards and dislikes demanding assignments are perhaps especially suspect. But careful study of the correlations leads to the impression that there is variance in the WPS which cannot be entirely accounted for in terms of social desirability response bias.

Insert Table 4 about here

Subjects who try, consciously or unconsciously, to put themselves in a good light are likely to get low scores on dislikes demanding assignments--they would claim to like jobs demanding a high degree of initiative and resourcefulness. This scale has more significant correlations with in-basket scores than any other. Its highest correlations are with leading action ($r = -.32$), imaginativeness ($r = -.31$), gives directions or suggestions ($r = -.30$), communicates by writing ($r = -.30$), number of subordinates involved ($r = -.28$), number of words written ($r = -.28$), number of items attempted ($r = -.27$), and initiates new structure ($r = -.27$). A person with a strong social desirability set might be expected to be very productive of words and actions, as is implied by the in-basket scores with these high correlations. The score variance

attributable to social desirability response set may actually be useful for predicting some aspects of behavior.

Some of the correlations, however, suggest the existence of variance in the Work Preference Schedule which should not be attributed to response bias. For example, low scores on dislikes supervising work presumably reflect willingness to work as the supervisor of a group of employees. This scale correlates with gives directions or suggestions ($r = -.33$), number of subordinates involved ($r = -.31$), and initiates a new structure ($r = -.31$). However, there is no sure way to distinguish the response bias from the content variance of the WPS in its present form.

Correlations of In-Basket Scores with Strong Vocational Interest Blank Scores

In discussing the correlations shown in Table 5, it will be convenient to deal with sets of scales which are interrelated and which have similar relationships to in-basket performance. Policeman and forest service man, for example, are both in Strong's (1943) Group IV, the subprofessional technical group. These scales have similar patterns of correlations, and the significant correlations are predominantly negative. Those who most resemble policemen and forest service men in their responses to the Strong items tend to avoid discussions with subordinates; the correlations with asks subordinates for information are -.26 and -.34 (for policeman and forest service man, respectively) and -.24 and -.34 with discusses with subordinates. They tend to get low imaginativeness scores (-.23 and -.23) and tend not to make procedural decisions (-.18 and -.24) or take leading actions (-.21 and -.23). Correlations with number of words written are negative but not significant; the general pattern of negative correlations can be accounted for only in part by low productivity. No positive correlation is significant.

Insert Table 5 about here

The Strong scales for personnel director, public administrator, and YMCA secretary are included in Group V, the so-called welfare group of occupations. High scores on these scales are associated with productivity: correlations are .39, .36, and .15 with number of items attempted for personnel director, public administrator, and YMCA secretary keys, respectively; .26, .22, and .23 with number of words written; and .32, .24, and .16 with communicates by writing. Those who gain high scores on these Strong scales tend to involve many subordinates (r's are .26, .24, and .22) and superiors (.26, .20, and .18). The personnel manager and public administrator scores, and to a much lesser extent YMCA secretary, are associated with a number of in-basket scores which suggest a willingness to take action on administrative problems: concluding decision (.22, .23, .12), plans only (-.20, -.22, -.00), leading action (.29, .19, .18), terminal action (.18, .22, -.02), follows lead of superior (.29, .16, .05), initiates a new structure (.30, .18, .19), and gives directions or suggestions (.26, .28, .20).

The business contact (Group IX) occupations for which scores were included are sales manager and life insurance salesman. Subjects who resemble members of these occupational groups in the way they reply to items in the SVIB tend to interact with people; they plan to have many discussions with subordinates (r's are .32 and .37 for sales manager and life insurance salesman, respectively) and tend to communicate face-to-face (.30 and .37). They also are inclined to take leading action (.22 and .26).

There are few significant correlations with the scale for president of a manufacturing concern; the highest correlation is .25 with procedural decision.

Those who resemble lawyers seem to use subordinates in making preparations for decisions: they ask subordinates for information (r = .32) and discuss with subordinates (r = .19). Consistent with these relationships is the tendency to take leading action (r = .22) but to avoid terminal action (r = -.20).

The psychologist and physician scales fall in Group I, the "creative scientific" group of occupations, while mathematician falls in Group II, the technical group. However, the pattern of correlations with in-basket scores is very much the same for physician and mathematician, while the psychologist key has no significant relationships. Those who respond to SVIB items like physicians and mathematicians tend to be low in productivity (r's are -.18 and -.22, respectively, for number of items attempted and -.23 and -.23 for number of words written) and to avoid actions which involve others (initiates new structure, -.26 and -.25; gives directions or suggestions, -.23 and -.20; concluding decision, -.21 and -.20). They tend to be low both on communicates by writing (-.27 and -.19) and communicates face-to-face (-.20 and -.19). Correlations are predominantly negative. The administrative situation seems alien to those resembling physicians and mathematicians.

The only occupation in Group VIII, the business detail group, which was included in the analysis is accountant. There seems to be some tendency for those with interests like accountants to tend toward taking terminal action (r = .18) rather than procedural decisions (r = -.22) or responses which recognize need for additional information (r = -.25).

Strong interest measures thus tend to be differentially related to in-basket test scores in ways which would seem to be more or less consistent with one's stereotypes about the occupational groups. The findings for physician and mathematician suggest that special problems may be encountered when one attempts to find administrators among members of scientific groups.

Correlations of In-Basket Scores with the Thurstone Temperament Schedule

The correlations involving the seven scores from the Thurstone Temperament Schedule are shown in Table 6. A number of substantial correlations are found in the first column. Those high on the active scale tend to follow the leads of superiors ($r = .42$) and to involve superiors ($r = .36$). They also tend to be productive in the sense that they write a lot ($r = .40$) and attempt many items ($r = .39$). Other correlations which are significant at the 1% level involve imaginativeness ($r = .28$), procedural decision ($r = .24$), leading action ($r = .36$), gives directions or suggestions ($r = .30$), communicates face-to-face ($r = .32$), and communicates by writing ($r = .27$). The relationships to measures which reflect concern with superiors and high work output suggest the operation of a social desirability response bias, although examination of the items does not strongly reinforce such an interpretation; the keyed responses do not appear to be highly desirable responses. It may be more reasonable to interpret the results as a validation of the active scale--those with high scores apparently do work fast and do try to complete activities.

Insert Table 6 about here

There are no significant correlations in the vigorous column of Table 6; reasonably enough, a liking for vigorous outdoor sports and physical activities has nothing to do with performance on the administrative problems found in the in-basket.

The sociable column contains only a few correlations which are significant and these at only the 5% level. Those with high scores, who profess facility in informal face-to-face social activities, tend slightly to have discussions with subordinates, take leading action, follow leads of superiors, and communicate face-to-face--all of which seems to constitute some slight evidence of the validity of the scale.

Those with high scores on the dominant scale are supposed to see themselves as leaders or central figures of groups. The pattern of correlations is very similar to that for active, although they tend to be a little lower. Those with high scores on dominant are productive, in that they attempt many items ($r = .35$) and write a lot ($r = .30$). They take leading action ($r = .34$), initiate new structure ($r = .29$), and communicate face-to-face ($r = .33$). They also tend to discuss with subordinates ($r = .24$) and ask subordinates for information ($r = .25$). All these correlations are of about the same magnitude as those for active. But the correlations with categories expressing concern with superiors are noticeably lower: .26 for follows lead of superior as compared with .42, and .21 for number of superiors involved as compared with .36. Apparently those who conceive of themselves as leaders do not show as much concern for their superiors as might otherwise be expected.

The calm and confident scale is supposed to indicate the degree to which one is calm, even tempered, and self-confident. Only two

correlations are significant at the 1% level, those with number of subordinates involved (r = .26) and initiates new structure (r = .26). Other significant correlations (5% level) are with number of items attempted, uses program values, discusses with subordinates, delays, gives directions or suggestions, communicates face-to-face, and communicates by writing.

Neither the solitary scale, which is thought to be a measure of social introversion, or the question score had any significant correlations with in-basket scores.

Correlations of Style and Content Scores of the In-Basket

Imaginativeness is the number of courses of action taken by a subject which had been judged to be "good ideas"; and organizational change is the number of courses of action involving a change in the organizational structure--duties or assignments of personnel. There is a fair amount of overlap in the scoring keys, which helps to account for the correlation of .60 between the scores. Both are obviously influenced by the total number of courses of action taken. It is therefore not surprising to find that the content scores have similar patterns of correlations (see Table 7) and that they have high correlations with measures of productivity such as number of words written (r = .56 and .45 for imaginativeness and organizational change respectively). But there are differences in correlations which may reflect the differences in the content scores. Asks subordinates for information, for example, correlates .34 with imaginativeness but only .11 with organizational change. Leading action correlates .36 with imaginativeness but only .12 with organizational change, while the corresponding correlations for

terminal action are .14 and .42. Thus the two content scores seem to be differentiated, to some extent, in a way which is consistent with the theoretical meanings of the scores.

Insert Table 7 about here

Relationship of Measures to Factors in In-Basket Performance

The estimated factor loadings of the items of biographical data and of the measures of cognitive ability, attitudes, personality, and interest on the factors in in-basket performance, as determined by the factor extension procedure, are shown in Table 8. These loadings represent the correlations of the measure with the residuals of the factors, the parts not found in the second-order factors. This method of studying the relationships of variables to measures of in-basket performance enables us to overcome some of the difficulties which one encounters when he tries to interpret correlations with the original in-basket scores. In interpreting these correlations it was sometimes necessary, for example, to conclude that a relationship might have been due to general productivity as well as to whatever was unique about the category. With the present method we can talk about relationships of measures to the unique part of each factor, that part which is left after removing the variance attributable to the second-order factors. It will be particularly helpful to be able to examine the relations of variables to primary factors with the influence of amount of work removed. But, since the communalities of the primary

factors in the second-order analysis were rather small (.23 to .44), a good deal of variance is left.

Insert Table 8 about here

In discussing the results shown in Table 8, each factor will be considered in the light of the variables having the highest loadings in that factor. In the absence of any significance test for the estimated factor loadings, we have no rule as to how many of the relationships we should attempt to interpret; but, since in general it seems possible to make sense of loadings as low as .20, we shall examine loadings of that magnitude or greater in dealing with each factor.

The loadings of .20 or higher for Factor A, Acting in Compliance with Suggestions, are as follows:

Dislikes irregularity (WPS)	-.30
President, manufacturing concern (SVIB)	.22
Forest service man (SVIB)	-.22
Mathematician (SVIB)	-.21
Sales manager (SVIB)	.20
Organizational change	.20

The highest loading, with the dislikes irregularity score of the Work Preference Schedule, reveals a moderate tendency for those who say they like nonroutine jobs to act in compliance with suggestions. Those who resemble presidents of manufacturing concerns and sales managers on the SVIB (occupations with executive responsibility) also tend to comply with suggestions. Those who resemble forest service men and mathematicians tend not to follow suggestions, but one may speculate that reasons are rather different for mathematicians than for forest service men. Taking

courses of action which were keyed to contribute to the organizational change score also tends to be slightly associated with Factor A.

The interpretation of the factor has always been somewhat of a puzzle because of the loadings on the factor of in-basket scores which stress complying with suggestions on the one hand and loadings on scores which suggest taking decisive actions on the other. The name given to the factor, Acting in Compliance with Suggestions, gives recognition to both kinds of scores; but we have never been sure whether the key idea is one of weak reliance on others or strong decisiveness. The loadings shown above tend a bit more toward the latter interpretation, since the factor is associated with interests like those of executives and with a dislike of regularity and routine.

The factor in the study of school administrators (Hemphill, Griffiths, & Frederiksen, 1962) which is very similar to Factor A was found to be associated with reasoning ability (but not with most other cognitive abilities). The results of the present study appear to be consistent at least to the extent that Interpretation of Data loads positively ($r = .16$) on Factor A, while the loadings for the other three ability tests are essentially zero. On the other hand, findings for the SVIB seem to be quite inconsistent with the other study, which showed a positive loading (.30) for the subprofessional technical occupation (policeman) and a negative loading (-.34) for the relevant executive occupation (city school superintendent). The school study showed that complying with suggestions was associated with tendencies to be insecure and tense; present findings are probably consistent as far as they go, since a negative loading (-.17) was found for the most relevant TTS scale, calm and confident.

The loadings of .20 or greater for Factor B, Preparing for Action by Becoming Informed, are as follows:

Dislikes supervising work (WPS)	-.35
Forest service man (SVIB)	-.34
Policeman (SVIB)	-.34
President, manufacturing concern (SVIB)	.28
Sales manager (SVIB)	.26
Lawyer (SVIB)	.25
Educational level	.25
Accountant (SVIB)	-.22
Imaginativeness	.20

Those who tend, in their responses to in-basket items, to prepare for decision and action by getting information and advice report that they like jobs which require them to supervise others. They resemble presidents of manufacturing concerns, sales managers, and lawyers and are unlike forest service men, policemen, and accountants in their responses to items of the SVIB. Amount of education is also positively related to Factor B, as is the imaginativeness score. The findings seem to reflect a general tendency for Factor B to be associated with high occupational level.

None of the factors in the school administration study is sufficiently similar to Factor B to justify a comparison of the findings, although the interpretation in terms of occupational level tends to be supported by SVIB score loadings for the primary factor exchanging information and the second-order factor Preparation for Decision.

Factor C, Concern with Public Relations, has the following loadings:

Vocabulary	.34
Imaginativeness	.32
Matrices	.25
Policeman (SVIB)	-.24

Educational level	.23
Chosen for advanced training	.22
Solitary (TTS)	.22
Supervisory duties	-.21

Factor C is related more clearly than any other factor to intellectual ability, with positive loadings on both the Vocabulary and Matrices tests and on imaginativeness. Amount of education is positively related and the policeman score negatively related to Factor C. Those with high scores tend to have been selected by their superiors for advanced training and not to have had supervisory duties. The positive loading of .22 on the TTS solitary scale is a surprise only if we think in terms of the popular stereotype of the public relations man.

In considering the meaning of these relationships, it should be remembered that the primary purpose of the Bureau of Business is public relations; as stated in the brochure describing the Bureau of Business, its aim is to "express the viewpoint of businessmen to Congress and to the American Public." The findings suggest that the more able people are the ones who correctly perceive the mission of the organization and work toward the accomplishment of that mission. These people tend not to conform to the stereotype of the public relations man operating through face-to-face contacts with people.

A factor in the school study was named Responding to Outsiders; it has some superficial similarity to Concern with Public Relations. That the factor is actually quite different is suggested by the different relationship to ability measures: the factor in the school study is associated with low scores on ability tests. But public relations has a different relationship to the operation of an elementary school than to running a division of the Bureau of Business.

Factor D, Procrastinating, has the following relationships with other measures:

Organizational change	-.44
Imaginativeness	-.41
Educational level	-.33
GS level	-.29
Dislikes supervising work (WPS)	.27
Dislikes demanding assignments (WPS)	.25
Dislikes separation from friends (WPS)	.23
Sociable (TTS)	-.23
Forest service man (SVIB)	.22
Sales manager (SVIB)	-.22
Dislikes social responsibility (WPS)	.22

The high loadings of the two content scores are in the expected direction, and since both the factor and the content scores came from the same responses there is some experimental dependence. It is noteworthy that the loadings are large even when the variance due to the second-order factor Amount of Work has been removed from Procrastinating.

We also find negative loadings for educational and GS level, but not age. Four of the Work Preference Schedule scores have loadings greater than .2. The signs are all positive, which indicates that Procrastinating is associated with the tendency to report dislike of jobs which require supervising people, demanding assignments, separation from family and friends, and social responsibility. Those who procrastinate apparently do not try to put themselves in a good light in responding to WPS items. Those who say they dislike supervising others and accepting difficult jobs in fact tend to delay or postpone work on in-basket items.

There are also tendencies for procrastinators to resemble forest service men but not sales managers with respect to SVIB scores, and to be low on the sociable scale of the TTS.

No procrastination factor was found in the study of school administration.

The loadings of .20 or greater for Concern with Superiors are as follows:

Dislikes hazards (WPS)	-.44
Dislikes irregularity (WPS)	-.32
YMCA secretary (SVIB)	.28
Active (TTS)	.25
Dislikes discomfort (WPS)	-.24
Personnel director (SVIB)	.23
Imaginativeness	.23
Public administrator (SVIB)	.20
Educational level	.20
Dislikes judging people (WPS)	-.20
Life insurance salesman (SVIB)	.20

The highest loading (-.44) is one of the highest in all of Table 8 and it involves a variable which we have previously suspected of reflecting a social desirability response bias. Those who reveal a tendency to try to put themselves in a good light in responding to questionnaire items turn out to be the ones who show much concern about their superiors in the in-basket situation. Four of the loadings of WPS scores on Factor E are above .20 and all but one of the loadings for the 12 scales are negative. It seems reasonable to interpret these loadings in terms of social desirability response bias.

Concern with Superiors is positively associated with scores on several of the Strong scales. Those who resemble YMCA secretaries, personnel directors, public administrators, and life insurance salesmen in their responses to SVIB items tend to show concern for superiors.

The active scale of the TTS also has a loading (.25) on Concern with Superiors, as does the imaginativeness content score (.23) and amount of education (.20).

The factor called Maintaining Organizational Relationships in the school study is the one most similar to Factor E, but it is much broader, including outsiders as well as superiors. The finding in the other study of a relationship to measures of sociability and confidence is not replicated here, although the TTS dominant scale has a loading of .19. Factor E is probably rather different from Maintaining Relationships.

There are only a couple of loadings on Factor F, Informality, to consider:

Forest service man (SVIB)	.24
Life insurance salesman (SVIB)	-.22

Perhaps the loading of forest service man can be accounted for in terms of occupational level and the negative loading for life insurance salesman as an instance of the more formal relationships expected between strangers in a business setting. No factor of informality was identified in the school administration study.

There are many loadings to report for Factor G, Directing Subordinates:

Supervisory duties	.33
President, manufacturing concern (SVIB)	-.31
Organizational change	.30
Policeman (SVIB)	.29
Dislikes being supervised (WPS)	-.28
YMCA secretary (SVIB)	.27
Dislikes training (WPS)	-.27
Calm and confident (TTS)	.23
Dislikes demanding assignments (WPS)	-.21
Lawyer (SVIB)	-.21

Sales manager (SVIB)	-.21
Forest service man (SVIB)	.20
Dislikes collaboration with incompetents (WPS)	-.20
Imaginativeness	.20

The loading of .33 for supervisory duties is positive, indicating a moderate tendency for those whose regular job involves supervision to supervise work in the simulated situation.

Those who tend to supervise work in their in-basket responses are unlike presidents of manufacturing concerns (-.31), lawyers (-.21), and sales managers (-.21) in the way they answer items of the SVIB, but they do resemble policemen (.29), YMCA secretaries (.27), and forest service men (.20). Again occupational level seems to be important, with people like those from lower level occupations more inclined to try to control subordinates directly.

Supervision is associated with organizational change (.30) and, to a lesser extent, with imaginativeness (.20). Being high on Factor G is thus not merely a stylistic trait; it also involves taking courses of action of the sort keyed for these content scores.

Loadings for Work Preference Schedule scores tend to be negative; those high on Factor G are likely to report that they don't mind being supervised (-.28), being trained (-.27), being given demanding assignments (-.21), or working with incompetent subordinates (-.20). While a social desirability response bias may again be involved, there is a certain amount of relevance of these scores to supervision, especially when coupled with the notion that supervision characterizes people of relatively low occupational status.

The only other loading in the above list is that of .23 for the calm and confident scores of the TTS.

The school administration study revealed a factor which also has something to do with controlling subordinates, but which involves more sympathetic, considerate techniques than the present Factor G. The factor in the school study was associated with generally low ability scores, soberness and stability, and interests unlike those of school superintendents and lawyers. In spite of the differences between the factors, the relationships to other measures tend toward the same results: negative loadings for Interpretation of Data (-.17), president, manufacturing concern (-.31), and lawyer (-.21), and the positive loading for calm and confident (.23).

None of the variables has a loading as high as .20 for Factor H, Discussing.

Turning to the estimated loadings for the second-order factors, we find comparatively few loadings of sufficient size to be of interest. None of the loadings for Factor X, Preparing for Action, are as large as .20. Relationships instead have tended to show up on the relevant primary factors, especially Factor B, Preparing for Action by Becoming Informed.

Factor Y, Amount of Work, has the following loadings of .20 or greater:

Imaginativeness	.38
Organizational change	.38
Vocabulary	.26
Dislikes hazards (WPS)	-.21

The two content scores are again shown as related to general productivity. The relationship is of course not entirely spurious; while

a large number of courses of action increases the likelihood of getting high content scores, one cannot take many imaginative actions and make many organizational changes without increasing his scores on measures of productivity.

Amount of Work is shown to have something to do with verbal ability as measured by Vocabulary. If we accept the score on dislikes hazards as measuring social desirability bias, we should probably conclude that desire to put oneself in a good light contributes to a tendency to increase his productivity in the in-basket situation.

The following three variables have loadings of .20 or greater on Factor Z, Seeking Guidance:

YMCA secretary (SVIB)	.28
Active (TTS)	.21
Life insurance salesman (SVIB)	.20

Apparently people who resemble YMCA secretaries and insurance salesmen with respect to responses to SVIB items are inclined to seek guidance. Perhaps such people are more "other directed" than most. The active scale of the TTS emphasizes tendencies to move and work fast; in view of the component of Procrastination in Factor Z, this loading of active on Factor Z seems inconsistent. Perhaps the relationship should be accounted for in terms of the larger components of concern with superiors and discussing. The loading of active may make sense in view of the interpretation of Factor Z as the behavior of someone who is anxious to please, who avoids doing things for which he might be criticized, and who makes many positive attempts to find out what his superiors want him to do.

Discussion

Perhaps the principle virtue of an unstructured situational test such as an in-basket test is that it provides an opportunity for the examinee to display spontaneously certain response tendencies which comprise a part of his "personality." The subject doesn't know precisely what is expected of him or how his products are to be scored, since his instructions are merely to "be the executive" and to behave as though he were really on the job. He may have some hypotheses (Orne, 1962) as to what the scorer will look for, such as completion of a large amount of work, or "good judgment," but it is impossible for him to anticipate all the stylistic variables which enter into the scoring system. Consideration for the feelings of subordinates or recognition of the need for information, for example, are likely to be displayed if displayed at all because they are natural or habitual expressions of the subject's personality.

If the in-basket scores are correlated with other measures which on theoretical or logical grounds we might expect to be related, we have evidence that the subject displays in his performance in the simulated job some of the same consistencies in behavior that are characteristic of him more generally. If the other measures involve a variety of techniques of measurement, and especially if biographical data are included, we feel more confident that the in-basket scores are in some sense valid.

The relationships reported in this study are, in general, in directions which one might expect on logical or theoretical grounds, and a variety of types of variables, including biographical, are involved.

For example, we may call attention to the following relationships:

Those who take many courses of action which were classified as imaginative tend to have high ability as measured by the Vocabulary test (r = .41).

Those who attempt to solve many problems tend to resemble personnel directors in their responses to SVIB items (r = .39).

Those who write a great deal tend to get high scores on the active scale of the TTS (r = .40).

Those who frequently involve subordinates in their responses tend to be of high GS level (r = .36).

Those who give indications that they are aware of poor work on the part of their subordinates tend to have high ability as measured by the Vocabulary test (r = .29).

Those who plan to have many discussions with subordinates tend to resemble life insurance salesmen in their responses to the SVIB (r = .37).

Those who frequently ask subordinates for information or advice tend to answer items in the SVIB like lawyers (r = .32), not like forest service men (r = -.34).

Those who frequently take leading actions tend to be of high GS level (r = .31).

Those who frequently give directions and suggestions tend to be of high GS level (r = .38).

Those who frequently plan to communicate face-to-face tend to resemble life insurance salesmen in their responses to the SVIB (r = .37).

Those who generally tend to prepare for action by becoming informed are likely to resemble presidents of manufacturing concerns (loading = .28) rather than policemen (loading = -.34) in their responses to the SVIB.

Those who generally tend to act in accordance with the mission of the organization by showing concern for public relations are likely to have high ability as measured by the Vocabulary test (loading = .34).

Those who generally tend to procrastinate are likely to be of low educational level (loading = -.33).

Those who generally tend to show concern about their superiors are likely to show a bias toward socially desirable responses on the WPS (loading = -.44 for the hazards scale).

Those who generally tend to supervise work of subordinates are likely to have supervisory duties in their real jobs (loading = .33).

Although none of these variables could reasonably be considered satisfactory as a final criterion for establishing the validity of any in-basket measure, the findings generally contribute to the validation of in-basket scores in the sense that they reveal that a certain amount of consistency is present both in in-basket performance and in the other variables. If as further evidence accumulates we continue to find sensible relationships between in-basket variables and items of information derived from different sources, our confidence in the use of this type of simulation in psychological measurement may grow to the point where we want to employ situational test measures in the validation of instruments which approach the measurement problem less directly.

The use of situational tests for providing dependent variables in social-psychological experiments is suggested by the findings. For

example, experimental treatments might consist in systematically varying the background situation in ways which would permit the testing of appropriate hypotheses about leadership or social behavior. The background situation would have to be rather carefully and perhaps elaborately presented if one is to be sure that it has sufficient impact to make a difference. Then the behavior of subjects under the various treatments could be studied by comparing the relevant scores derived from the records of performance in the situational test. Such a method would permit much more complete control of the experimental conditions than is possible in small group research, for example, where no two groups perform under exactly the same experimental conditions.

The results of the study also suggest the possibility of using situational tests, such as the in-basket, in the psychological appraisal of personnel. Like the situational tests used by the OSS Assessment Staff (1948) during World War II, the in-basket test elicits spontaneous behaviors resembling those of the criterion tasks. But unlike the OSS assessment procedures, the in-basket test provides a detailed record of performance which is readily amenable to objective scoring on a variety of variables as well as to impressionistic interpretation. Such situational tests have the characteristics of an instrument with large bandwidth (Cronbach & Gleser, 1957), yet at the same time some of the discrete scores are potentially satisfactory as narrow-band high-fidelity instruments. The objective scores and impressionistic content together might make such tests useful assessment instruments in situations where many types of questions are to be answered or many kinds of decisions made.

Summary

Scores on tests of cognitive abilities, attitudes, interests, and personality and biographical information were obtained for a group of 115 administrators in the federal government who had also been given the Bureau of Business In-Basket Test. The group overlapped with a larger group (N = 335) of subjects who had provided data for a factor analysis of scores from the in-basket. The purpose of the present study was to observe the correlations of in-basket scores with the ability and other measures and to estimate the factor loadings of the other measures on the factors obtained in the previous study. This was accomplished by estimating the correlations between in-basket scores and other variables for the larger group (assuming explicit multivariate selection), and then using a factor extension procedure to estimate loadings on the oblique primary factors and the second-order factors.

The general trend of the results is in harmony with the relationships one might expect on logical or theoretical grounds. Findings suggest that a response set toward social desirability is operating in one of the instruments and that scores on a social desirability scale under certain conditions might be useful in a predictor battery. The results tend to establish the construct validity of in-basket scores. It would therefore seem reasonable to consider using scores on situational tests like the in-basket as dependent variables in social-psychological experiments, or as provisional criteria for validating tests which approach the problem of measuring personality less directly. The use of situational tests in assessment is discussed.

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Footnotes

1. Dr. David Goodrich has contributed ideas and criticism at all stages of this study from its inception. He provided invaluable help in the data collection phase of the study and made many useful suggestions after reviewing the manuscript. Responsibility for any errors of fact or interpretation, however, is the author's.

2. Government Service.

3. In Table 1 and in subsequent tables based on the intercorrelations of the 77 variables for Sample B, correlations of .24 or greater are significant at the 1% level and correlations of .18 or greater are significant at the 5% level.

Table 1

Intercorrelations of Variables

(N = 115)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
BIOGRAPHICAL DATA																		
1. Age		.48	-.10	.08	.12	-.30	-.24	-.02	-.29	.29	.19	-.02	.18	-.16	-.02	-.15	.09	.09
2. GS Level	.48		.07	.26	.16	.05	-.09	.17	-.09	.18	.15	-.17	.16	-.08	-.08	-.28	.06	.17
3. Educational Level	-.10	.07		-.08	-.05	.29	.12	.25	.23	-.01	.07	.00	.10	.17	-.00	-.03	.04	.09
4. Supervisory Duties	.08	.26	-.08		.15	.07	.04	.18	.07	.08	.01	.06	-.02	.20	.12	.04	.04	-.04
5. Chosen for Advanced Training	.12	.16	-.05	.15		-.14	-.14	.02	-.04	.00	-.01	-.12	-.00	.02	-.14	-.09	-.02	-.03
ABILITY TESTS																		
6. Interpretation of Data	-.30	.05	.29	.07	-.14		.43	.44	.57	-.16	.02	-.03	.03	.13	.18	.16	-.11	.02
7. Matrices	-.24	-.09	.12	.04	-.14	.43		.34	.56	-.02	.05	.10	.01	.20	.04	.07	.02	.12
8. Vocabulary	-.02	.17	.25	.18	.02	.44	.34		.56	-.16	-.11	-.19	-.04	.04	-.01	-.10	-.02	-.02
9. Reading Comprehension	-.29	-.09	.23	.07	-.04	.57	.56	.56		-.23	-.04	-.06	-.08	.16	.09	.09	-.07	.06
WORK PREFERENCE SCHEDULE																		
10. Dislikes Training	.29	.18	-.01	.08	.00	-.16	-.02	-.16	-.23		.24	.33	.33	.01	.24	.10	.14	.16
11. Dislikes Hazards	.19	.15	.07	.01	-.01	.02	.05	-.11	-.04	.24		.24	.60	.06	.21	.11	.14	.49
12. Dislikes Judging People	-.02	-.17	.00	.06	-.12	-.03	.10	-.19	-.06	.33	.24		.36	.15	.55	.60	.24	.08
13. Dislikes Discomfort	.18	.16	.10	-.02	-.00	.03	.01	-.04	-.08	.33	.60	.36		.15	.56	.25	.30	.48
14. Dislikes Lack of Recognition	-.16	-.08	.17	.20	.02	.13	.20	.04	.16	.01	.06	.15	.15		.16	.04	.36	.05
15. Dislikes Social Responsibility	-.02	-.08	-.00	.12	-.14	.18	.04	-.01	.09	.24	.21	.55	.36	.16		.51	.21	.07
16. Dislikes Supervising Work	-.15	-.28	-.03	.04	-.09	.16	.07	-.10	.09	.10	.11	.60	.2,	.04	.51		.02	.01
17. Dislikes Being Supervised	.09	.06	.04	.04	-.02	-.11	.02	-.02	-.07	.14	.14	.24	.30	.36	.21	.02		.21
18. Dislikes Separation from Friends	.09	.17	.09	-.04	-.03	.02	.12	-.02	.06	.16	.49	.08	.48	.05	.07	.01	.21	
19. Dislikes Collaboration with Incompetent	-.04	.00	.15	.22	-.17	-.02	.19	-.03	.06	.21	.31	.34	.39	.31	.38	.12	.49	.29
20. Dislikes Demanding Assignments	.04	-.16	-.01	-.04	.09	-.03	-.10	-.16	-.12	.34	.22	.49	.28	-.17	.37	.48	.06	.12
21. Dislikes Irregularity	.06	.07	.08	.10	.06	-.04	.07	-.07	.04	.06	.38	.19	.32	.07	.19	.13	.06	.45
STRONG VOCATIONAL INTEREST BLANK																		
22. Psychologist	-.25	-.00	.33	.04	-.13	.43	.16	.38	.39	-.28	-.17	-.09	-.10	.15	.09	.10	-.04	-.04
23. Physician	-.12	-.16	.15	.03	-.05	.08	.07	.02	.10	-.14	.09	.42	.20	.12	.28	.30	.27	.12
24. Mathematician	-.04	-.07	.10	.04	-.11	.20	.13	.10	.20	.03	.15	.48	.22	.08	.48	.40	.22	.10
25. Production Manager	.17	.11	-.32	.08	.01	-.20	-.03	-.07	-.14	.05	-.16	-.04	-.12	.01	.07	-.21	.07	-.04
26. Policeman	.10	-.09	-.26	.05	.11	-.32	-.34	-.21	-.29	-.10	-.26	-.01	-.15	-.12	-.08	-.05	.00	-.20
27. Forest Service Man	.16	-.17	-.11	.08	-.07	-.09	-.05	-.06	-.10	.09	-.13	.12	-.01	-.10	.22	.13	.12	-.05
28. Personnel Director	-.04	.15	.13	-.04	.04	.05	-.16	.17	-.01	-.16	-.29	-.60	-.35	-.07	-.41	-.47	-.21	-.10
29. Public Administrator	-.10	.09	.17	-.02	.05	.12	-.08	.15	.07	-.16	-.17	-.41	-.18	-.08	-.24	-.26	-.20	-.03
30. YMCA Secretary	.03	.14	.12	-.03	.02	-.06	-.17	.03	-.10	-.08	-.14	-.42	-.22	-.17	-.42	-.25	-.30	-.01
31. Accountant	.22	.04	-.22	-.00	-.07	-.15	-.11	-.05	-.13	-.08	.02	-.08	-.02	.04	-.01	-.15	-.07	-.04
32. Sales Manager	.05	.20	-.20	-.08	.16	-.19	-.10	-.11	-.19	.14	-.01	-.37	-.15	-.13	-.44	-.37	-.21	-.10
33. Life Insurance Salesman	.01	.19	-.05	-.10	.21	-.11	-.17	-.11	-.18	.14	.07	-.35	-.05	-.10	-.43	-.27	-.25	-.01
34. Lawyer	-.22	.06	.33	-.03	.20	.29	.01	.16	.18	-.13	.07	-.11	.01	.07	-.11	.02	-.14	-.11
35. President, Manufacturing Concern	.02	.17	-.21	-.03	.04	-.02	.11	-.13	-.03	.11	.08	-.08	.13	.12	-.06	-.16	-.02	.02
THURSTONE TEMPERAMENT SCHEDULE																		
36. Active	-.05	.12	.12	.01	.05	.10	.02	.18	.01	-.04	-.12	-.33	-.22	.02	-.32	-.35	-.05	-.06
37. Vigorous	.09	.08	-.22	-.07	.06	-.18	-.17	-.21	-.19	-.06	-.21	-.16	-.13	-.07	-.03	-.09	-.01	-.06
38. Sociable	-.07	.09	.09	-.05	-.00	.03	-.12	-.06	-.09	.03	.03	-.33	-.12	-.03	-.43	-.33	-.08	.04
39. Dominant	.01	.12	.04	-.06	.12	-.08	-.13	.03	-.02	-.09	-.26	-.34	-.33	-.21	-.62	-.43	-.29	-.03
40. Calm and Confident	.17	.25	-.09	.04	-.01	-.24	-.24	-.02	-.25	.10	-.09	-.41	-.16	-.27	-.28	-.33	-.25	-.09
41. Solitary	.05	-.07	.13	.02	.09	.03	.10	.19	.19	-.04	.08	.20	.11	.17	.30	.13	.16	.08
42. Question Score	-.12	-.21	-.06	.07	-.02	.01	.10	.08	.13	.00	-.02	.15	-.11	.16	.28	.22	.07	.03

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
-.04	.04	.06	-.25	-.12	-.04	.17	.10	.16	-.04	-.10	.03	.22	.05	.01	-.22	.02	-.03	.09	-.07	.01	.17	.05	-.12
.00	-.16	.07	-.00	-.16	-.07	.11	-.09	-.17	.15	.09	.14	.04	.20	.19	.06	.17	.12	.08	.09	.12	.25	-.07	-.21
.15	-.01	.08	.33	.15	.10	-.32	-.26	-.11	.13	.17	.12	-.22	-.20	-.05	.33	-.21	.12	-.22	.09	.04	-.09	.13	-.06
.22	-.04	.10	.04	.03	.04	.08	.05	.08	-.04	-.02	-.03	-.00	-.08	-.10	-.03	-.03	.01	-.07	-.05	-.06	.04	.02	.07
-.17	.09	.06	-.13	-.05	-.11	.01	.11	-.07	.04	.05	.02	-.07	.16	.21	.20	.04	.03	.06	-.00	.12	-.01	.09	-.02
-.02	-.03	-.04	.43	.08	.20	-.20	-.32	-.09	.05	.12	-.06	-.15	-.19	-.11	.29	-.02	.10	-.18	.03	-.08	-.24	.03	.01
.19	-.10	.07	.16	.07	.13	-.03	-.34	-.05	-.16	-.08	-.17	-.11	-.10	-.17	.01	.11	.02	-.17	-.12	-.13	-.24	.10	.10
-.03	-.16	-.07	.38	.02	.10	-.07	-.21	-.06	.17	.15	.03	-.05	-.11	-.11	.16	-.13	.18	-.21	-.06	.03	-.02	.19	.08
.06	-.12	.04	.39	.10	.20	-.14	-.29	-.10	-.01	.07	-.10	-.13	-.19	-.18	.18	-.03	.01	-.19	-.09	-.02	-.25	.19	.13
.21	.34	.06	-.28	-.14	.03	.05	-.10	.09	-.16	-.16	-.08	-.08	.14	.14	-.13	.11	-.04	-.06	.03	-.09	.10	-.04	.00
.31	.22	.38	-.17	.09	.15	-.16	-.26	-.13	-.29	-.17	-.14	.02	-.01	.07	.07	.08	-.12	-.21	.03	-.26	-.09	.08	-.02
.34	.49	.19	-.09	.42	.48	-.04	-.01	.12	-.60	-.41	-.42	-.08	-.37	-.35	-.11	-.08	-.33	-.16	-.33	-.54	-.41	.20	.15
.39	.28	.52	-.10	.20	.22	-.12	-.15	-.01	-.35	-.18	-.22	-.02	-.15	-.05	.01	.13	-.22	-.13	-.12	-.35	-.16	.11	-.11
.31	-.17	.07	.15	.12	.08	.01	-.12	-.10	-.07	-.08	-.17	.04	-.13	-.10	.07	.12	.02	-.07	-.03	-.21	-.27	.17	.16
.38	.37	.19	.09	.28	.48	.07	-.08	.22	-.41	-.24	-.42	-.01	-.44	-.43	-.11	-.06	-.32	-.03	-.43	-.62	-.28	.30	.28
.12	.48	.13	.10	.30	.40	-.21	-.05	.13	-.47	-.26	-.25	-.15	-.37	-.27	.02	-.16	-.35	-.05	-.33	-.43	-.33	.13	.22
.49	.06	.06	-.04	.27	.22	.07	.00	.12	-.21	-.20	-.30	-.07	-.21	-.25	-.14	-.02	-.03	-.01	-.08	-.29	-.25	.16	.07
.29	.12	.45	-.04	.12	.10	-.04	-.20	-.03	-.10	-.03	-.01	-.04	-.10	-.01	-.11	.02	-.06	-.06	.04	-.03	-.09	.08	.03
	.09	.27	.01	.29	.27	.03	-.08	.09	-.25	-.11	-.35	-.08	-.24	-.25	-.12	.04	-.14	-.11	-.14	-.38	-.25	.20	.10
.09		.12	-.16	.17	.12	-.08	.09	.18	-.38	-.21	-.20	-.21	-.19	-.12	-.09	-.16	-.38	-.03	-.21	-.33	-.22	.01	.01
.27	.12		-.01	.16	.10	-.05	-.03	.03	-.16	-.01	-.09	.11	-.29	-.21	-.09	-.08	-.21	-.07	-.03	-.20	-.14	.14	.00
.01	-.16	-.01		.38	.35	-.13	-.22	-.06	.29	.31	.05	-.16	-.43	-.37	.19	-.23	-.10	-.22	-.19	-.09	-.03	.19	.09
.89	.17	.16	.38		.64	-.03	-.04	.21	-.34	-.20	-.35	-.39	-.53	-.44	.03	-.20	-.21	-.10	-.33	-.38	-.30	.32	.15
.27	.12	.10	.35	.64		-.03	-.26	.05	-.41	-.36	-.39	-.20	-.48	-.49	.05	-.11	-.25	-.19	-.42	-.44	-.32	.34	.29
.05	-.08	-.05	-.13	-.03	-.03		.42	.40	.20	.15	-.20	.35	-.02	-.31	-.60	.31	-.01	.42	-.10	-.09	.16	-.04	.02
-.08	.09	-.03	-.22	-.04	-.26	.42		.53	.24	.31	.18	.30	-.19	-.18	-.43	-.37	-.17	.40	.04	.04	.12	-.17	-.10
.09	.18	.03	-.06	.21	.05	.40	.53		-.07	.17	-.09	.10	-.54	-.51	-.56	-.32	-.08	.33	-.21	-.27	-.02	.04	.09
-.25	-.38	-.16	.29	-.34	-.41	.20	.24	-.07		.74	.57	.26	.19	.14	.02	-.15	.21	.10	.33	.48	.36	-.07	-.13
-.11	-.21	-.01	.31	-.20	-.36	.15	.31	.17	.74		.43	.25	-.07	-.03	-.06	-.26	.19	.12	.17	.32	.29	-.03	-.09
-.35	-.20	-.09	.05	-.35	-.39	-.20	.18	-.09	.57	.43		.06	.13	.39	.08	-.34	.18	.04	.35	.33	.34	-.25	-.14
-.08	-.21	.11	-.16	-.39	-.20	.35	.30	.10	.26	.25	.06		-.01	-.19	-.32	-.06	-.02	.09	-.10	-.12	.10	.02	.05
-.24	-.19	-.29	-.43	-.33	-.48	-.02	-.19	-.34	.19	-.07	.13	-.01		.80	.26	.34	.31	.05	.43	.49	.34	-.33	-.30
-.25	-.12	-.21	-.37	-.44	-.49	-.31	-.18	-.31	.14	-.03	.39	-.19	.80		.48	.30	.33	.00	.34	.33	.28	-.39	-.35
-.12	-.09	-.09	.19	.03	.05	-.60	-.43	-.36	.02	-.06	.08	-.32	.26	.48		.03	.25	-.34	.21	.19	-.09	-.01	-.18
.04	-.16	-.08	-.25	-.20	-.11	.31	-.37	-.32	-.15	-.26	-.34	-.06	.34	.30	.03		.16	.16	.10	.09	.16	-.22	-.20
-.14	-.38	-.21	-.10	-.21	-.25	-.01	-.17	-.08	.21	.19	.18	-.02	.31	.33	.25	.16		.06	.37	.37	.13	-.18	-.14
-.11	-.03	-.07	-.22	-.10	-.19	.42	.40	.33	.10	.12	.04	.09	.03	.00	-.34	.16	.06		.12	.14	.20	-.26	-.22
-.14	-.21	-.03	-.19	-.33	-.42	-.10	.04	-.21	.33	.17	.33	-.10	.43	.34	.21	.10	.37	.12		.37	.23	-.33	-.36
-.38	-.33	-.20	-.09	-.38	-.44	-.09	.04	-.27	.48	.32	.33	-.12	.49	.33	.19	.09	.37	.14	.37		.43	-.39	-.25
-.25	-.22	-.14	-.03	-.30	-.32	.16	.12	-.02	.36	.29	.34	.10	.34	.28	-.09	.16	.13	.20	.25	.43		-.33	-.36
.20	.01	.14	.19	.32	.34	-.04	-.17	.04	-.07	-.03	-.25	.02	-.33	-.39	-.01	-.22	-.18	-.26	-.33	-.39	-.33		.29
.10	.01	.00	.09	.15	.29	.02	-.10	.09	-.13	-.09	-.14	.03	-.30	-.35	-.18	-.20	-.14	-.22	-.36	-.25	-.36	.29	

Table 2

Correlations of In-Basket Scores with Biographical Data

Variable	Age	GS Level	Educational Level	Supervisory Duties	Chosen for Advanced Training
Imaginativeness	-.02	.19	.10	.11	-.09
Organizational Change	.11	.22	.17	.15	.03
Number of Items Attempted	.03	.20	.27	.02	.01
Estimated Number of Words Written	-.03	.33	.21	.02	-.08
Number of Subordinates Involved as Individuals	.05	.36	.29	.10	-.08
Number of Superiors Involved	-.02	.24	.07	.19	-.01
Number of Outsiders Involved as Individuals	.10	.27	.18	-.05	-.05
Unusual Action	.04	.22	-.01	.14	-.05
Aware of Poor Work	-.05	.08	-.03	.19	-.07
Carelessness or Minor Error	.12	.18	.04	.01	.05
Socially Insensitive	.04	.10	.00	.13	-.15
Relates to Background Material or Other Items	.10	.13	.25	-.08	.00
Uses Program Values	.03	.12	.17	-.05	-.02
Discusses with Subordinates	-.07	.13	.16	-.17	-.09
Asks Subordinates for Information or Opinion	-.15	.20	.19	-.08	.03
Requires Further Information for Deciding	.02	.12	.17	.09	-.13
Delays, Postpones or Temporizes	-.01	-.10	-.09	.01	-.06
Arrives at a Procedure for Deciding	-.11	.21	.17	-.09	-.10
Concluding Decision	.08	.18	.11	.07	-.07

Table 2 (Continued)

Variable	Age	GS Level	Educational Level	Supervisory Duties	Chosen for Advanced Training
Tentative or Definite Plans Only	-.18	-.19	-.01	.01	-.07
Work Scheduled for Same or Next Day	-.11	.13	.05	-.13	-.08
Work Scheduled for Same or Next Week	.09	.12	-.05	.06	-.04
Work Scheduled--No Time Specified	-.07	.12	.19	-.06	-.04
Leading Action	-.07	.31	.24	-.12	-.15
Terminal Action	.06	.11	.06	.07	.00
Follows Lead by Subordinates	.07	.12	.21	-.21	-.08
Follows Lead by Superiors	-.15	.13	.16	-.04	-.10
Initiates a New Structure	.05	.27	.13	-.06	-.04
Gives Directions or Suggestions	.08	.38	.12	-.01	-.08
Refers to Superiors	.11	.01	.12	.00	-.08
Communicates Face-to-Face	-.01	.22	.15	-.06	-.05
Communicates by Writing	.03	.36	.20	-.03	-.12
Courtesy to Outsiders	.06	.07	.07	.02	.15
Informality to Subordinates	.09	-.01	.05	-.17	-.03
Informality to Superiors	.08	-.08	.00	.03	-.07

Table 3

Correlations of In-Basket Scores with Ability Test Scores

Variable	Interpretation of Data	Matrices	Vocabulary	Reading Comprehension
Imaginativeness	.14	.15	.41	.17
Organizational Change	-.03	.04	.29	.06
Number of Items Attempted	.12	-.05	.16	.07
Estimated Number of Words Written	.15	.09	.30	.14
Number of Subordinates Involved as Individuals	.16	.08	.32	.16
Number of Superiors Involved	.06	-.18	.16	.02
Number of Outsiders Involved as Individuals	.05	-.07	.25	.02
Unusual Action	-.03	-.01	.01	.05
Aware of Poor Work	.03	.22	.29	.21
Carelessness or Minor Error	-.03	-.09	-.06	-.08
Socially Insensitive	.04	.05	-.01	-.06
Relates to Background Material or Other Items	.07	-.02	.15	.06
Uses Program Values	.03	.04	.21	.03
Discusses with Subordinates	.16	-.01	.10	-.01
Asks Subordinates for Information or Opinion	.20	.04	.14	.18
Requires Further Information for Deciding	.18	.20	.27	.18
Delays, Postpones, or Temporizes	-.02	-.17	-.10	-.06
Arrives at a Procedure for Deciding	.17	.07	.08	.10
Concluding Decision	-.06	-.03	.17	-.01
Tentative or Definite Plans Only	.05	.02	-.14	.02
Work Scheduled for Same or Next Day	.32	.12	.13	.17

Table 3 (Continued)

Variable	Interpretation of Data	Matrices	Vocabulary	Reading Comprehension
Work Scheduled for Same or Next Week	-.03	-.13	.07	-.02
Work Scheduled--No Time Specified	.00	-.07	-.02	-.17
Leading Action	.19	.05	.19	.07
Terminal Action	-.09	-.01	.11	.00
Follows Lead by Subordinates	.00	.06	.03	-.08
Follows Lead by Superiors	.15	-.05	.25	.14
Initiates a New Structure	.10	.10	.19	.02
Gives Directions or Suggestions	-.01	-.05	.17	-.01
Refers to Superiors	-.07	-.06	.07	.02
Communicates Face-to-Face	.07	-.04	.10	-.01
Communicates by Writing	.06	-.01	.15	-.07
Courtesy to Outsiders	-.11	.06	.07	-.08
Informality to Subordinates	-.12	-.16	-.01	-.13
Informality to Superiors	-.17	-.12	.04	-.09

Table 4

Correlations of In-Basket Scores with the Work Preference Schedule

Variable	Dislikes Training	Dislikes Hazards	Dislikes Judging People	Dislikes Discomfort	Dislikes Lack of Recognition	Dislikes Social Responsibility	Dislikes Supervising Work	Dislikes Being Supervised	Dislikes Separation from Friends	Dislikes Collaboration with Incompetents	Dislikes Demanding Assignments	Dislikes Irregularity
Imaginativeness	-.13	-.18	-.12	-.14	.03	-.16	-.13	-.00	-.04	-.10	-.31	-.08
Organizational Change	-.13	-.03	-.10	-.07	.05	-.20	-.18	.01	-.08	-.08	-.15	.02
Number of Items Attempted	-.18	-.26	-.35	-.30	-.01	-.29	-.27	-.10	-.16	-.16	-.27	-.34
Estimated Number of Words Written	-.07	-.19	-.31	-.11	.00	-.28	-.29	-.09	.01	-.06	-.28	-.09
Number of Subordinates Involved as Individuals	-.12	-.11	-.29	-.13	-.09	-.19	-.31	-.17	-.01	-.09	-.28	-.10
Number of Superiors Involved	-.03	-.28	-.22	-.10	-.08	-.21	-.12	.07	-.03	-.05	-.08	-.12
Number of Outsiders Involved as Individuals	-.06	-.13	-.11	.03	.07	-.16	-.16	.07	.02	-.08	-.12	.05
Unusual Action	-.07	-.13	-.08	-.12	-.09	-.11	-.00	-.18	-.02	.00	-.10	-.16
Aware of Poor Work	-.10	-.12	-.09	-.03	.05	-.05	-.06	-.06	-.08	-.04	-.25	.00
Carelessness or Minor Error	.19	-.07	-.04	.04	-.07	-.15	-.01	-.08	.08	-.11	-.05	.09
Socially Insensitive	.13	-.09	.07	-.01	.14	.02	.01	.06	-.09	.21	.10	.05
Relates to Background Material or Other Items	.03	-.13	-.09	.01	.01	-.05	-.03	-.09	-.01	-.17	-.03	-.03
Uses Program Values	-.01	-.15	-.13	-.10	-.09	-.14	-.16	.03	-.15	-.20	-.03	-.04
Discusses with Subordinates	-.04	.08	-.26	.03	-.14	-.21	-.17	-.09	.12	-.08	-.21	-.12

Table 4 (Continued)

Variable	Dislikes Training	Dislikes Hazards	Dislikes Judging People	Dislikes Discomfort	Dislikes Lack of Recognition	Dislikes Social Responsibility	Dislikes Supervising Work	Dislikes Being Supervised	Dislikes Separation from Friends	Dislikes Collaboration with Incompetents	Dislikes Demanding Assignments	Dislikes Irregularity
Asks Subordinates for Information or Opinion	-.10	-.09	-.11	-.06	.08	-.10	-.12	-.14	.02	-.19	-.22	-.03
Requires Further Information for Deciding	-.03	-.04	-.13	.04	-.01	-.05	-.16	-.00	-.04	.00	-.12	-.14
Delays, Postpones, or Temporizes	-.06	.06	-.12	-.01	-.17	-.01	.04	-.17	.07	-.05	.08	-.01
Arrives at a Procedure for Deciding	-.09	-.19	-.20	-.09	-.01	-.06	-.10	-.05	.01	-.00	-.22	-.19
Concluding Decision	-.04	-.12	-.16	-.18	.00	-.27	-.25	.02	-.13	-.09	-.18	-.17
Tentative or Definite Plans Only	-.13	.03	.06	.04	.03	-.03	.23	-.01	.02	.03	.08	-.07
Work Scheduled for Same or Next Day	-.08	.06	-.16	.03	-.07	.07	-.06	-.09	.05	-.05	-.26	-.04
Work Scheduled for Same or Next Week	.13	-.11	-.12	-.01	-.06	-.05	.02	.04	.09	-.06	.04	-.07
Work Scheduled--No Time Specified	-.10	-.07	-.12	-.09	-.10	-.26	-.22	-.04	.06	-.11	-.09	-.16
Leading Action	-.04	-.19	-.32	-.10	-.06	-.17	-.31	-.10	.05	-.03	-.32	-.13
Terminal Action	-.06	-.09	-.07	-.17	.07	-.16	-.15	.05	-.14	-.03	-.12	-.13
Follows Lead by Subordinates	.08	-.12	-.06	-.06	.01	-.22	-.15	.09	.02	-.10	-.02	-.13
Follows Lead by Superiors	-.02	-.31	-.35	-.17	.07	-.24	-.23	-.03	-.16	-.11	-.23	-.25

Table 4 (Continued)

Variable	Dislikes Training	Dislikes Hazards	Dislikes Judging People	Dislikes Discomfort	Dislikes Lack of Recognition	Dislikes Social Responsibility	Dislikes Supervising Work	Dislikes Being Supervised	Dislikes Separation from Friends	Dislikes Collaboration with Incompetents	Dislikes Demanding Assignments	Dislikes Irregularity
Initiates a New Structure	-.13	-.02	-.34	-.11	-.11	-.28	-.31	-.07	-.01	-.14	-.27	-.14
Gives Directions or Suggestions	.00	-.07	-.25	-.04	-.06	-.18	-.33	-.08	.08	-.05	-.30	-.08
Refers to Superiors	-.05	-.10	-.06	-.00	-.12	.05	.06	-.07	-.07	-.08	-.00	-.00
Communicates Face-to-Face	.04	-.04	-.27	-.05	-.14	-.19	-.21	-.05	.05	-.07	-.22	-.17
Communicates by Writing	-.06	-.20	-.33	-.16	-.10	-.23	-.30	-.04	.01	-.06	-.30	-.16
Courtesy to Outsiders	.09	-.10	.05	.00	-.03	-.12	-.07	.09	-.02	-.12	-.02	.18
Informality to Subordinates	.07	-.08	-.07	.14	-.08	.04	-.03	.06	.03	-.02	.13	.10
Informality to Superiors	.05	-.14	-.06	-.16	-.14	-.08	-.04	.13	-.06	-.02	-.02	-.09

Table 5

Correlations of In-Basket Scores with the Strong Vocational Interest Blank

Variable	Psychologist	Physician	Mathematician	Production Manager	Policeman	Forest Service Man	Personnel Director	Public Administrator	YMCA Secretary	Accountant	Sales Manager	Life Insurance Salesman	Lawyer	President, Manufacturing Concern
Imaginativeness	.11	-.10	-.10	-.08	-.23	-.23	.09	.04	.10	-.02	.05	.02	.12	.07
Organizational Change	.12	-.14	-.23	-.07	-.01	-.07	.15	.26	.22	.14	-.06	-.05	-.04	-.10
Number of Items Attempted	.15	-.18	-.22	-.06	.02	-.11	.39	.36	.15	-.03	.14	.11	.17	-.01
Estimated Number of Words Written	.14	-.23	-.23	-.06	-.14	-.15	.26	.22	.23	-.06	.13	.16	.12	.08
Number of Subordinates Involved as Individuals	.16	-.19	-.16	-.04	-.08	-.07	.26	.24	.22	-.11	.11	.07	.09	.03
Number of Superiors Involved	.07	-.13	-.24	.02	.06	-.03	.26	.20	.18	.03	.10	.17	.13	-.01
Number of Outsiders Involved as Individuals	.07	-.07	-.12	-.06	-.13	-.11	.03	-.02	.10	-.06	-.01	.01	.07	.08
Unusual Action	.02	-.15	-.14	.07	.12	.05	.17	.15	.21	-.00	.01	.08	-.05	-.03
Aware of Poor Work	.06	-.01	-.01	.03	-.07	.01	.09	.07	.01	-.10	.01	.00	-.01	-.03
Carelessness or Minor Error	-.16	-.14	-.08	.02	.07	.12	.08	.03	.12	-.01	.08	.04	.00	.07
Socially Insensitive	.00	.09	-.03	.01	-.03	.07	.02	.02	-.16	-.01	-.01	-.14	.00	.07
Relates to Background Material or Other Items	.13	-.08	-.11	-.04	-.05	.03	.09	.08	.15	-.18	.05	.13	.08	.03
Uses Program Values	.04	.01	-.05	-.11	-.00	-.01	.17	.04	.13	-.10	.05	.03	.19	-.14
Discusses with Subordinates	.09	-.16	-.12	-.16	-.24	-.34	.13	.04	.15	-.11	.32	.37	.19	.16
Asks Subordinates for Information or Opinion	.18	-.06	.01	-.10	-.26	-.34	.05	.04	.09	-.18	.12	.20	.32	.18

Table 5 (Continued)

Variable	Psychologist	Physician	Mathematician	Production Manager	Policeman	Forest Service Man	Personnel Director	Public Administrator	YMCA Secretary	Accountant	Sales Manager	Life Insurance Salesman	Lawyer	President, Manufacturing Concern
Requires Further Information for Deciding	.09	.05	.13	-.11	-.18	-.07	-.04	-.03	-.09	-.25	.06	-.02	.15	.03
Delays, Postpones, or Temporizes	-.02	-.04	-.02	-.06	.07	.10	.02	.03	.09	.10	-.03	.04	-.03	-.04
Arrives at a Procedure for Deciding	.09	-.08	-.03	.00	-.18	-.24	.13	.04	.03	-.22	.20	.16	.17	.25
Concluding Decision	.03	-.21	-.20	-.01	.06	.05	.22	.23	.12	.16	.00	-.07	-.11	-.07
Tentative or Definite Plans Only	.02	.13	.08	-.11	-.06	-.11	-.20	-.22	-.00	-.11	-.03	.04	.04	.03
Work Scheduled for Same or Next Day	.12	-.05	.03	-.11	-.26	-.17	.03	-.00	-.17	-.13	.18	.16	.20	.18
Work Scheduled for Same or Next Week	.02	-.12	-.10	-.01	-.11	-.12	.08	-.02	.16	-.09	.08	.12	.06	.13
Work Scheduled--No Time Specified	.07	-.06	-.10	-.10	-.03	-.18	.11	.08	.28	-.10	.11	.24	.11	-.02
Leading Action	.13	-.18	-.12	-.07	-.21	-.23	.29	.19	.18	-.15	.22	.26	.22	.16
Terminal Action	.03	-.14	-.17	.09	.12	.11	.18	.22	-.02	.18	-.06	-.20	-.20	-.03
Follows Lead by Subordinates	.00	-.13	-.13	-.05	-.07	-.04	.11	.12	.08	.02	.10	.03	-.02	.07
Follows Lead by Superiors	.16	-.18	-.23	.01	-.06	-.15	.29	.16	.05	.02	.21	.15	.15	.11
Initiates a New Structure	.06	-.26	-.25	.02	-.08	-.20	.30	.18	.19	.00	.23	.17	.04	.10
Gives Directions or Suggestions	.10	-.23	-.20	.01	-.10	-.11	.26	.28	.20	.01	.14	.17	.06	.13
Refers to Superiors	-.05	-.04	-.03	.06	-.06	-.06	.04	.04	.04	.08	.02	.02	-.01	-.01
Communicates Face-to-Face	.05	-.20	-.19	-.10	-.14	-.20	.21	.11	.22	-.13	.30	.37	.17	.12
Communicates by Writing	.06	-.27	-.19	.01	-.02	-.08	.32	.24	.16	-.04	.11	.03	-.04	.09
Courtesy to Outsiders	-.08	-.07	-.04	.18	.03	.06	.05	.02	.01	.10	-.02	-.14	-.11	.09
Informality to Subordinates	.01	-.06	-.06	.12	.12	.17	.05	.16	-.02	-.03	-.11	-.10	-.14	-.02
Informality to Superiors	-.03	-.06	.03	.13	.06	.06	.04	-.01	-.07	.13	-.00	-.11	-.14	-.10

Table 6

Correlations of In-Basket Scores with the Thurstone Temperament Schedule

Variable	Active	Vigorous	Sociable	Dominant	Calm and Confident	Solitary	Question Score
Imaginativeness	.28	-.13	.05	.21	-.06	-.03	.12
Organizational Change	.16	-.00	-.02	.06	-.00	.02	.07
Number of Items Attempted	.39	.07	.14	.35	.23	-.03	-.02
Estimated Number of Words Written	.40	-.00	.12	.30	.13	-.11	-.03
Number of Subordinates Involved as Individuals	.26	.00	.12	.23	.26	-.15	-.04
Number of Superiors Involved	.36	-.04	.06	.21	-.02	-.01	-.16
Number of Outsiders Involved as Individuals	.13	-.02	.09	.14	.10	-.07	-.09
Unusual Action	.00	.12	-.00	.13	.04	-.09	.03
Aware of Poor Work	.14	-.10	-.09	.18	.00	.05	.19
Carelessness or Minor Error	.18	.14	.09	.19	.10	-.09	-.04
Socially Insensitive	-.02	-.08	-.02	-.20	-.13	-.00	.08
Relates to Background Material or Other Items	.16	-.01	.04	.09	.10	-.01	-.05
Uses Program Values	.09	-.04	.10	.15	.21	.11	-.25
Discusses with Subordinates	.21	-.17	.20	.24	.20	-.13	-.11
Asks Subordinates for Information or Opinion	.21	-.12	.06	.25	-.00	-.06	.01
Requires Further Information for Deciding	.14	-.14	.02	.13	.04	-.01	.03
Delays, Postpones, or Temporizes	.12	.05	-.01	.04	.18	-.11	.02
Arrives at a Procedure for Deciding	.24	.05	.09	.19	.04	-.05	.01
Concluding Decision	.18	.05	.05	.14	.13	-.02	-.04
Tentative or Definite Plans Only	-.02	-.12	-.05	-.11	-.08	-.02	-.01

Table 6 (Continued)

Variable	Active	Vigorous	Sociable	Dominant	Calm and Confident	Solitary	Question Score
work Scheduled for Same or Next Day	.21	-.14	.13	.12	.07	-.05	-.01
Work Scheduled for Same or Next Week	.18	-.07	-.10	.15	.13	.04	.06
Work Scheduled--No Time Specified	.17	-.09	.12	.18	-.00	-.16	-.17
Leading Action	.36	-.02	.22	.34	.10	-.12	-.04
Terminal Action	.07	.16	-.03	.01	.11	.06	.00
Follows Lead by Subordinates	.19	-.11	.07	.11	.01	-.12	-.13
Follows Lead by Superiors	.42	.06	.18	.26	.07	-.10	-.14
Initiates a New Structure	.20	-.01	.10	.29	.26	-.09	-.07
Gives Directions or Suggestions	.30	.03	.09	.26	.22	-.16	-.03
Refers to Superiors	-.02	-.07	-.07	-.02	.08	.07	.10
Communicates Face-to-Face	.32	-.05	.18	.33	.19	-.11	-.11
Communicates by Writing	.27	.14	.15	.24	.19	-.12	-.05
Courtesy to Outsiders	.01	.06	.03	.06	-.00	.04	-.03
Informality to Subordinates	.12	.03	-.00	-.01	.01	-.05	.06
Informality to Outsiders	.11	-.02	.02	.07	.11	.03	.19

Table 7

Correlations of Content Scores with Other In-Basket Scores

Variable	Imaginativeness	Organizational Change	Variable	Imaginativeness	Orgizational Change
Number of Items Attempted	.20	.25	Tentative or Definite Plans Only	-.04	-.09
Estimated Number of Words Written	.56	.45	Work Scheduled for Same or Next Day	.10	-.09
Number of Subordinates Involved as Individuals	.40	.41	Work Scheduled for Same or Next Week	.23	.04
Number of Superiors Involved	.30	.25	Work Scheduled--No Time Specified	.19	.13
Number of Outsiders Involved as Individuals	.45	.35	Leading Action	.36	.12
Unusual Action	.12	.13	Terminal Action	.14	.42
Aware of Poor Work	.39	.26	Follows Lead by Subordinates	.13	.22
Carelessness or Minor Error	.04	.01	Follows Lead by Superiors	.38	.32
Socially Insensitive	-.01	.03	Initiates a New Structure	.43	.37
Relates to Background Material or Other Items	.11	.11	Gives Directions or Suggestions	.43	.44
Uses Program Values	.06	-.04	Refers to Superiors	.04	-.02
Discusses with Subordinates	.17	.04	Communicates Face-to-Face	.25	.14
Asks Subordinates for Information or Opinion	.34	.11	Communicates by Writing	.35	.31
Requires further Information for Deciding	.24	.00	Courtesy to Outsiders	.25	.25
Delays, Postpones, or Temporizes	.23	-.27	Informality to Subordinates	-.04	-.01
Arrives at a Procedure for Deciding	.21	-.02	Informality to Superiors	.03	-.02
Concluding Decision	.33	.53			

Table 8

Estimated Factor Loadings

Variable	Acting in Compliance with Suggestions	Preparing for Action by Becoming Informed	Concern with Public Relations	Procrastinating	Concern with Superiors	Informality	Directing Subordinates	Discussing	Preparing for Action	Amount of Work	Seeking Guidance
Age	.01	-.03	.06	.06	.07	-.09	-.01	.05	.00	.00	.12
GS Level	.13	.19	.10	-.29	.01	-.03	-.00	.02	.03	.15	-.05
Educational Level	.11	.25	.23	-.33	.20	.03	-.19	.02	.08	.15	.08
Supervisory Duties	-.17	-.13	-.21	-.13	.09	.02	.33	.04	-.12	-.01	.07
Chosen for Advanced Training	-.17	-.08	.22	-.11	-.09	-.07	.04	.07	-.05	-.02	-.04
Interpretation of Data	.16	.19	.15	-.06	-.03	-.18	-.17	.04	.07	.03	-.01
Matrices	-.07	.14	.25	-.01	-.18	-.17	.03	-.02	.07	.02	-.09
Vocabulary	-.07	.10	.34	-.16	.13	.12	.11	-.08	.08	.26	.08
Reading Comprehension	-.09	-.02	.12	-.03	.10	.05	.13	-.07	-.01	.10	.06
Dislikes Training	.05	.12	.00	-.04	-.04	.03	-.27	-.06	.03	-.10	-.13
Dislikes Hazards	-.12	.02	-.14	.15	-.44	-.09	.04	.17	.11	-.21	-.16
Dislikes Judging People	-.13	-.13	.01	.08	-.20	-.00	-.05	.02	-.06	-.16	-.14
Dislikes Discomfort	-.18	.03	-.06	.16	-.24	.11	-.05	.09	.16	-.16	-.06
Dislikes Lack of Recognition	.18	.09	-.04	-.11	.04	-.02	-.12	-.12	-.06	.04	-.12
Dislikes Social Responsibility	-.11	-.03	-.05	.22	-.14	.14	-.18	-.11	.04	-.17	-.15
Dislikes Supervising Work	-.15	-.35	-.13	.27	-.11	.08	.09	.06	-.09	-.14	.01
Dislikes Being Supervised	.14	.07	.16	-.16	-.11	.10	-.28	.07	.05	.04	-.13

Table 8 (Continued)

Variable	Acting in Compliance with Suggestions	Preparing for Action by Becoming Informed	Concern with Public Relations	Procrastinating	Concern with Superiors	Informality	Directing Subordinates	Discussing	Preparing for Action	Amount of Work	Seeking Guidance
Dislikes Separation from Friends	-.12	.06	-.02	.23	-.19	-.10	-.04	.01	.10	-.17	-.05
Dislikes Collaboration with Incompetent	.12	.12	-.15	-.04	-.15	-.03	-.20	.01	.02	-.12	-.17
Dislikes Demanding Assignments	-.02	-.13	-.09	.25	-.06	.06	-.21	-.05	-.03	-.19	-.07
Dislikes Irregularity	-.30	-.15	.18	.13	-.32	.16	.02	.16	.10	-.10	-.07
Psychologist	-.01	.07	.01	.01	.08	.14	.03	-.04	.09	.08	.07
Physician	-.19	-.03	-.07	.14	-.11	.14	-.05	.05	.10	-.15	-.01
Mathematician	-.21	.10	-.04	.10	-.11	.07	-.05	-.05	.10	-.16	-.08
Production Manager	-.13	-.09	-.04	-.01	-.01	.16	.10	-.09	-.05	.00	-.07
Policeman	-.13	-.34	-.24	.06	.05	.12	.29	.03	-.17	-.02	.06
Forest Service Man	-.22	-.34	-.10	.22	-.12	.24	.20	.02	-.05	-.05	-.01
Personnel Director	.08	.01	.07	-.14	.23	-.05	.08	-.04	-.07	.15	.12
Public Administrator	.08	.02	-.08	-.15	.20	.05	.09	-.06	-.06	.11	.07
YMCA Secretary	-.17	-.12	.05	.04	.28	-.16	.27	-.01	-.09	.04	.28
Accountant	.12	-.22	-.06	.11	-.01	-.11	.09	-.08	-.19	.03	-.06
Sales Manager	.20	.26	.09	-.22	.07	-.19	-.21	.06	.05	.02	.01
Life Insurance Salesman	.06	.16	.02	-.08	.20	-.22	-.10	.10	.04	-.05	.20
Lawyer	.02	.25	.12	-.15	.17	-.07	-.21	.05	.11	-.02	.13
President, Manufacturing Concern	.22	.28	.13	-.03	-.10	-.14	-.31	-.05	.10	-.01	-.14

Table 8 (Continued)

Variable	Acting in Compliance with Suggestions	Preparing for Action by Becoming Informed	Concern with Public Relations	Procrastinating	Concern with Superiors	Informality	Directing Subordinates	Discussing	Preparing for Action	Amount of Work	Seeking Guidance
Active	.14	.15	.17	-.10	.25	.28	-.15	.05	.13	.16	.21
Vigorous	.02	-.07	-.04	-.02	.06	-.01	.07	-.15	-.13	.03	-.08
Sociable	.14	.11	.19	-.23	.00	-.09	-.14	.15	.04	.09	.03
Dominant	-.08	.10	.15	-.15	.19	-.11	.18	.03	.03	.13	.19
Calm and Confident	-.17	-.08	.02	.12	-.10	.18	.23	.07	.12	.07	.08
Solitary	-.12	-.00	.22	-.08	-.04	.09	-.09	.01	.03	.01	-.04
Question Score	-.09	.03	-.19	-.01	-.04	.14	.14	-.10	.01	-.02	-.09
Imaginativeness	.10	.20	.32	-.41	.23	-.06	.20	-.03	.01	.38	.12
Organizational Change	.20	-.06	.07	-.44	.16	.03	.30	.03	-.16	.38	.04