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ABSTRACT

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The Relationship Between Structured Job Analysis Information, Interests, and Job Satisfaction

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THE RELATIONSHIP BETWEEN STRUCTURED JOB ANALYSIS INFORMATION, INTERESTS, AND JOB SATISFACTION[1]

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Interest in workers' attitudes, as expressed in job satisfaction research, is a relatively recent development in psychology. Early work in this area can be traced back to two classic publications of the 1930's -- the Hawthorne studies (Roethlisberger and Dickson, 1939) and the Hoppock Monograph on job satisfaction (Hoppock, 1935). However, despite its relative recency into the literature, it has proven to be a topic of considerable research interest. For instance, Locke (1969) has estimated that over 3,000 studies have been published on this topic. An estimate today would surely increase this figure significantly.

Historically, the human relations movement provided the initial stimulant for the study of job attitudes and their relations to worker behavior. As such, job satisfaction became an independent variable of early research because of its presumed relationship to job performance. The extent to which this assumption dominated the literature is exemplified by the study of the relationship between job satisfaction and worker performance in order to demonstrate that the assumed positive relationship did, in fact, exist.

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However, several comprehesive reviews later appeared which have challenged this assumption (e.g., Brayfield and Crockett, 1955; and Vroom, 1964). To briefly summarize these reviews, the evidence seems to indicate a small, positive relationship between job satisfaction and performance. This relationship does not appear to be at all as simple as the proponents of the human relations movement had speculated. More recently, the status of job satisfaction has changed in that while most earlier research dealt with job satisfaction as an independent variable, there is a body of more current research which deals with job satisfaction as a dependent variable. Specifically, thoerizing has been presented which explores the nature and determinants of job satisfaction. It is this body of theory to which we now turn.

1. One approach conceptualizes job satisfaction in terms of a comparison between environmental returns and an individual's basic needs, desires, and wants. This approach hypothesizes that an individual is satisfied when he receives that which he wants most. Likewise, the more he wants something, the more dissatisfied he is when he does not receive it.

This represents what has been called a subtractive model (Vroom, 1964), and has been formalized in the work of Locke (1969), Katzell (1964), Morse (1953), and Porter (1961). In essence, these approaches hypothesize that job satisfaction results when the work environment provides for the fulfillment of employees' needs. A well-known example of this approach is seen in the early research of Porter (1961). Porter measured the need fulfillment of employees in terms of their perception of the degree to which their jobs satisfied basic psychological needs.

2. A different approach to job satisfaction which has had great impact on job satisfaction research is the Cornell model (Smith, Kendall, and Hulin, 1969). Job satisfaction is simply defined as the feelings a worker has about his job. There are different feelings corresponding to differential

aspects of the job. In particular, the Cornell model specifies five important aspects -- the nature of the work itself, the pay, the opportunities for promotion, the supervision, and the attributes of co-workers on the job. Smith et al (1969), state "Job satisfactions are ...a function of the perceived characteristics of the job in relation to an individual's frame of reference. Alternatives available in given situations, expectations, and experience play important roles in providing the relevant frame of reference." (p. 12).

Therefore, a particular job aspect (for example, supervision) can be a satisfier, dissatisfier, or irrelevant, depending on conditions in comparable jobs, conditions of other people of the same qualifications, and past experience of the individual; as well as on numerous situational variables of the present job. Thus, job satisfaction is not an absolute phenomenon, but it is relative to the alternatives available to the individual (Fournet, Distefano, and Pryer, 1966).

The scale developed by the Cornell group to measure job satisfaction is called the Job Descriptive Index (JDI). The development of this scale provides an example of the concern for reliability and construct validity which has been lacking in some earlier job satisfaction instruments.

3. The work of Porter and Lawler (1967) represents a third approach to satisfaction. In their view, satisfaction is a function of the rewards a person receives on the job. In general, the greater the rewards, the greater the satisfaction. They are quick to point out, however, that several factors mediate the rewards-satisfaction relationship. In a recent expansion of the theory, Lawler (1971) considers pay satisfaction as a function of the discrepancy between perceived amount of pay that should be received, and perceived amount of pay actually received. Both of these two determinants are seen as influenced by a host of other factors.

One major point that Porter and Lawler (1967) make is the clear distinction between intrinsic and extrinsic rewards. They argue that extrinsic rewards are not often tied to performance, while intrinsic rewards may be more closely tied to performance.

4. Equity theory (Adams, 1965) provides yet another theory of job satisfaction. This approach argues that a person compares the ratio of his own outputs over inputs to the ratio of some comparison object. If the two ratios are equal, satisfaction results. If they are not equal, dissatisfaction results (Pritchard, 1969).

5. A final theoretical position which advocates the mutual interaction between the individual and his work environment is given by Lofquist and Dawis (1969). The basic principle of this theory is that of work adjustment. The theory states that each individual will seek to achieve and maintain "correspondence" with his environment. Correspondence can be described as the individual's fulfilling the requirements of the work environment, and the work environment fulfilling the requirements of the individual. This mutual fulfillment has been termed "reciprocity" by Bennis (1966) and "the psychological contract" by Schein (1970). In short, correspondence is inferred when the individual is both satisfactory and is satisfied.

Thus, this theory of work adjustment makes job satisfaction a central concept. To Lofquist and Dawis, a significant aspect of an individual is his work personality, and the major component of his work personality is his vocational needs. Vocational needs are basic preferences for responding in certain stimulus conditions in the work environment which have been experienced by the individual to be reinforcing.

Further, the model states that the prediction of work adjustment also requires information about the work environment. According to this theory,

the work environment must be desribed in work-personality terms; that is, in terms of reinforcer systems. If the individuals were described in terms of vocational needs, and if the work environment were desribed in terms of reinforcer systems, then it is possible to measure the degree of correspondence between any individual and any work environment. The more correspondent the job's reinforcer system is to the individual's vocational needs, the more he is said to be job satisfied. This again implies a subtractive model of job satisfaction. Appropriate questionnaires have been developed to measure vocational needs, reinforcer systems, and job satisfaction.

Common to all these approaches to job satisfaction is the notion of rewards. All the models seem to postulate that the major determinant of satisfaction is the rewards a person receives on the job. Clearly, other factors are said to be involved such as importance of needs, expected rewards, perceived equitable rewards, the situation of a comparison object etc. However, the clearest thread is the actual rewards a person receives from the job.

If we take the point of view that job satisfaction arises first and foremost from the rewards a person receives from the job, the next step is to consider the rewards themselves. A major distinction in rewards has been made for some time between extrinsic and intrinsic rewards (e.g., Porter and Lawler, 1967). This distinction seems to be an important one since the locus of these two types of rewards is different. Specifically, as we are considering them here, extrinsic rewards refer to rewards which are controlled and awarded by the organization. They include such things as pay, promotions, formal recognition, security, etc. In contrast, intrinsic rewards are given to the person by himself. They arise from his own interaction with the job and include such things as feelings of accomplishment, feelings of doing an important job, and the person's control over his own activities.

Given that we can meaningfully distinguish between intrinsic and extrinsic rewards, it seems logical that one could consider both intrinsic and extrinsic satisfaction. Intrinsic satisfaction being determined by intrinsic rewards, extrinsic satisfaction by extrinsic rewards. It is an empirical question how intrinsic and extrinsic satisfaction might combine to produce total satisfaction; the relative independence of the two types of satisfaction; or whether the two types of satisfaction might be differentially related to such behavior as turnover and absenteeism.

However, one point is very clear. Intrinsic satisfaction has received very little attention in the literature. On the one hand, this is surprising since it is intuatively appealing to hypothesize that the satisfaction from the actual work itself might have a powerful influence on behavior. On the other hand, it is not so surprising since it is so difficult to clearly conceptualize and measure intrinsic satisfaction.

In order to get a handle on this issue we must return to the question of rewards. Clearly, rewards can be considered stimuli from the job situation. With this in mind, one could conceptualize job satisfaction as being ultimately determined from this large collection of job stimuli. Carrying this a step further, intrinsic rewards, and thus intrinsic satisfaction must be influenced by the job itself - the actual tasks employed in the context of the organization. In contrast, extrinsic rewards and thus extrinsic satisfaction must be influenced by those stimuli not associated with the work task itself; that is, the stimuli that the worker perceives from the organization itself in the form of personnel policies, his supervisor, etc. The major point here is that intrinsic satisfaction could be conceptualized as arising first and foremost from the actual job duties the person engages in, while extrinsic satisfaction arises first and foremost from the interactions of the worker with the organization outside his actual job duties.

With this analysis in mind, the first purpose of the present research is to explore the relationship between actual job duties and satisfaction. More specifically, to explore the differential relationship between job duties and 1) extrinsic satisfaction, and 2) intrinsic satisfaction. It is predicted that intrinsic satisfaction will be more related to job duties than will extrinsic satisfaction.

A second purpose of the present research is to explore some of the factors mediating the relationship between job stimuli and satisfaction. Most of the theories of job satisfaction discussed above postulate mediating factors such as needs, comparison objects, perceived level of equitable rewards. Another strong possibility as a mediator is suggested by the work adjustment notion of work personality and reinforcer systems (Lofquist and Dawis, 1969).

We would suggest that if job duties influence satisfaction, especially intrinsic satisfaction, this relationship should be mediated by the individual's interest in performing these job duties. More specifically, if a person's interests match his job duties, satisfaction should result. If interests do not match job duties, dissatisfaction should result. Given our arguments above about intrinsic and extrinsic satisfaction we would further predict that the discrepancy between job duties and interests should predict intrinsic satisfaction better than extrinsic satisfaction.

METHOD

Instruments

In order to explore these ideas, the research to be discussed below had to measure 1) job duties, 2) interest in performing job duties, and 3) job satisfaction, both intrinsic and extrinsic.

1. Job duties. The measure of job duties was the Position Analysis Questionnaire (PAQ). The PAQ (McCormick, Jeanneret, and Mecham; 1969; 1972) is a structured job analysis questionnaire which focuses on worker-oriented job elements which could be present in a wide variety of jobs. The instrument is composed of 187 items organized in the categories of Information Input (e.g., use of written materials); Mental Processes (e.g., amount of planning/scheduling); Work Output (e.g., use of precision tools/instruments); Relationships with Other Persons (e.g., amount of public speaking); Job Context (e.g., degree of noise intensity); and Other Job Characteristics (e.g., vigilance of infrequent events).

The person completing the job analysis instrument indicates the importance, degree of use, frequency of occurrence, etc. of each of the 187 job elements on a 5-point Likert scale. A "Does not apply" alternative is also provided.

Form B of the PAQ was used in this investigation. Slight modifications in the wording of items were made in order to make the questionnaire more applicable to Navy jobs. In all instances, care was taken to preserve the original meaning of the items. The complete PAQ used in this research is presented in Appendix A.

2. Job interests. The measure of job interests used was the Job Activity Preference Questionnaire (JAPQ) developed by Mecham, Harris, McCormick, and Jeanneret (1972). It was developed as a parallel instrument to the PAQ. PAQ items were revised into a 6-point Likert format. Respondents are asked to rate how important they would like each of the job elements to be in their work. The instrument is composed of 150 items which were taken directly from or slightly revised from the PAQ. PAQ items which were not amendable to such revision were eliminated. As with the PAQ, slight modifications in the wording of the items were made to insure their appropriateness for Naval personnel. The complete instrument is presented in Appendix B.

3. Job Satisfaction. The measure of job satisfaction employed in the present research was the Minnesota Satisfaction Questionnaire (MSQ) (Weiss, Dawis, England, and Lofquist, 1967). This instrument measures 20 dimensions of job satisfaction including advancement, compensation, co-workers, achievement, independence, and variety. Two items from each of the scales were selected for the final instrument. Respondents indicated their satisfaction with each item on a 5-point Likert scale ranging from "Very Satisfied" to "Very Dissatisfied." The scale can be scored to yield three scores: Total Satisfaction, Intrinsic Satisfaction, and Extrinsic Satisfaction. Slight Modifications were made in the items to insure their appropriateness for Naval personnel. In addition, two questions were added to assess overall satisfaction with the Navy. The complete instrument is presented in Appendix C.

Subjects

The subjects in this study represented a stratified random sample of enlisted Naval personnel. Logistical considerations limited the sample to three home-based air craft carriers and their associated squadrons. However, proportionally, the total sample generally represented the enlisted rate/rating classifications for the entire Navy. Table 1 contains a complete breakdown of the sample by Navy ratings.

In all, some data were collected from 629 enlisted personnel. However, complete sets of data were not available for all subjects. Table 2 represents a breakdown of the sample in terms of age, educational level, time in the Navy, time in present rate, and time on present ship.

Table 2

	N	Mean
Age	580	24.2 years
Educational Level	581	slightly greater than high school.
Time in Navy	601	5.5 years
Time in present rate	597	2.1 years
Time on present ship	597	1.4 years

Procedure. Arrangements were made to go aboard three aircraft carriers and their associated squadrons. The three aircraft carriers were the USS Independence, the USS Intrepid, and the USS Forestal. University personnel were assigned a liason officer on board each ship and at each squadron. With the help of the liason officer, personnel logs were obtained from which to draw a random sample.

Ideally, it was desired that a stratified random sample for the entire Navy be obtained. Logistically, this was not possible. Rather, personnel aboard aircraft carriers were used as subjects since they were felt to be representative of Navy rating classifications.

From a listing of all Navy enlisted jobs, proportions were determined for choosing a stracified sample. These proportions were used to ensure that Naval jobs were represented proportionately to their occurance throughout the Navy. University personnel selected, randomly, subjects from the lists provided by the liason officers until the allocated proportions were obtained. In all, 629 subjects were selected to participate in this study.

With the cooperation of the liason officers, designated enlisted personnel were contacted. The general procedure for collecting the date went as follows. Subjects reported to the investigators in groups of five. All subjects were

given a general orientation as to the purpose of the research and their part in it. Three of the subjects were given the JAPQ and the MSQ to complete on their own. Appropriate instructions were given. The other two subjects were administered the PAQ. The PAQ was administered orally; each subject was talked through all items by one of the investigators. Subjects were rotated through both phases until subjects were administered each of the three questionnaires. In some cases, time limitations and duty commitments prevented complete sets of data from being obtained. This general procedure was followed both on the aircraft carriers and at the allied squadrons. The entire time for administration of these questionnaires was between 1 1/2 and 2 hours.

Table 1 Description of Sample

Rate/Rating of Billets	N
Group I: Deck	
BMCS	1
BM 1	1
BM 2	1
BM 3	3
BMSN	1
QM 2	1
QM 3	1
QMSN	1
RD 1	1
RD 2	3
RD 3	3
RDSN	3
Group II: Ordnance	N
GM 3	1
GMG 1	1
GMG 3	1
GMT 3	1
GMTSN	1
Group III: Electronics	
ETC	1
ET 1	1
ET 2	1
ETAN	1
ETN 2	2
ETN 3	3
ETR 2	2
ETR 3	2
ETRSN	1
Group V: Administrative and Clerical)	
CSCS	1
CSC	1
CS 1	1
CS 2	1
CS 3	3
CSSN	1
CYN 3	2
CYNSN	3
DPC	1
DP 1	1
DP 2	1
DP 3	1
DPSA	1

Group V:(continued)

PNC	1
PN 1	1
PN 2	3
PN 3	4
PNSN	3
PNSA	1
RMC	1
RM 1	1
RM 2	2
RM 3	5
RMSN	6
SK 2	1
SK 3	2
SKSN	1
YN 2	3
YN 3	3

(Group VII: Engineering and Hull)

BTC	4
BT 1	7
BT 2	8
BT 3	15
BTFN	17
BTFA	5
EMC	2
EM 1	2
EM 2	3
EM 3	3
HT 1	2
HT 2	1
HT 3	2
MMC	5
MM 1	8
MM 2	18
MM 3	30
MMFN	16
MMFA	2

Group IX: Aviation

ABC	1
ABAA	1
ABAN	1
ABE 1	1
ABE 2	2
ABE 3	7
ABFC	1
ABF 3	3
ABG 3	1
ABH 2	2
ABH 3	2
ABHAN	1
ABHAA	2
ADC S	1

Rate/Rating of Billets (Group IX: Aviation)	N
AD 2	1
AD 3	1
ADAN	2
ADJC	4
ADJ 1	5
ADJ 2	5
ADJ 3	11
ADJAN	7
ADJAA	2
ADR 3	2
ADRAN	1
AECS	1
AEC	3
AE 1	5
AE 2	5
AE 3	8
AEAN	3
AKC	1
AK 1	3
AK 2	3
AK 3	2
AMCS	2
AM 1	1
AME 2	1
AME 3	2
AMHC	2
AMH 1	1
AMH 2	8
AMH 3	1
AMHAA	1
AMS 2	2
AMS 3	6
AMSAN	6
AO 2	1
AO 3	6
AOAN	3
ARAN	1
ASM 3	1
ASMAN	1
AQCS	1
AQC	1
AQ 1	1
AQ 2	5
AQAN	1
ATCS	1
ATC	4
AT 1	11
AT 2	21
AT 3	21
ATAN	20
AV 1	1
AWC	1
AW 1	1
AW 2	2
AW 3	1

Rate/Rating of Billets (Group IX: Aviation-continued)	N
AWAN	2
AWN 2	1
AX 1	1
AZ 1	1
AZ 2	1
AZ 3	2
AZAN	5
PR 1	1
PR 2	2
PR 3	2

(Group X: Medical)	N
HMC	1
HM 1	2
HM 2	3
HM 3	1

(General Apprenticeships)	
AA	13
AN	17
FN	12
SA	10
SN	14
TN	5
Unclassified	48
TOTAL N =	629

RESULTS

Overview

The basic procedures in the data analysis consisted of generating a series of factor scores from the PAQ and JAPQ and relate these, through multiple regression, to the various indices of job satisfaction. In addition, measures of profile similarity between the PAQ and JAPQ were generated and these indices were related to the satisfaction

PAQ Factor Scores

Extensive factor analytic work on the PAQ (McCormick, et al., 1969) has resulted in two sets of factors. The first set of factors was derived from factor analyses of the total instrument. These analyses resulted in the selection of five factors. These were termed overall factors (McCormick, et al., 1969) and are listed in Table 3. The second set of factors were based on factor analyses of the six subsections of the PAQ. (It should be noted that these six subsections had been formed on the basis of cluster analysis procedures, McCormick, et al., 1969). Factor analyses of these subsections resulted in 27 interpretable factors. These are known as specific factors and are also presented in Table 3.

For the analyses presented here, factor scores were generated for each subject on both the overall and specific factors.

JAPQ Factor Scores

The JAPQ is a relatively new instrument and, as such, factor analytic work has not yet been performed on it. However, since it is based so directly on the PAQ, it was felt to be reasonable for our purposes that the same factor structure as the PAQ be used for the JAPQ. Thus, for each dimension of the PAQ, the corresponding items of the JAPQ were isolated. Factor scores for each of the JAPQ "factors" were then calculated by summing each person's

Table 3

Overall and Specific Factors of the PAQ

Overall Factors

1. Decision/communication/social responsibility
2. Skilled activities
3. Physical activities/related environmental conditions
4. Equipment/vehicle operation
5. Information processing activities

Specific Factors

A. Information Input

1. Visual input from device /materials
2. Perceptual interpretation
3. Information from people
4. Visual input from distal sources
5. Evaluation of information from physical sources
6. Environmental awareness
7. Awareness of body movements/posture

B. Mediating Processes

8. Decision making
9. Information processing

C. Work Output

10. Machine/process control
11. Manual control/coordination activities
12. Control/equipment operation
13. General body activity
14. Handling/manipulating activity
15. Use of finger controlled devices vs. physical work
16. Skilled technical activities

D. Interpersonal Activities

17. Communication of decisions/judgements
18. Job-related information exchange
19. Staff/related activities
20. Supervisor-subordinate relationships
21. Public/related contact

E. Work Situation and Job Context

22. Unpleasant/hazardous physical environment
23. Personally demanding situations

Table 3 (Cont.)

F. Miscellaneous Aspects

24. Businesslike work situations
25. Attentive/discriminating work demands
26. Unstructured vs. structured work
27. Variable vs. regular work schedule

response to the items in that factor. Thus, the factor scores for the JAPQ were calculated by a unit weighting procedure. Obviously, this procedure resulted in the same 5 overall JAPQ factors and 27 specific JAPQ factors as the PAQ.

Profile Similarity Index

The index of profile similarity employed was a simple d^2 technique. Two profile similarity indices were generated, one for the specific factors and one for the overall factors. For the overall factors, the JAPQ factor score for each dimension was subtracted from the PAQ factor score for that dimension, and the difference squared. An analogous procedure was employed for the 27 specific factors.

This procedure resulted in two sets of scores for each subject. Both reflected the degree of fit between interests in job duties and actual duties. One set of scores was predicted in the five overall job dimensions, the other set on the 27 specific dimensions.

Job Satisfaction Measure

As described above, two items from each of the 20 dimensions of the MSQ were employed in the satisfaction measure. In addition, two new items were used to measure overall Navy satisfaction. These 21 dimensions are presented in Table 4. This table also indicates those dimensions which are summed to yield the satisfaction indices as well as which items on the actual instrument (Appendix C) which correspond to each dimension.

Data Analysis.

The first series of data analyses consisted of attempting to predict the satisfaction indices (Intrinsic Satisfaction, Extrinsic Satisfaction, Total Satisfaction, and Navy Satisfaction) from 1) the PAQ scores, 2) the JAPQ factor

Table 4

Scales of the Job Satisfaction Measure

	Item Nos.	Total Satisfaction	Intrinsic Satisfaction	Extrinsic Satisfaction	Navy Satisfaction
1. Ability Utilization	10,22	X	X		
2. Achievement	17,30	X	X		
3. Activity	18,31	X	X		
4. Advancement	4,24	X		X	
5. Authority	1.21	X	X		
6. Company Policies and Practices	38,39	X		X	
7. Compensation	3,23	X		X	
8. Co-Workers	14,28	X			
9. Creativity	7,26	X	X		
10. Independence	8,20	X	X		
11. Moral Values	36,40	X	X		
12. Recognition	15,29	X		X	
13. Responsibility	6,25	X	X		
14. Security	34,37	X	X		
15. Social Service	19,32	X	X		
16. Social Status	33,35	X	X		
17. Supervision-Human Relations	2,11	X		X	
18. Supervision-Technical	5,13	X		X	
19. Variety	9,16	X	X		
20. Working Conditions	12,27	X			
21. Overall Navy (not from MSQ)	41,42				X

scores, and 3) the index of profile similarity (d^2) between PAQ and JAPQ factor scores. Recall that the PAQ, JAPQ and d^2 each comprise two sets of scores: overall factors and specific factors. Stepwise multiple regression procedures were employed to predict the satisfaction indices.

The results of these analyses for the entire sample are presented in Table 5. The R (multiple R) presented in this and subsequent tables was selected from the stepwise procedure using the following criterion. The value of R selected was that value associated with last predictor entering the equation which increased the R^2 by at least .005 units. The order of the factors' entrance into the regression equation is presented in Appendix D, E, and F for tables 5, 6, and 7 respectively.

The first hypothesis stated that job duties should predict intrinsic satisfaction better than extrinsic satisfaction. Table 5 clearly supports this hypothesis. Both the PAQ and the d^2 for both specific and overall factors predicted intrinsic satisfaction better than extrinsic satisfaction. All four of these differences are significant at least $p < .04$ or better. The mean correlation for predicting intrinsic satisfaction was .42 while the mean correlation for predicting extrinsic satisfaction was .26. In terms of percent of variance accounted for, correlations with intrinsic satisfaction ($\bar{r}^2 = .81$) accounted for over two and a half times as much variation as did correlation with extrinsic satisfaction ($\bar{r}^2 = .07$)

The second hypothesis stated that the index of profile similarity should also predict satisfaction, and predict intrinsic satisfaction better than extrinsic satisfaction. This hypothesis was supported in that significant and moderately large correlations emerged from predicting the satisfaction indices from the d^2, and correlations with intrinsic satisfaction were larger than correlations with extrinsic satisfaction. (It should be noted that the multiple correlations are to be interpreted as the greater the d^2 the less the satisfaction.)

Table 5

Specific and Overall Factors of the PAQ, JAPQ, and d^2

Predicting the Satisfaction Indices

	Specific Factors	Overal Factors
	R	R
PAQ predicting:	(N=576)	(N=574)
1. Intrinsic Satisfaction	.49	.41
2. Extrinsic Satisfaction	.31	.24
3. Navy Satisfaction	.43	.38
4. Total Satisfaction	.46	.36
JAPQ predicting:	(N = 478)	(N = 586)
1. Intrinsic Satisfaction	.38	.17
2. Extrinsic SAtisfaction	.19	.12
3. Navy Satisfaction	.28	.14
4. Total Satisfaction	.33	.12
d^2 predicting:	(N = 599)	(N = 600)
1. Intrinsic Satisfaction	.47	.30
2. Extrinsic Satisfaction	.27	.20
3. Navy Satisfaction	.43	.26
4. Total Satisfaction	.42	.27

However, this conclusion must be tempered with the fact that the PAQ alone predicted the satisfaction indices better than did the d^2 measure which includes both the PAQ and the JAPQ.

Several other points from Table 5 deserve mention. First, of the three sets of predictors, the best was the PAQ, next best was the d^2, and the JAPQ was the poorest. Second, the specific factors predicted better than the overall factors. Third, the magnitude of correlations with total and Navy Satisfaction were generally between the magnitude associated with Intrinsic and Extrinsic Satisfaction.

Although the sample size was large (about 600) relative to the number of predictors (maximum of 27 for specific factors), it was felt worthwhile to examine possible shrinkage of the Rs. To accomplish this, a 50% random sample was drawn from the total sample, and the multiple regression recomputed. Then using a procedure developed by Burket (1964) estimates of shrinkage were computed. This procedure gives an estimate of shrinkage which takes into consideration the sample size, number of predictors, and the size of the R obtained in the development sample.

Results of these analyses are presented in Table 6. This table indicates that the Rs obtained from the 50% sample were quite comparable to those obtained for the total sample. In fact, in most cases the Rs in the 50% sample were slightly higher than the Rs in the total sample. More importantly, Table 6 indicates that the shrinkage of these Rs was generally quite small. In fact, the mean shrinkage was only .06 units.

It should be noted that the entire sample is composed of Naval enlisted personnel whose tenure in the Navy varied from less than 1 year to over 20 years. It was felt that this variability could result in spurious correlations in that more senior personnel would have more responsible or important job duties

Table 6

Estimates of Shrinkage in Predicting Satisfaction Indices

PAQ predicting	Specific Factors		Overall Factors	
	Dev. R. (N = 254)	Shrunken R	Dev. R (N = 254)	Shrunken R
1. Intrinsic Satisfaction	.54	.51	.45	.43
2. Extrinsic Satisfaction	.43	.36	.25	.19
3. Navy Satisfaction	.46	.40	.32	.27
4. Total Satisfaction	.50	.47	.40	.38
JAPQ predicting	(N =221)		(N = 264)	
1. Intrinsic Satisfaction	.44	.32	.19	.13
2. Extrinsic Satisfaction	.30	.21	.13	-.01
3. Navy Satisfaction	.31	.21	.10	.06
4. Total Satisfaction	.37	.29	.17	.11
d^2 predicting	(N = 264)		(N = 265)	
1. Intrinsic Satisfaction	.50	.45	.32	.29
2. Extrinsic Satisfaction	.38	.29	.22	.13
3. Navy Satisfaction	.48	.39	.25	.20
4. Total Satisfaction	.47	.41	.29	.25

and, by the fact that they reinlisted, also be more satisfied with the Navy. Such relationships could produce artifically high correlations between job duties and satisfaction, as well as between interests and satisfaction. To explore this potential problem the sample was broken down into those who had less than four years in the Navy and those who had more than four years. (Four years is the point of the first reenlistment The regression analyses were repeated for the lower and upper group separately, and are presented in Table 7. Inspection of the table indicates that meaningful correlations result for both groups separately, just as they did for the entire sample. However, an interesting finding emerges. The satisfaction of the upper group is much more predictable than the satisfaction of the lower group. This is most clearly apparent in the analyses using the specific factors where the mean R for the lower group is .30 while the mean R for the upper group is .48.

Table 7 also indicates that the first hypothesis is generally supported by both the upper group and the lower group. PAQ and d^2 predictions of satisfaction for the lower group show an $\overline{R}$ of .32 for predicting Intrinsic satisfaction and an $\overline{R}$ of .23 for Extrinsic satisfaction. Respective figures for the upper group are Intrinsic , .36; and Extrinsic , .32. As in the case of the total sample, the second hypotheses is only partially supported in that while Rs using d^2 were moderately large, they were smaller than the PAQ alone.

Another interesting point is that the JAPQ predicted satisfaction for the upper group quite well. These correlations are substantially larger than those obtained from either the total sample or the lower group.

Summary of the data analyses

In summary, the following results were obtained.

1. The first hypothesis was strongly supported. In 19 out of a possible 20 comparisons of PAQ and d^2 predicting Intrinsic and Extrinsic satisfaction, Rs were higher for Intrinsic than for Extrinsic. For

Table 7

Prediction of Satisfaction Indices: Upper and Lower Groups

	Specific Factors		Overall Factors	
PAQ predicting:	Lower (N = 406)	Upper (N = 103)	Lower (N = 406)	Upper (N = 103)
1. Intrinsic Satisfaction	.32	.53	.26	.31
2. Extrinsic Satisfaction	.24	.58	.19	.19
3. Navy Satisfaction	.37	.54	.26	.27
4. Total Satisfaction	.31	.51	.23	.25
JAPQ predicting	(N = 358)	(N = 121)	(N = 476)	(N = 161)
1. Intrinsic Satisfaction	.24	.61	.14	.15
2. Extrinsic Satisfaction	.25	.39	.07	.18
3. Navy Satisfaction	.31	.44	.13	.28
4. Total Satisfaction	.24	.56	.14	.16
d^2 predicting	(N = 430)	(N = 171)	(N = 430)	(N = 170)
1. Intrinsic Satisfaction	.35	.44	.33	.16
2. Extrinsic Satisfaction	.24	.37	.24	.14
3. Navy Satisfaction	.35	.39	.39	.14
4. Total Satisfaction	.33	.42	.34	.15

the total sample, Rs involving Intrinsic Satisfaction accounted for over two and one half times the variance as did Rs involving Extrinsic Satisfaction.

2. The second hypothesis was marginally supported in that meaningful correlations between d^2 and the satisfaction indices emerged, and d^2 predicted Intrinsic Satisfaction better than Extrinsic Satisfaction. However, the PAQ alone resulted in higher correlations than did the d^2.
3. In general, the PAQ was the best predictor of the satisfaction indices followed by the d^2, and the poorest was the JAPQ. The only exception to this was with the upper group which showed strong relationships between the JAPQ and the satisfaction indices.
4. The specific factors generally predicted the satisfaction indices better than did the overall factors.
5. Predictions of Navy satisfaction generally fell between Intrinsic and Extrinsic in magnitude.
6. The findings held up when shrinkage of the Rs was considered.
7. When the total sample was broken down into those subjects with greater or less than 4 years in the Navy, the pattern of results was similar to those found for the total group. However, results were stronger for those subjects with more than four years in the Navy.

DISCUSSION

The general argument of this research was that actual job duties, as contrasted with organizational rewards, are significant contributors to job satisfaction. Our results clearly support this argument. Our measure of job duties correlated fairly substantially (mid .40s) with overall satisfaction, and with satisfaction with the Navy. It is also clear, however, that other factors play a major role in determining satisfaction. Organizational rewards would undoubtedly be one set of factors. Also, the various moderators between rewards and satisfaction such as level of need, expected level of reward, etc. that were discussed in the introduction probably also play a role. But, to reiterate, it is clear that actual job duties also play a major role.

More specifically, we hypothesized that actual job duties should predict intrinsic satisfaction better than extrinsic satisfaction. The results clearly support this hypothesis. This lends support to the argument that intrinsic satisfaction is determined more by the job itself than is extrinsic satisfaction. The other side of the argument, not tested by this research, would be that extrinsic satisfaction would be primarily determined by organizational rewards.

In one sense it is surprising that our results come out so well. That is, the measure of intrinsic satisfaction employed was probably not the best measure possible. Recall that we conceptualized intrinsic satisfaction as arising from rewards arising from the task while extrinsic satisfaction arises from rewards given by the organization. With this in mind, it is clear that some of the items on the intrinsic scale of the MSQ do not deal with intrinsic rewards. The MSQ items dealing with such things as security and social status probably do not reflect rewards a person gives himself. Furthermore, additional rewards could be considered intrinsic in nature such as doing an important job and having control over the job. One implication from the

present research is that it would be valuable to develop a specific measure of intrinsic satisfaction.

The second hypothesis dealt with discrepancies between job duties and interests. It stated that if duties match interests satisfaction would result; while if large discrepancies existed between duties and interests, dissatisfaction would result. The results can be said to have supported this hypothesis in that moderately large correlations between d^2 and satisfaction emerged (low.40s), and d^2 predicted intrinsic satisfaction better than extrinsic satisfaction. However, the relationships for the d^2 were actually lower than for the PAQ alone. Thus, in the final analysis, this hypothesis can only be said to be partially supported. One could argue that there are problems with the JAPQ such as lack of response variability or it is a poor measure of interests, but this is contradicted by the fact that the JAPQ alone also predicted satisfaction fairly well (low.30s).

It is possible that the general unreliability of difference scores tended to attenuate the strength of the results. A second possibility is that "weighting" job duties by interests simply does not add much. One is reminded of the research weighting elements of job satisfaction by their importance (Ewen, 1967; Friedlander, 1965; Mikes and Hulin, 1968) with the finding that such weighting does not materially affect the original satisfaction ratings.

One particularily interesting set of findings was that dealing with the subjects with greater or lesser than four years in the Navy. The general finding was that prediction of satisfaction was substantially lower in the lower group (less than four years) as compared to the upper group (more than four years). It seems that for first term Naval personnel, factors outside the job itself influence satisfaction more than for more senior people. These factors might

include extrinsic rewards, interests outside their Naval job, etc. The job itself may indeed become more important for senior personnel. More specifically, this line of reasoning argues that the sources of satisfaction come more from the job itself as a person gains experience with the Navy. This would imply that the type of job a person forsees for himself at the time he considers his first reinlistment may be a significant determinant of his decision to stay or go.

In summary, the results of this investigation suggest the following.

1. Actual job duties have a meaningful influence on job satisfaction.
2. Actual job duties influence intrinsic satisfaction more than extrinsic satisfaction.
3. It is uncertain whether the degree of fit between job duties and interests can predict satisfaction.
4. Job duties seem to have greater influence on the satisfaction of more senior people than on first term personnel.

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Appendix A
POSITION ANALYSIS QUESTIONNAIRE (PAQ)

(Navy Edition)

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Instructions for Completing PAQ for Naval Billets

As part of a research project sponsored by the Office of Naval Research you are being asked to use the Position Analysis Questionnaire (PAQ) to describe certain characteristics of the billet you occupied in your last Naval duty assignment. In describing your billet consider your primary duties and any particularly significant collateral duties. (Do not consider incidental collateral duties that occupied only a nominal proportion of your time.)

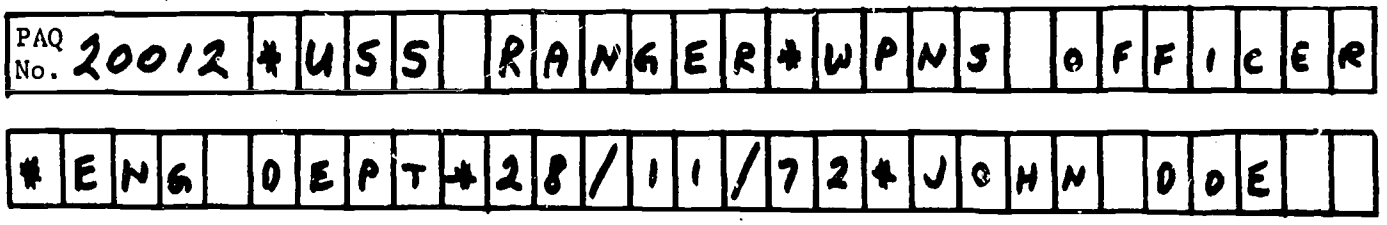
Identification: To be entered on PAQ Record Form (B) (White IBM form with red ink)

1. Side 1 (front). On the top of the PAQ Record Form are 2 rows of boxes. Print the following information in those boxes, entering an asterisk (*) between items of information:

   SHIP OR STATION*BILLET TITLE*DEPT. (OR OTHER ORGANIZATIONAL UNIT)*DATE*
   YOUR NAME

   When entering this information, consider the second row of boxes as a continuation of the first. For date, enter today's date in sequence day, month, and year, with a slash between these, as illustrated in the example below:

Example



2. Side 2 (back)--top of page. Enter your name (in space "Name of Incumbent"). As the PAQ analyst, mark box "Job incumbent himself." Write a brief description of your billet in the space provided, including reference to significant collateral duties.

Rating PAQ Job Elements

First, be sure that you are familiar with these instructions and with the PAQ Record Form. Instructions and a rating scale are provided for use with each job element (item) in the PAQ. Determine the appropriate response for each element after considering the concept reflected in the job element itself, and the scale provided for use with that element. Notice that different scales are used with the various job elements, as follows:

Letter	Rating Scale
U	Extent of Use
I	Importance to Billet
T	Amount of Time
P	Possibility of Occurrence
A	Applicability
S	Special Code (when this type of code is used, it applies only to the job element of which it is a part.) Note that certain "Special" (S) rating scales do not have a "Does not apply" answer because the statement applies in some degree to every billet.

Following are three particular points that you should keep in mind when analyzing your billet:

1. The examples given for many job elements in the PAQ serve only to illustrate the intended concept or scope of the job element, and do not indicate the complete range of possible content. Several of the examples are from "civilian" types of jobs, but they may have their counterparts in naval activities. You should interpret the concept of each job element as it relates to your billet.

2. There will be many job elements that do not apply to your billet. In such instances simply mark =DNA= (Does not apply). Some of the job elements relate primarily to civilian jobs, and would seldom, if ever, be applicable.

3. When analyzing your billet, always refer to the description of each job element in the PAQ itself, and then record your response on the Record Form, as the Record Form includes only the title of each job element without any description or illustrations.

Recording Ratings of PAQ Job Elements

Begin with element 1 (on following page), and mark your ratings on the Record Form (B), as in the following example:

Example

1(U) Written materials (as sources of information)

=DNA= ==1== ==2== ==3== ==4== ==5==

This letter refers to the rating scale to be used for this element. These scales are listed at the beginning of each section of the PAQ and also at the top of the PAQ Record Form (B). In this example, scale value "1" has been marked to indicate the "very infrequent" use of written materials.

POSITION ANALYSIS QUESTIONNAIRE (PAQ)

Code	Extent of Use (U)
DNA	Does not apply
1	Nominal/very infrequent
2	Occasional
3	Moderate
4	Considerable
5	Very substantial

1 INFORMATION INPUT

1.1 Sources of Job Information

Rate each of the following items in terms of how much it is used by the worker as a source of information in performing his billet.

1.1.1 Visual Sources of Job Information

1(U) Written materials (books, reports, office notes, job instructions, logs, signs, etc.)

2(U) Quantitative materials (materials which deal with quantities or amounts, such as graphs, accounts, specifications, tables of numbers, etc.)

3(U) Pictorial materials (pictures or picture-like materials used as sources of information for example, drawings, blueprints, diagrams, tracings, charts, photographic film, X-ray films, TV pictures, etc.)

4(U) Patterns/related devices (templates, stencils, patterns, etc., used as sources of information when observed during use; do not include here materials described in item 3 above)

5(U) Visual displays (dials, gauges, signal lights, radar scopes, speedometers, clocks, graphic displays, monitors, etc.)

6(U) Measuring devices (rulers, calipers, scales, thickness gauges, pipettes, thermometers, protractors, etc., used to obtain visual information about physical measurements; do not include here devices described in item 5 above)

7(U) Mechanical devices (tools, equipment, machinery, and other mechanical devices which are sources of information when observed during use or operation)

8(U) Materials in process (parts, materials, objects, etc., which are sources of information when being modified, worked on, or otherwise processed, such as bread dough being mixed, workpiece being turned in a lathe, etc.)

9(U) Materials not in process (parts, materials, objects, etc., not in the process of being changed or modified, which are sources of information when being inspected, handled, packaged, distributed, or selected, etc., such as items or materials in inventory, storage, or distribution channels, items being inspected, etc.)

10(U) Features of nature (geological formations, vegetation, cloud formations, and other features of nature which are observed or inspected to provide information)

11(U) Man-made features of environment (structures, ships, buildings, dams, highways, bridges, docks, and other "man-made" or altered aspects of the indoor or outdoor environment which are observed or inspected to provide job information)

12(U) Behavior (observing the actions of people or animals; for example, in teaching, supervising, etc., where this behavior is a source of job information)

13(U) Events or circumstances (those events the worker visually observes and in which he may participate, such as movement of ships, movement of materials, airport control tower operations, etc.)

14(U) Art or decor (artistic or decorative objects or arrangements used as sources of job information; for example, visual aids, paintings, interior decoration, etc.)

Code	Extent of Use (U)
DNA	Does not apply
1	Nominal/very infrequent
2	Occasional
3	Moderate
4	Considerable
5	Very substantial

1.1.2 Non-visual Sources of Job Information

15(U) Verbal sources (verbal instructions, orders, requests, conversations, interviews, discussions, formal meetings, etc.; consider only verbal communication which is relevant to job performance)

16(U) Non-verbal sounds (for example, noises, engine sounds, sonar, whistles, musical instruments, signals, horns, etc.)

17(U) Touch (pressure, pain, temperature, moisture, etc.; for example, feeling texture of surface, etc.)

18(U) Odor (odors which the worker needs to smell in order to perform his job; do not include odors simply because they happen to exist in the work environment)

19(U) Taste (bitter, sour, sweet, or salty qualities which are sources of job information; for example, cooks, stewards, etc.)

20(S) Near visual differentiation (using the code below, rate the amount of detail the worker must see to adequately obtain job information from objects, events, features, etc., within arm's reach)

Code	Degree of Detail
DNA	Does not apply (worker is blind or works in total darkness)
1	Very little detail (for example, that required in moving boxes, dumping trash, opening desk drawers, etc.)
2	Limited detail (for example, that required in crating, grinding hamburger, etc.)
3	Moderate detail (for example, that required in painting, reading typed letters, reading dials and gauges, etc.)
4	Considerable detail (for example, reading small blueprints, gauge calibration, etc.)
5	Extreme detail (for example, that required in assembling small electrical transistors; repairing chronometers, electronic circuits, etc.; miniature and microminiature optical work; etc.)

Note on rating "Importance to Billet":

Each of the items in the questionnaire which uses the "Importance to Billet (I)" scale is to be rated in terms of how important the activity described in the item is to the completion of the job, as compared with the other activities which are part of this job. Consider such factors as amount of time spent, the possible influence on overall job performance if the worker does not properly perform this activity, etc.

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

21(I) Far visual differentiation (seeing differences in the details of objects, events, or features beyond arm's reach; for example, operating a vehicle, lookout watch, air controller, etc.)

22(I) Depth perception (judging the distance from the observer to objects, or the distances between objects as they are positioned in space, as in operating a crane, manual gun sighting, handling and positioning objects, etc.)

23(I) Color perception (differentiating or identifying objects, materials, or details thereof on the basis of color; for example, identifying running lights, etc.)

24(I) Sound pattern recognition (recognizing different patterns, or sequences of sounds; for example, those involved in Morse code, heart beats, engines not functioning correctly, etc.)

25(I) Sound differentiation (recognizing differences or changes in sounds in terms of their loudness, pitch, and/or tone quality; for example, sonar operation, etc.)

26(I) Body movement sensing (sensing or recognizing changes in the direction or speed at which the body is moving without being able to sense them by sight or hearing; for example, as in flying aircraft, working in internal compartments aboard ship, etc.; in the case of shipboard personnel, rate in terms of the extent to which it is required in actual performance of duties)

27(I) Body balance (sensing the position and balance of the body when body balance is critical to job performance, as when climbing high masts, walking on slippery decks or on narrow gangplanks, aircraft refueling, hazardous types of maintenance jobs such as side cleaning, etc.)

I.3 Estimation Activities

In this section are various operations involving estimation or judging activities. In each case consider activities in which the worker may use any or all of the senses; for example, sight, hearing, touch, etc. Continue using the "Importance to Billet" scale.

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

28(I) Estimating speed of moving parts (estimating the speed of the moving parts associated with stationary objects; for example, the revolutions per minute of a motor, the speed at which a lathe turns, etc.)

29(I) Estimating speed of moving objects (estimating the speed of moving objects or materials relative to a fixed point or to other moving objects; for example, the speed of vessels or aircraft, materials on a conveyor belt, etc.)

30(I) Estimating speed of processes (estimating the speed of on-going processes or a series of events while they are taking place; for example, chemical reactions, assembly operations, timing of food preparation in galley, etc.)

31(I) Judging condition/quality (estimating the condition, quality, and/or operational readiness of electronic systems, engineering systems, weapon systems, etc.; judging value of surplus items to be liquidated; etc.)

32(I) Inspecting (inspecting products, objects, materials, etc., either one's own workmanship or that of others, in terms of established standards; for example, identifying defects, classifying by grade, etc.; do not include here activities described in item 31 above)

33(I) Estimating quantity (estimating the quantity of objects without direct measurement, including weight, number, volume, etc.; for example, of foodstuffs, supplies on hand, etc.)

34(I) Estimating size (estimating the dimensions of objects without direct measurement, including length, thickness, etc.; for example, estimating the height of a tree, judging sizes of boxes in loading a hold, etc.)

35(I) Estimating time (estimating the time required for past or future events or work activities; for example, judging the amount of time to make a delivery, estimating the time required to service a worn machine part or piece of equipment, judging the length of time required to set up a lathe, etc.)

2 MENTAL PROCESSES

2.1 Decision Making, Reasoning, and Planning/Scheduling

36(S) Decision making (indicate, using the code below, the level of decision making typically involved in the billet, considering: the number and complexity of the factors that are taken into account; the variety of alternatives available; the consequences and importance of the decisions; the background experience, education, and training required; the precedents available for guidance; and other relevant considerations. The examples given for the following codes are only suggestive.)

Code	Level of Decision
1	Low ("decisions" such as those in selecting parts in routine cleaning, shelving items in a storeroom, etc.)
2	Below average ("decisions" such as those in operating or dispatching vehicles, lubricating a truck, etc.)
3	Average ("decisions" such as those in setting-up machine tools for operation, diagnosing mechanical disorders of aircraft, ordering office supplies several months in advance, etc.)
4	Above average ("decisions" such as those in making personnel decisions such as promotions and disciplinary actions, determining flight plan, etc.)
5	High ("decisions" such as those in recommending major surgery, determining battle strategy, etc.)

37(S) Reasoning in problem solving (indicate, using the code below, the level of reasoning that is required of the worker in applying his knowledge, experience, and judgment to problems)

Code	Level of Reasoning in Problem Solving
1	Low (use of common sense to carry out simple, or relatively uninvolved, instructions; for example, sweeper, messenger, stores working party, etc.)
2	Below average (use of some training and/or experience to select from a limited number of solutions the most appropriate action or procedure in performing the billet; for example, issuing clerk, mess stewards, etc.)
3	Average (use of relevant principles to solve practical problems and to deal with a variety of concrete variables in situations where only limited standardization exists; for example, draftsman, carpenter, ship navigation, non-routine repair of mechanical equipment, etc.)
4	Above average (use of logic or scientific thinking to define problems, collect information, establish facts, and draw valid conclusions; for example, individual with major responsibilities for diagnosis and repair of complex electronic and weapon systems, aeronautical engineering officer, etc.)
5	High (use of principles of logical or scientific thinking to solve a wide range of intellectual and practical problems; for example, commanding a vessel, research scientists, etc.)

38(S) Amount of planning/scheduling (indicate, using the code below, the amount of planning/scheduling the worker is required to do which affects his own activities and/or the activities of others)

Code	Amount of Planning
DNA	Does not apply (has no opportunity to plan even his own activities; the specific activities of the worker are virtually predetermined for him)
1	Very limited (has limited opportunity to plan or schedule his own activities; for example, mess cook, side cleaner, etc.)
2	Limited (some planning is required, typically of one's own work activities; for example, the planning that would be done by a radio operator, etc.)
3	Moderate (a moderate amount of planning of his own or other activities is required; for example, a carpenter who must plan the best way to build a structure, a dispatcher, etc.)
4	Considerable (a fairly large amount of planning/scheduling is required; for example, a leading petty officer who must plan the activities of his subordinates, an instructor who must prepare lectures or lesson plans, planning/scheduling the arrival and distribution of materials, etc.)
5	Extensive (substantial amount of planning/scheduling is required; for example, a department head, an executive officer who must plan the activities of different work groups, contingency planning, etc.)

2.2 Information Processing Activities

In this section are various human operations involving the "processing" of information or data. Rate each of the following items in terms of how important the activity is to the completion of the job.

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

39(I) Combining information (combining, synthesizing, or integrating information or data from two or more sources to establish new facts, hypotheses, theories, or a more complete body of related information; for example, integrating intelligence information, a pilot flying aircraft, a weatherman using information from various sources to predict weather conditions, radarman, signalman, etc.)

40(I) Analyzing information or data (for the purpose of identifying underlying principles or facts by breaking down information into component parts; for example, interpreting intelligence reports, diagnosing mechanical disorders or medical symptoms, ECM operators, etc.)

41(I) Compiling (gathering, grouping, classifying, or in some other way arranging information or data in some meaningful order or form; for example, preparing reports of various kinds, filing correspondence on the basis of content, selecting particular data to be gathered, preparing lesson plans, etc.)

42(I) Coding/decoding (coding information or converting coded information back to its original form; for example, "reading" Morse Code, translating foreign languages, or using other coding systems such as shorthand, mathematical symbols, computer languages, drafting symbols, replacement part numbers, etc.; TTY; cryptography; etc.)

43(I) Transcribing (copying or posting data or information for later use; for example, copying gauge readings in a record book, keeping a bell log, recording weather, etc.)

44(I) Other information processing activities (specify in margin of PAQ Record Form)

2.3 Use of Learned Information

45(I) Short-term memory (learning and retaining job-related information and recalling that information after a brief period of time, for example, cook, telephone operator, helmsman, messenger, etc.)

46(S) Education (indicate, using the code below, the level of education generally or typically required by persons who are selected for this occupational field; include education in elementary, high school, colleges, etc.; do not include training in naval schools, or technical or vocational school training--see item 48)

Code	Education (given level or equivalent)
DNA	Does not apply (little or no formal education required)
1	Less than high school diploma
2	High school diploma
3	Some college education (some college but not a 4-year college degree)
4	College degree (degree requiring 4 years or more to complete; for example, B.A., B.S., etc.)
5	Advanced degree (M.S., Ph.D., M.D., L.L.D., etc.)

47(S) Job-related experience (indicate, using the code below, the amount of all previous job-related experience in other related or lower-level jobs or billets generally required by persons selected for the billet; do not include formal education as described in item 46)

Code	Job-related Experience
DNA	Does not apply (no experience required)
1	Less than 1 month
2	Over 1 month up to and including 12 months
3	Over 1 year up to and including 3 years
4	Over 3 years up to and including 5 years
5	Over 5 years

48(S) Training (indicate, using the code below, the total amount of training generally required for persons who have had no prior job training to learn to perform adequately in this billet; consider all types of required job-related training except for education described in item 46; include training at Class A, B, and C schools, as well as striker, on-the-job, off-the-job, and orientation training, etc.)

Code	Training
DNA	Does not apply or very limited (no more than one day's training required)
1	Over 1 day up to and including 30 days
2	Over 30 days up to and including 6 months
3	Over 6 months up to and including 1 year
4	Over 1 year up to and including 3 years
5	Over 3 years

49(S) Using mathematics (indicate, using the code below, the highest level of mathematics required by the billet)

Code	Level of Mathematics
DNA	Does not apply
1	Simple basic (counting, addition and subtraction of 2-digit numbers or less)
2	Basic (addition and subtraction of numbers of 3-digits or more, multiplication, division, etc.)
3	Intermediate (calculations and concepts involving fractions, decimals, percentages, etc.)
4	Advanced (algebraic, geometric, trigonometric, and statistical concepts, techniques, and procedures, usually applied in standard practical situations)
5	Very advanced (advanced mathematical and statistical theory, concepts, and techniques; for example, calculus, topology, vector analysis, factor analysis, probability theory, etc.)

3 WORK OUTPUT

3.1 Use of Devices and Equipment

3.1.1 Hand-held Tools or Instruments

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

Consider in this category those devices which are used to move or modify work pieces, materials, products, or objects. Do not consider measuring devices here.

Manually-powered

50(I) Precision tools/instruments (that is, tools or instruments powered by the user to perform very accurate or precise operations; for example, the use of engraver's tools, watchmaker's tools, surgical instruments, etc.)

51(I) Non-precision tools/instruments (tools or instruments powered by the user to perform operations not requiring great accuracy or precision; for example, hammers, wrenches, trowels, knives, scissors, chisels, putty knives, strainers, hand grease guns, etc.; do not include long-handle tools here)

52(I) Long-handle tools (hoes, rakes, shovels, picks, axes, brooms, mops, etc.)

53(I) Handling devices/tools (tongs, ladles, dippers, forceps, etc., used for moving or handling objects and materials; do not include here protective gear such as asbestos gloves, etc.)

Powered (manually controlled or directed devices using an energy source such as electricity, compressed air, fuel, hydraulic fluid, etc., in which the component part which accomplishes the modification is hand-held, such as dentist drills, welding equipment, etc., as well as devices small enough to be entirely hand-held)

54(I) Precision tools/instruments (hand-held powered tools or instruments used to perform operations requiring great accuracy or precision, such as dentist drills, soldering irons, welding equipment, saws, etc., used for especially accurate or fine work)

55(I) Non-precision tools/instruments (hand-held, energy-powered tools or instruments used to perform operations not requiring great accuracy or precision; for example, power saws, drills, sanders, clippers, etc., and related devices such as electrical soldering irons, spray guns or nozzles, welding equipment, etc.)

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

3.1.2 Other Hand-held Devices

56(I) Drawing and related devices (instruments or devices used in writing, sketching, illustrating, drafting, etc.; for example, pens, pencils, drawing instruments, artist's brushes, drafting equipment, etc.; do not include measuring instruments here, see item 58)

57(I) Applicators (brushes, rags, paint rollers, etc., which are hand-held and used in applying solutions, materials, etc.; do not consider devices covered by items 50-55 above)

58(I) Measuring devices (rules, measuring tapes, micrometers, calipers, protractors, squares, thickness gauges, levels, volume measuring devices, etc.)

59(I) Technical and related devices (cameras, stopwatches, slide rules, etc.)

60(I) Other hand-held tools and devices (specify in margin of PAQ Record Form)

3.1.3 Stationary Devices

61(I) Machines/equipment (used to generate power, or to process, fabricate, or otherwise modify parts, objects, materials, etc.; use this category in addition to indicating the controls used in the subsection which follows)

3.1.4 Control Devices (on any equipment operated or used)

62(I) Activation controls (hand or foot operated devices used to start, stop, or otherwise activate energy-using systems or mechanisms; for example, light switches, electric motor switches, ignition switches, etc.)

63(I) Fixed setting controls (hand or foot operated devices with distinct positions, detents, or definite settings; for example, TV selector switch, gear-shift, etc.)

64(I) Variable setting controls (hand or foot operated devices that can be set at the beginning of operation, or infrequently, at any position along a scale; for example, TV volume control, thermostat, rheostat, etc.)

65(I) Keyboard devices (typewriters, adding machines, calculators, pianos, keypunch machines, etc.)

Frequent adjustment controls (used in making frequent adjustments of mechanisms)

66(I) Hand-operated controls (controls operated by hand or arm for making frequent, but not continuous, adjustments; for example, hand controls on a crane or bulldozer, valve controls, helm of ship, etc.)

67(I) Foot-operated controls (controls operated by foot or leg for making frequent, but not continuous, adjustments; for example, automobile brakes, etc.)

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

Continuous controls (used continuously in operation or use)

68(I) Hand-operated controls (controls operated by hand and used continuously for adjusting to changing, or possible changing, situations; for example, use of steering wheel, controls on a "tracking" device, etc.)

69(I) Foot-operated controls (controls operated by foot and used continuously for adjusting to changing, or possibly changing, situations; for example, accelerator, etc.)

3.1.5 Transportation and Mobile Equipment

70(I) Man-powered vehicles (bicycles, rowboats, punts, etc.)

71(I) Powered highway/rail vehicles (vehicles intended primarily for highway or railroad transportation; for example, automobiles, trucks, buses, trains, etc.)

72(I) Powered mobile equipment (movable vehicles not primarily intended for highway use; for example, warehouse trucks, fork lifts, road graders, tractors, etc.)

73(I) Powered water vehicles (ships, submarines, small boats, etc.)

74(I) Air/space vehicles (planes, helicopters, balloons, gliders, rocketships, etc.)

75(I) Man-moved mobile equipment (hand trucks, wheel barrows, floor polishers and buffers, etc.)

76(I) Operating equipment (cranes, hoists, elevators, etc.)

77(I) Remote-controlled equipment (conveyor systems, etc.)

3.2 Manual Activities

This section describes manual activities in which tools may or may not be used.

78(I) Setting up/adjusting (adjusting, calibrating, aligning and/or setting up of machines or equipment; for example, setting up a lathe or drill press, adjusting an engine carburetor, adjusting, calibrating, and aligning electric circuitry, etc.)

79(I) Manually modifying (using hands directly to form or otherwise modify materials or products; for example, kneading dough by hand, folding letters, etc.)

80(I) Material-controlling (manually controlling or guiding materials being processed; for example, in operating sewing machine, jig saws, etc.)

81(I) Assembling/disassembling (either manually or with the use of hand tools putting parts or components together to form more complete items, or taking apart or disassembling items into their component parts)

82(I) Arranging/positioning (manually placing objects, materials, etc., in a specific position or arrangement; for example, in displays, in stocking shelves, positioning patients for certain medical and dental procedures, etc.; do not include here arranging/positioning which is a part of the operations listed in items 78-81)

83(I) Feeding/off-bearing (manually inserting, throwing, dumping or placing materials into or removing them from machines or processing equipment; this category is not to be used in describing operations in which the worker manually guides or controls the materials or parts during processing, as in item 80)

84(I) Physical handling (physically handling objects, materials, human beings, etc., either manually or with nominal use of aiding devices; for example, in certain warehousing activities, loading/unloading conveyor belts or trucks, packaging, hospital procedures, etc.; typically there is little requirement for careful positioning or arrangement of objects; include here relatively uninvolved handling operations not provided for in items 78-83)

3.3 Activities of the Entire Body

85(I) Highly skilled body coordination (activities involving extensive, and often highly-learned coordination activities of the whole body, such as characterized by athletic activities)

86(I) Balancing (maintaining body balance or equilibrium to prevent falling when standing, walking, running, crouching, etc., on narrow, slippery, steeply inclined or erratically moving surfaces; for example, walking on narrow elevated plank, during underway replenishment, etc.)

3.4 Level of Physical Exertion

87(S) Level of physical exertion (indicate, using the code below, the general level of body activity, considering the frequency and effort required to perform job tasks involving pushing, pulling, carrying, lifting, etc., during an average work day)

Code	Level of Physical Exertion
1	Very light (occasionally walking or standing and/or occasionally moving light objects, materials, etc., such as yeoman, draftsman, radio operator, etc.)
2	Light (frequently walking or standing and/or frequently exerting force equivalent to lifting up to approximately 10 pounds and/or occasionally exerting force equivalent to lifting about 20 pounds)
3	Moderate (frequently exerting forces equivalent to lifting up to approximately 25 pounds and/or occasionally exerting forces equivalent to lifting up to approximately 50 pounds; for example, light engine mechanic, bus driver, etc.)
4	Heavy (frequently exerting forces equivalent to lifting up to approximately 50 pounds and/or occasionally exerting forces equivalent to lifting up to approximately 100 pounds; for example, general laborer, bulldozer operator, heavy equipment mechanic, etc.)
5	Very heavy (frequently exerting forces equivalent to lifting over 50 pounds and/or occasionally exerting forces over that required to lift 100 pounds; for example, stevedores, etc.)

Code	Amount of Time (T)
DNA	Does not apply (or is very incidental)
1	Under 1/10 of the time
2	Between 1/10 and 1/3 of the time
3	Between 1/3 and 2/3 of the time
4	Over 2/3 of the time
5	Almost continually

3.5 Body Positions/Postures

Indicate by code the approximate proportion of working time the worker is engaged in the following activities (nos. 88-92)

88(T) Sitting

89(T) Standing (do not include walking)

90(T) Walking/running

91(T) Climbing (for example, painter, telephone lineman, etc.)

92(T) Kneeling/stooping (kneeling, stooping, crawling, crouching, and other related body positions which may be uncomfortable or awkward)

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

3.6 Manipulation/Coordination Activities

Rate the following items in terms of how important the activity is to completion of the job.

93(I) Finger manipulation (making careful finger movements in various types of activities; for example, fine assembly, use of precision tools, repairing watches, use of writing and drawing instruments, operating keyboard devices, etc.; usually the hand and arm are not involved to any great extent)

94(I) Hand-arm manipulation (the manual control of manipulation of objects through hand and/or arm movements, which may or may not require continuous visual control; for example, repairing engines, semaphore signalling, etc.)

95(I) Hand-arm steadiness (maintaining a uniform, controlled hand-arm posture or movement; for example, using a welding torch, performing surgery, etc.)

96(I) Eye-hand/foot coordination (the coordination of hand and/or foot movements where the movement must be coordinated with what is seen; for example, driving a vehicle, operating a sewing machine, operating winch, tuning radar, using electronic test equipment for alignment, etc.)

97(I) Limb movement without visual control (movement of body limbs from one position to another without the use of vision; for example, reaching for controls without looking, touch typing, etc.)

98(I) Hand-ear coordination (the coordination of hand movements with sounds or instructions that are heard; for example, tuning radio receivers, piloting aircraft by control tower instructions, etc.)

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

4 RELATIONSHIPS WITH OTHER WORKERS

This section deals with different aspects of interaction between people involved in various kinds of work.

4.1 Communications

Rate the following in terms of how important the activity is to the completion of the billet. Some jobs may involve several or all of the items in this section.

4.1.1 Oral (communicating by speaking)

99(I) Advising (dealing with individuals in order to counsel, and/or guide them with regard to problems that may be resolved by legal, financial, scientific, technical, clinical, spiritual, and/or other professional principles)

100(I) Negotiating (dealing with others in order to reach an agreement or solution; for example, negotiating procurement contracts, diplomatic relations, etc.)

101(I) Persuading (dealing with others in order to influence them toward some action or point of view; for example, public relations officers, etc.)

102(I) Instructing (the teaching of knowledge or skills, either in an informal or formal manner, to others; for example, instructor, petty officer teaching a striker, etc.)

103(I) Interviewing (conducting interviews directed toward some specific objective; for example, interviewing applicants in recruiting office, career counseling, etc.)

104(I) Routine information exchange (the giving and/or receiving of information of a routine or simple nature; for example, radio operator, receptionist, information clerk, etc.)

105(I) Non-routine information exchange (the giving and/or receiving of information of a non-routine or complex nature; for example, engineers discussing shipyard overhaul, officers' call, CIC to OOD, lookout to OOD, etc.)

106(I) Public speaking (making speeches or formal presentations before relatively large audiences; for example, lecturing, radio/TV broadcasting, delivering a sermon, etc.)

4.1.2 Written (communicating by written/printed material)

107(I) Writing (for example, writing or dictating letters, reports, etc., writing notices, writing instructions, etc.; do not include transcribing activities described in item 42)

4.1.3 Other Communications

108(I) Signaling (communicating by some type of signal; for example, hand signals, semaphore, whistles, horns, bells, lights, etc.)

Code communications (telegraph, cryptography, shorthand, etc.)

4.2 Miscellaneous Interpersonal Relationships

110(I) Entertaining (performing to amuse or entertain others; for example, on stage, TV, clubs, etc.)

111(I) Serving/catering (attending to the needs of, or performing personal services for, others; for example, mess cook, barbers, sick-bay attendant, etc.)

4.3 Amount of Job-required Personal Contact

112(S) Job-required personal contact (indicate, using the code below, the extent of job-required contact with others, individually or in groups; for example, contact with patients, students, the public, superiors, subordinates, fellow shipmates, official visitors, etc.; consider only personal contact which is definitely part of the billet)

Code	Extent of Required Personal Contact
1	Very infrequent (almost no contact with others is required)
2	Infrequent (limited contact with others is required)
3	Occasional (moderate contact with others is required)
4	Frequent (considerable contact with others is required)
5	Very frequent (almost continual contact with others is required)

4.4 Types of Job-required Personal Contact

This section lists types of individuals with whom the worker must have personal contact in order to perform his job. Indicate by code the importance of contact with each of the types of individuals listed below. Consider personal contact not only with personnel within the organization, but also with personnel from other organizations, if contact with them is part of the billet.

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

113(I) Executives/officials (flag officers, squadron commanders, commanding officers, executive officers, etc.)

114(I) Middle management/staff personnel (department and division officers, other staff officers, etc.)

115(I) Supervisors (those personnel who have immediate responsibility for a work group; for example, leading petty officers, etc.)

116(I) Professional personnel (doctors, lawyers, scientists, engineers, professors, teachers, consultants, etc.)

117(I) Semi-professional personnel (technicians, draftsmen, designers, photographers, surveyors, and other personnel who are engaged in activities requiring fairly extensive education or practical experience but which typically involve a more restricted area of operation than that of professional personnel)

118(I) Clerical personnel (personnel engaged in office work, such as yeoman, personnel men, dispersing clerks, etc.)

119(I) Manual and service workers (personnel in skilled, semi-skilled, unskilled, and related types of work, such as deck crew, engine room crew, etc.)

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

120(I) Sales personnel

121(I) Buyers (purchasing agents, not public customers)

122(I) Public customers (as in ship service stores, base cafeterias, etc.)

123(I) The public (not including customers or persons in other specified categories; include the "public" as contacted by, for example, shore patrolmen and masters at arms, etc.)

124(I) Students/trainees/apprentices

125(I) Clients/patients/counselees

126(I) Special interest groups (fraternal and service organizations, minority groups, wive's groups, property owners, etc.)

127(I) Other individuals (Include here types of persons not described in items 113-126 above, but, whenever possible, use one of the above categories) (Specify in margin of PAQ Record Form)

4.5 Supervision and Coordination

4.5.1 Supervision/Direction Given

128(S) Supervision of non-supervisory personnel (indicate, using the code below, the number of persons directly supervised who are actually involved in the repairing of equipment, in maintenance, in service activities, etc., and do not supervise others; this item would apply, for example, to most "first line" supervisors, most division officers, leading petty officers, etc.

Code	Number of Non-supervisory Personnel Supervised
DNA	Does not apply
1	1 or 2 workers
2	3 to 5 workers
3	6 to 8 workers
4	9 to 12 workers
5	13 or more workers

129(S) Direction of supervisory personnel (indicate, using the code below, the number of supervisory personnel--those who have responsibility for the supervision or direction of others--who report directly to the person holding this position; this item would apply to most department heads, etc.)

Code	Number of Supervisory Personnel Directed
DNA	Does not apply (does not direct supervisors)
1	1 or 2 supervisory personnel
2	3 to 5 supervisory personnel
3	6 to 8 supervisory personnel
4	9 to 12 supervisory personnel
5	13 or more supervisory personnel

130(S) Total number of personnel for whom responsible (indicate, using the code below, the total number of personnel for whom the person holding this job is either directly or indirectly responsible; for example, a commanding officer would be responsible for all personnel under his command; and department, division, and leading petty officers would be responsible for all within their sphere of command; use this item in addition to 128 and/or 129)

Code	Total number of personnel for whom responsible
DNA	Does not apply (not responsible for other personnel)
1	10 or fewer workers
2	11 to 50 workers
3	51 to 250 workers
4	251 to 750 workers
5	751 or more workers

4.5.2 Other Organizational Activities

This subsection includes activities of a coordinating, staff, or supervisory nature.

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

131(I) Supervises non-employees (students, patients, etc.)

132(I) Coordinates activities (coordinates, monitors, or organizes the activities of others to achieve certain objectives, but does not have line management authority; for example, special services officer, club committee chairman, etc.)

133(I) Staff functions (advises, consults, or gives other types of assistance to line officers; for example, legal officer, intelligence officer, etc.)

4.5.3 Supervision Received

134(S) Supervision received (indicate, using the code below, the level of supervision the worker typically receives)

Code	Level of Supervision Received
1	Immediate supervision (receives close supervision relating to specific work activities, including assignments, methods, etc.; usually receives frequent surveillance over job activities)
2	General supervision (receives general supervision relating to work activities)
3	General direction (receives only very general guidance relating to job activities, primarily guidance with respect to general objectives; has rather broad latitude for determining methods, work scheduling, how to achieve objectives, etc.; for example, department and division officers, etc.
4	Nominal direction (receives only nominal direction or guidance in job, as in the case of a manager of an organization or a major subdivision thereof, and is therefore subject only to very broad policy guidelines; for example, commanding officers, etc.

5 JOB CONTEXT

5.1 Physical Working Conditions

This section lists various working conditions. Rate the average amount of time the worker is exposed to each condition during a typical work period.

Code	Amount of Time (T)
DNA	Does not apply (or is very incidental)
1	Under 1/10 of the time
2	Between 1/10 and 1/3 of the time
3	Between 1/3 and 2/3 of the time
4	Over 2/3 of the time
5	Almost continually

5.1.1 Outdoor Environment

135(T) Out-of-door environment (susceptible to changing weather conditions)

5.1.2 Indoor temperatures (do not consider indoor temperature conditions that are simply a function of the weather; for example, heat in summer)

136(T) High temperature (conditions in which the worker might experience severe discomfort or heat stress, such as in boiler rooms, around furnaces, etc.; typically this would occur in a dry atmosphere at about 90° F. and in a humid atmosphere at about 80° F. or 85° F.)

137(T) Low temperature (conditions in which the worker is exposed to low temperatures which are definitely uncomfortable even though clothing appropriate for the conditions may be worn, such as refrigerated rooms, etc.)

5.1.3 Other Physical Working Conditions

138(T) Air contamination (dust, fumes, smoke, toxic conditions, disagreeable odors, etc.; consider here air contamination or pollution which is an irritating or undesirable aspect of the billet)

139(T) Vibration (vibration of whole body or body limbs; for example, driving a tractor or truck, operating an air hammer, etc.)

140(T) Improper illumination (inadequate lighting, excessive glare, etc.)

Code	Amount of Time (T)
DNA	Does not apply (or is very incidental)
1	Under 1/10 of the time
2	Between 1/10 and 1/3 of the time
3	Between 1/3 and 2/3 of the time
4	Over 2/3 of the time
5	Almost continually

141(T) Dirty environment (an environment in which the worker and/or his clothing easily becomes dirty, greasy, etc.; for example, environments often associated with engine rooms, foundries, highway construction, furnace cleaning, etc.)

142(T) Awkward or confining work space (conditions in which the body is cramped or uncomfortable)

143(S) Noise intensity (indicate, using the code below, the typical noise level to which the worker is exposed)

Code	Noise Intensity
1	Very quiet (intensive care ward in hospital, photo lab, etc.)
2	Quiet (many private offices, libraries, etc.)
3	Moderate (office where typewriters are used, light automobile traffic, ship service store, etc.)
4	Loud (heavy traffic, machine shops, carpenter shops, etc.)
5	Very loud (close to jet engines, large earth-moving equipment, riveting, etc.)

Code	Possibility of Occurrence (P)
No	No possibility
1	Very limited
2	Limited
3	Moderate
4	Fairly high
5	High

5.2 Physical Hazards

The four items which follow describe accidents or illnesses which may result from exposure to hazards. Rate the possibility of the occurrence of each of the types of accidents/illnesses to the typical worker in this billet. In making the ratings consider the safety/accident record of workers in this billet, and/or the possibility of accidents due to such factors as: traveling at high speeds, being in high places, working with machinery, sharp tools, hot or very cold materials, exposure to falling objects, dangerous chemicals, explosives, toxic fumes, nuclear and radio frequency radiation, high voltages, etc.

144(P) First-aid cases (minor injuries or illnesses which typically result in a day or less of "lost" time and are usually remedied with first-aid procedures)

145(P) Temporary disability (temporary injuries or illnesses which prevent the worker from performing his job from one full day up to extended periods of time but which do not result in permanent disability or impairment)

146(P) Permanent partial impairment (injuries or illnesses resulting in the amputation or permanent loss of use of any body member or part thereof, or permanent impairment of certain body functions)

Code	Possibility of Occurrence (P)
No	No possibility
1	Very limited
2	Limited
3	Moderate
4	Fairly high
5	High

147(P) Permanent total disability/death (injuries or illnesses which totally disable the worker and permanently prevent his further gainful employment; for example, loss of life, sight, limbs, hands, radiation sickness, etc.)

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

5.3 Personal and Social Aspects

This section includes various personal and social aspects of jobs. Indicate by code the importance of these aspects as a part of the billet.

148(I) Civic obligations (because of the job the worker assumes, or is expected to assume, certain civic obligations or responsibilities, as might be the case with certain public relations officers, commanding officers, etc.)

149(I) Frustrating situations (job situations in which attempts to deal with problems or to achieve job objectives are seriously obstructed or hindered, and may thus contribute to frustration on the part of the worker)

150(I) Strained personal contacts (dealing with individuals or groups in "unpleasant" or "strained" situations; for example, certain aspects of shore patrol work, handling certain mental patients, MAA, etc.)

151(I) Personal sacrifice (being willing to make particular personal sacrifices while being of service to other people or the objectives of an organization; for example, chaplains, etc.; do not consider physical hazards here)

152(I) Interpersonal conflict situations (job situations in which there are virtually inevitable differences in objectives, opinions, or viewpoints between the worker and other persons or groups of persons, and which may "set the stage" for conflict; for example, supervisors who must enforce an unpopular policy, etc.)

153(S) Non-job-required social contact (indicate, using the code below, the opportunity to engage in informal, non-job-required conversation, social interaction, etc. with others while on the job; for example, barber, receptionist, member of working party, etc.; do not include here the personal contacts required by the job as described in item 112)

Code	Opportunity for Non-job-required Social Contact
1	Very infrequent (almost no opportunity)
2	Infrequent (limited opportunity)
3	Occasional (moderate opportunity)
4	Frequent (considerable opportunity)
5	Very frequent (almost continual opportunity)

6 OTHER JOB CHARACTERISTICS

Code	Applicability (A)
DNA	Does not apply
1	Does apply

6.1 Apparel Worn

For each item mark DNA if the item does not apply, a one (1) if the item applies. Note: One or more items in this section may be applicable.

154(A) Business suit or dress (expected to wear, when appropriate, presentable civilian clothing such as tie and jacket, street dress, etc.)

155(A) Specific uniform/apparel (service dress uniforms; mark "does apply" except in unusual circumstances)

156(A) Work clothing (dungarees, etc.)

Code	Applicability (A)
DNA	Does not apply
1	Does apply

157(A) Protective clothing or gear (clothing or equipment worn as a regular part of the job to protect the worker; for example, safety helmets, goggles, noise suppressors, safety shoes, insulated gloves or clothing, protective masks, etc.; this item does not apply if only worn occasionally or rarely)

158(A) Informal attire (sports wear, etc.; mark "does not apply" except in very unusual circumstances)

159(A) Apparel style optional (style totally optional; mark "does not apply" except in unusual circumstances)

6.2 Licensing

160(A) Licensing/certification required (to be restricted to such fields as medicine, nursing, law, etc.)

6.3 Work Schedule

Code	Applicability (A)
DNA	Does not apply
1	Does apply

6.3.1 Continuity of work (as relevant to total year)

161(A) Regular work (special instructions in analyzing naval billets: mark "1" for this item)

162(A) Irregular work (special instructions in analyzing naval billets: mark "DNA" for this item)

In each of the following two groups of items, mark one (1) for the item that most nearly applies, and mark DNA for all other items in that group.

6.3.2 Regularity of working hours

163(A) Regular hours (same basic work schedule every week)

164(A) Variable shift work (work shift varies from time to time)

165(A) Irregular hours (works variable or irregular hours, depending on requirements of the service)

6.3.3 Day-night schedule

166(A) Typical day hours

167(A) Typical night hours (including evening work)

168(A) Typical day and night hours (works some days and some nights, depending on work shifts, job demands, schedules, or other job factors)

6.4 Job Demands

This section lists various types of demands that the job situation may impose upon the worker, usually requiring that he adapt to these in order to perform his work satisfactorily. Rate the following items in terms of how important they are to the billet.

Code	Importance to Billet (I)
DNA	Does not apply
1	Very minor
2	Low
3	Average
4	High
5	Extreme

169(I) Specified work pace (as on a controlled assembly line; this would seldom apply to a naval billet)

170(I) Repetitive activities (performance of the same physical or mental activities repeatedly, without interruption, for periods of time)

171(I) Cycled work activities (performance of a sequence or schedule of work activities which typically occurs on a weekly, daily, or hourly basis and which typically allows the worker some freedom of action so long as he meets a schedule; for example, a security guard patrolling his beat, preparing scheduled reports, etc.; do not include here activities more nearly described as repetitive activities in item 170 above)

172(I) Following set procedures (need to follow specific set procedures or routines in order to obtain satisfactory outcomes; for example, following check-out list to inspect equipment or vehicles, following procedures for changing a tire, performing specified laboratory tests, etc.)

173(I) Time pressure of situation (meal hours in mess hall, urgent time deadlines, rush jobs, etc.)

174(I) Precision (need to be more than normally precise and accurate)

175(I) Attention to detail (need to give careful attention to various details of one's work, being sure that nothing is left undone)

176(I) Recognition (need to identify, recognize, or "perceive" certain objects, events, processes, behavior, etc., or aspects, features, or properties thereof; this item is primarily concerned with "recognition" of that which is "sensed" by vision, hearing, touch, etc.)

177(I) Vigilance: infrequent events (need to continually search for very infrequently occurring but relevant events in the job situation; for example, look-out watch, observing instrument panel to identify infrequent change from "normal," etc.)

178(I) Vigilance: continually changing events (need to be continually aware of variations in a continually or frequently changing situation; for example, driving in traffic, controlling aircraft traffic, continually watching frequently changing dials and gauges, etc.)

179(I) Working under distractions (telephone calls, interruptions, disturbances from others, etc.)

180(I) Updating job knowledge (need to keep job knowledge current, being informed of new developments related to the billet)

181(A) Special talent (using the code above, indicate if a billet requires some particularly unique talent or skill that is not covered by other items; typically this item would apply to billets in which the very unique skill or characteristic of the worker is clearly dominant, as in certain entertainment activities; the item may be used, however, in certain other kinds of situations but only where there is some distinctly unique or special skill or talent involved) (If "1" is marked, write the special talent in the margin of the PAQ Record Form.)

Code	Applicability (A)
DNA	Does not apply
1	Does apply

182(T) Travel (indicate by code the proportion of a typical year in which the incumbent would be away from his place of residence)

Code	Amount of Time (T)
DNA	Does not apply (or is very incidental)
1	Under 1/10 of the time
2	Between 1/10 and 1/3 of the time
3	Between 1/3 and 2/3 of the time
4	Over 2/3 of the time
5	Almost continually

6.5 Responsibility

This section includes types of responsibility which may be associated with the decisions and actions of the worker. Indicate by code the degree of each type of responsibility involved in the billet.

183(S) Responsibility for the safety of others (indicate, using the code below, the degree to which the work requires diligence and effort to prevent injury to others; do not include hazards beyond the control of the individual concerned with the billet)

Code	Degree of Responsibility for the Safety of Others
DNA	Does not apply
1	Very limited (worker has minimum responsibility for the safety of others; for example, he may only use small hand tools, non-hazardous machines, etc.)
2	Limited (worker must exercise reasonable care in order to avoid injury to others; for example, operating lathes, punch presses, and similar equipment)
3	Intermediate (worker must be especially careful in order to avoid injury to others; for example, operating overhead cranes, driving vehicles, etc.)
4	Substantial (worker must exercise constant and substantial care in order to prevent serious injury to others; for example, handling dangerous chemicals, using explosives, insuring that recoil area of guns is clear, etc.)
5	Very substantial (the safety of others depends almost entirely on the correct action of the worker; for example, piloting an aircraft, performing major surgery, etc.)

184(S) Responsibility for material assets (indicate, using the code below, the degree to which the worker is directly responsible for waste, damage, defects, or other loss of value to material assets or property, such as materials, products, parts, equipment, cash, etc., that might be caused by inattention or inadequate job performance)

Code	Degree of Responsibility for Material Assets
1	Very limited (for example, a few dollars)
2	Limited (for example, up to about one hundred dollars)
3	Intermediate (for example, a few hundred dollars)
4	Substantial (for example, one or two thousand dollars)
5	Very substantial (for example, more than two thousand dollars)

185(S) General responsibility (indicate, using the code below, the degree of "general" responsibility associated with this billet in terms of the extent to which the worker is "responsible" for any of a number of activities such as: accounting, analyzing, composing, developing, designing, evaluating, forecasting, initiating, planning, programming, proposing, scheduling, sponsoring, staffing, writing, etc.; do not consider here responsibility for the safety of others or responsibility for assets as described in items 183 and 184)

Code	Degree of General Responsibility
1	Very limited
2	Limited
3	Intermediate
4	Substantial
5	Very substantial

6.6 Job Structure

186(S) Job structure (indicate, using the code below, the amount of "structure" of the billet, that is, the degree to which the billet activities are "pre-determined" for the worker by the nature of the work, the procedures, or other billet characteristics; the more highly-structured billets permit less deviation from pre-determined patterns, and little if any need for innovation, decision making, or adaptation to changing situations)

Code	Amount of Job Structure
1	Very high structure (virtually no deviation from a pre-determined job "routine," for example, routine assembly work, etc.)
2	Considerable structure (only moderate deviation from pre-determined work "routine" is possible; for example, disbursing clerk, stock handler, etc.)
3	Intermediate structure (considerable change from a "routine" is possible; work activities change considerably from day to day or even from hour to hour, but usually within some reasonable and expected bounds; for example, carpenter, mechanic, machinist, etc.)
4	Limited structure (relatively little routine work; the job is characterized by considerable opportunity for improving methods devices, etc., and the necessity for making decisions; for example, public relations officer, investigators, etc.)
5	Very low structure (virtually no established "routine" of activities; the position involves a wide variety of problems which must be dealt with; the solutions to these problems allows for unlimited resourcefulness and initiative; for example, major responsibility for research and development activities, etc.)

6.7 Criticality of Position

187(S) Criticality of position (indicate, using the code below, the degree to which inadequate billet performance by the worker in this position is critical in terms of possible detrimental effects on the organizational operations, assets, reputation, etc., or on the public or other people; consider the duration of such consequences, whether immediate or long-term, their seriousness, and the extent to which they have restricted or widespread effects)

Code	Degree of Criticality of Position
1	Very low
2	Low
3	Moderate
4	High
5	Very high

188-194 Pay/income (Do not use these items.)

Appendix B

Job Activity Preference Questionnaire (JAPQ)

(The JAPQ is an interest inventory that provides for the expression of interests in the job elements of the Position Analysis Questionnaire, which is a structured job analysis instrument.)

Robert C. Mecham, Alma F. Harris, Ernest J. McCormick, P. R. Jeanneret

The purpose of this questionnaire is to obtain a measure of your job interests or preferences. Each individual has different interests, so there are no right or wrong answers. Simply mark what applies to you.

The questionnaire is divided into 9 sections, each of the sections containing a listing of work activities or situations. For each section there is a rating scale that you are to use in rating how much you would want each of the work activities or situations to be a part of a job that you might sometime have.

In rating the work activities and situations, do not attempt to relate your responses directly to any specific job or occupation. Rather, consider each item separately, and indicate the level of your interest in the activity or situation as a part of any job that you might consider. As you rate each work activity or situation, assume that an opportunity would be available for you to get any required education or training.

PERSONAL DATA

Last Name First Name Middle Name	Social Security Number	Age

Employer, if presently employed.

Name_____

City_____ State_____

Occupation, if employed

Education (Check One)

8 or less years ☐ Some high school ☐ High school grad. ☐ Some college ☐ College degree ☐ Advanced degree ☐

Vocational, technical, or related training (Number of months) ☐

School or College, if presently a student

Name_____

City_____ State_____

Today's Date

Your Address

City_____ State_____

Sex (Check One)

Male ☐ Female ☐

SECTION 1

Information is needed to perform any type of work, and that information can come from many different sources. Use the numbers from 0 to 5 on the rating scale to mark how much you would like to use or engage in each of the following activities to get the "information" needed in your work. Place the scale value that you choose in the space provided beside each question.

Rating Scale	
0	None
1	Very limited
2	Limited
3	Moderate
4	Considerable
5	Very extensive

Example

5 1. Reading (books, reports, office notes, job instructions, etc.)

A "5" has been marked in this example. This indicates that "very extensive" reading as a source of job information is desired.

____ 1. Reading (books, reports, office notes, job instructions, etc.)

____ 2. Using numerical materials (graphs, accounts, specifications, etc.)

____ 3. Using graphic materials (pictures, drawings, blueprints, diagrams, maps, tracings, X-ray films, TV pictures, etc.)

____ 4. Using patterns and related devices (stencils, patterns, templates, etc.)

____ 5. Using visual displays (dials, gauges, signal lights, radar scopes, speedometers, clocks, etc.)

____ 6. Using measuring devices (rulers, calipers, tire pressure gauges, scales, thermometers, etc.)

____ 7. Observing and listening to mechanical devices in use (tools, equipment, machinery, etc.)

____ 8. Observing things you are working with (materials, parts or objects, such as bread dough being mixed, wood being cut, metal being welded, boxes being inventoried, items being inspected, etc.)

____ 9. Observing features of nature (landscapes, fields, geological samples, plants, cloud formations, or other features of nature)

____ 10. Observing or inspecting man-made features of the environment (buildings dams, highways, bridges, docks, railroads, etc.)

____ 11. Observing the behavior of people or animals

____ 12. Observing the events or circumstances around you (flow of traffic, movement of materials, airport control tower operations, etc.)

____ 13. Viewing art, decorations, etc. (paintings, sculpture, jewelry, window displays, etc.)

____ 14. Listening to spoken information (instructions, conversations, interviews, meetings, discussions, etc.)

____ 15. Listening to sounds (non-verbal)

____ 16. Touching

____ 17. Smelling

____ 18. Tasting

SECTION 2

Rate how important you would like each of the following abilities and activities to be in your work. Again use the numbers 0 to 5.

Rating Scale	
0	No importance
1	Very minor
2	Low
3	Average
4	High
5	Extreme importance

_____19. Using distance vision (watching things at distances beyond arm's reach)

_____20. Using depth perception (judging the distance from yourself to an object, or the distance between objects, as in running a crane, operating a dentist's drill, etc.)

_____21. Using color perception (telling the difference between things by color)

_____22. Recognizing sound patterns (Morse code, heart beats, engine not running properly, etc.)

_____23. Recognizing sounds by loudness, pitch or tone quality (tuning pianos, repairing sound systems, etc.)

_____24. Body movement sensing (detecting changes in the direction or speed at which you are moving, without using sight or hearing, as in flying aircraft, working in a submarine, etc.)

_____25. Body balancing (walking on steel beams, climbing high poles, working on steep roofs, etc.)

_____26. Judging condition or quality (antique dealer, appraiser, jeweler, used car dealer, coin dealer, etc.)

_____27. Inspecting (grading or finding defects)

_____28. Estimating speed of moving parts (the revolutions per minute of a motor, the speed at which a lathe turns, etc.)

_____29. Estimating speed of moving objects (the speed of vehicles, speed of materials moving on a conveyor belt, etc.)

_____30. Estimating speed of processes (chemical reactions, assembly operations, timing of food preparation, etc.)

_____31. Estimating quantity (number of board feet of lumber in a log, the weight of a horse, the number of bacteria in an area by looking through a microscope, etc.)

_____32. Estimating size (height of a tree, measurements of a box, etc.)

_____33. Estimating time (time to make a delivery, to service a piece of equipment, etc.)

_____34. Combining information (weatherman using different pieces of information to prepare a weather report, pilot using different bits of information to fly his plane, etc.)

_____35. Analyzing information (interpreting financial reports, determining why an automobile engine will not run, diagnosing an illness, etc.)

_____36. Gathering, grouping, or classifying information (preparing reports, filing correspondence, etc.)

_____37. Coding or decoding (reading Morse code, translating foreign languages, shorthand, etc.)

_____38. Setting up or adjusting equipment (setting up a lathe or drill press, adjusting an engine carburetor, etc.)

_____39. Using hands directly to change things (using the hands directly to change or alter or to modify people, materials, products, etc.)

Rating Scale	
0	No importance
1	Very minor
2	Low
3	Average
4	High
5	Extreme importance

____40. Controlling or guiding materials being processed (operating a sewing machine, operating a jig saw, etc.)

____41. Assembling or disassembling (putting parts together to form a complete item, or taking an item apart)

____42. Arranging or positioning (placing objects, materials, persons, animals, etc., in a specific position or arrangement)

____43. Physically handling objects, materials, animals, human beings, etc. (loading or unloading trucks, farming activities, taking care of babies in a nursery, etc.)

____44. Highly skilled body coordination activities (athletics, dancing, etc.)

____45. Finger manipulation (making careful finger movements in various types of activities, such as in the use of precision tools, repairing watches, playing the piano, etc.)

____46. Feeding/off-bearing (feeding materials into a machine or removing materials from a machine or piece of processing equipment)

____47. Hand-arm manipulation (activities involving hand and arm movements, as might be used in repairing automobiles, packaging products, etc.)

____48. Hand-arm steadiness (steady hand and arm movements, as might be necessary in using a welding torch or in performing surgery, etc.)

____49. Eye-hand/foot coordination (the coordination of hand and/or foot movements with what is seen)

____50. Limb movement without visual control (movement of body limbs from one position to another without the use of vision)

____51. Hand-ear coordination (the coordination of hand movements with sounds or instructions that are heard)

____52. Advising (using legal, financial, scientific, technical, clinical, spiritual, or other professional principles to counsel or guide individuals)

____53. Negotiating (dealing with others to reach an agreement or solution, for example, labor bargaining, diplomatic relations, etc.)

____54. Persuading (influencing others, as in selling or political campaigning)

____55. Teaching

____56. Interviewing

____57. Exchanging routine information (giving and receiving routine information as might be done by a ticket agent, taxi-cab dispatcher, etc.)

____58. Exchanging specialized information (giving and receiving specialized information, as might be done in a professional committee meeting, or as engineers might do when discussing a product design, etc.)

____59. Public speaking

____60. Writing (letters, reports, newspaper articles, etc.)

____61. Signaling (hand signals, semaphore, whistles, horns, bells, lights, etc.)

____62. Code communications (telegraph, cryptography, shorthand, etc.)

____63. Entertaining (performing to amuse or entertain others)

Rating Scale	
0	No importance
1	Very minor
2	Low
3	Average
4	High
5	Extreme importance

_____64. Serving or catering (performing personal services, or attending to the needs of others, for example, waiting on tables, hairdressing, etc.)

_____65. Supervising non-employees (students, patients, campers, etc.)

_____66. Coordinating activities (social director, committee chairman, etc.)

_____67. Serving as a staff member (advising, consulting, and giving other types of assistance to management personnel, for example, legal adviser, accountant, etc.)

SECTION 3

Different jobs require you to associate with different types of individuals. How important would you want personal contact with the following types of individuals to be? Continue using the same rating scale.

Rating Scale	
0	No importance
1	Very minor
2	Low
3	Average
4	High
5	Extreme importance

_____68. Executives or officials (government administrators, corporation vice-presidents, plant superintendents, etc.)

_____69. Middle management (division or district managers)

_____70. Supervisors (foremen, office managers, etc.)

_____71. Professional personnel (doctors, lawyers, scientists, engineers, professors, teachers, etc.)

_____72. Semi-professional personnel (technicians, draftsmen, designers, photographers, surveyors, etc.)

_____73. Personnel engaged in office work (clerks, bookkeepers, receptionists, etc.)

_____74. Purchasing agents (individuals who buy for companies)

_____75. Customers (as in stores or restaurants)

_____76. The public generally (such as police officers, park attendants, etc., might come in contact with)

_____77. Students, trainees, or apprentices

_____78. Clients, patients, or individuals being counseled

_____79. Special interest groups (stockholders, property owners, lobbyists, etc.)

_____80. Sales personnel

_____81. Skilled and unskilled workers

SECTION 4

Following are five job situations or circumstances. Use the numbers from 0 to 5 to indicate how much of each you would be willing to accept in your work.

Rating Scale	
0	None
1	Very little
2	Little
3	Moderate amount
4	Considerable
5	Large amount

____82. Frustrating situations (situations in which you would become frustrated because your attempts to do something might be hindered or obstructed)

____83. Unpleasant personal contacts (some types of police work, handling certain mental patients, etc.)

____84. Personal sacrifice in the service of others (as might be required by a policeman, minister of religion, social worker, etc.)

____85. Disagreements or conflict situations (as might be involved in labor negotiations, enforcement of an unpopular policy, etc.)

____86. Distractions (telephone calls, interruptions and disturbances from others, etc.)

SECTION 5

Use the numbers from 0 to 5 to indicate how much you would like to use each of the following devices or pieces of equipment in your work.

Rating Scale	
0	None
1	Very limited
2	Limited
3	Moderate
4	Considerable
5	Very extensive

____87. Precision hand tools (engraver's tools, watchmaker's tools, surgical instruments, etc.)

____88. Other hand tools (hammers, wrenches, knives, scissors, etc.)

____89. Long-handle tools (hoes, rakes, shovels, picks, axes, brooms, etc.)

____90. Handling devices or tools (tongs, ladles, dippers, forceps, etc., used for moving or handling objects and materials)

____91. Hand-held precision power tools (dentist drills, welding equipment, etc.)

____92. Other hand-held power tools (ordinary power saws, drills, sanders, clippers, etc.)

____93. Writing and drawing instruments (pens, pencils, artist's brushes, drafting equipment, etc.)

____94. Applicators (brushes, rags, paint rollers, used in applying solutions, materials, etc.)

____95. Technical devices (cameras, stopwatches, slide rules, etc.)

____96. Processing machines and equipment (used to process or modify parts, objects, materials, etc.)

____97. Controls: used continuously (controls requiring continuous adjustment or manipulation, for example, accelerator, steering wheel, etc.)

____98. Controls: not used continuously (controls used to start or stop, to set positions on a machine, etc.)

Rating Scale	
0	None
1	Very limited
2	Limited
3	Moderate
4	Considerable
5	Very extensive

_____99. Keyboard devices (pianos, typewriters, adding machines, etc.)

_____100. Highway or rail vehicles (automobiles, trucks, buses, trains, etc.)

_____101. Powered mobile equipment (fork lifts, self-propelled lawn mowers, road graders, tractors, etc.)

_____102. Powered water vehicles (ships, submarines, motor boats, etc.)

_____103. Air or space vehicles (planes, helicopters, balloons, gliders, rocketships, etc.)

_____104. Man-moved mobile equipment (hand-pushed lawn mowers, wheel barrows, floor polishers, etc.)

_____105. Operating equipment (cranes, hoists, elevators, etc.)

_____106. Remote-controlled equipment (conveyor systems, etc.)

SECTION 6

Use the numbers from 0 to 5 to indicate how much of your working time you would be willing to spend in the following activities or under the following circumstances.

Rating Scale	
0	None
1	Under 1/10 of the time
2	Between 1/10 and 1/3 of the time
3	Between 1/3 and 2/3 of the time
4	Over 2/3 of the time
5	Almost continually

_____107. Sitting

_____108. Standing

_____109. Walking or running

_____110. Climbing (for example, house painter, telephone lineman, etc.)

_____111. Kneeling or stooping (or other body positions which may be uncomfortable or awkward)

_____112. Working indoors in high temperatures (conditions in which you may be uncomfortable, such as in boiler rooms, around furnaces, etc.)

_____113. Working indoors in low temperatures (conditions in which you would be definitely cold even though you wore heavy clothing, such as in refrigerated rooms, etc.)

_____114. Working outdoors (under different weather conditions)

_____115. Working in contaminated air (dust, fumes, smoke, bad odors, etc.)

_____116. Working with vibrating equipment (equipment that vibrates the whole body or body limbs (driving a tractor or truck, operating an air hammer, etc.)

_____117. Working under poor lighting conditions (not enough light, excessive glare, etc.)

Rating Scale	
0	None
1	Under 1/10 of the time
2	Between 1/10 and 1/3 of the time
3	Between 1/3 and 2/3 of the time
4	Over 2/3 of the time
5	Almost continually

_____118. Working under dirty conditions (garages, foundries, coal mines, highway construction, furnace cleaning, etc.)

_____119. Working in awkward or small work spaces (conditions in which the body is cramped or uncomfortable)

_____120. Traveling

SECTION 7

Below are descriptions of 4 degrees of injury, ranging from minor to very serious. Use the numbers from 0 to 5 to indicate the "risk" (or the possibility) of each occurring that you would be willing to accept as a part of your work.

Rating Scale	
0	No possibility
1	Very limited possibility
2	Limited possibility
3	Moderate possibility
4	Fairly high possibility
5	High possibility

_____121. Minor injury or illness which might result in a day or less of lost time

_____122. Injury or illness which would prevent work for one full day or more, but which would not have any permanent effects

_____123. Permanent injury or illness (resulting in the loss of an arm, leg, hearing, sight of one eye, etc.)

_____124. Permanent total disability or death (injury or illness which would result in disability for life, or in death)

SECTION 8

Following is a list of job requirements. Use the numbers from 0 to 5 to rate how much you would want each to be a part of your work.

Rating Scale	
0	None (No part)
1	Very limited
2	Limited
3	Moderate
4	Considerable
5	Very extensive

_____125. A set specified rate of work (assembly line, etc.)

_____126. Repetitive activities (repeating the same activity, without interruption, for periods of time)

_____127. Cycled work activities (working according to a schedule which repeats weekly, daily, or hourly, such as a postman or milkman making his rounds, a guard patrolling his beat, etc.)

_____128. Precision (need to be more than normally precise and accurate)

_____129. Attention to detail

_____130. Recognition (need to identify certain objects, events, processes, behavior, etc.)

Rating Scale	
0	None (No part)
1	Very limited
2	Limited
3	Moderate
4	Considerable
5	Very extensive

_____131. Vigilance (need to be constantly alert and aware of any changes in a situation)

_____132. Need to keep job knowledge current (continually learning new developments related to the job)

SECTION 9

Select one of the responses for each of the following questions.

_____133. Competition: How important would you want competition with other individuals or groups to be in your work (for such things as promotions, financial rewards, recognition, etc.)

1. Very minor importance
2. Minor importance
3. Moderate importance
4. High importance
5. Extreme importance

_____134. Decision making level: What level of decisions would you want to make in your work?

1. Low level decisions (such as must be made in pasting labels on cartons, putting items on shelves in a warehouse, etc.)
2. Below average level decisions (such as those made in running a wood planer, greasing a car, or dispatching a taxi)
3. Average level decisions (such as in ordering office supplies several months in advance, determining what is wrong with an automobile engine, setting up machine tools for operation, etc.)
4. Above average level decisions (such as deciding who will be promoted, who will be hired or fired, if property will be purchased, etc.)
5. High level decisions (such as recommending major surgery, selecting the location for a new plant, or approving a corporation's annual budget)

_____135. Reasoning in problem solving: Which of the following reasoning levels would you want your work to require?

1. Low (use of common sense to carry out uninvolved instructions, as might be done by a janitor or a deliveryman)
2. Below average (use of some experience or training, such as a sales clerk, a postman, a keypunch operator or an electrician's apprentice might use)
3. Average (use of principles to solve practical problems, such as might be required in farming, drafting or carpentry)
4. Above average (use of logic or scientific thinking, as might be used by a mechanical engineer, a personnel director, or the manager of a store, etc.)
5. High (use of principles of logic or scientific thinking to solve a wide range of problems, as might be done by a research chemist, a nuclear engineer, a corporate president, or the manager of a large plant)

_____136. Amount of planning: How much planning or scheduling would you like to do in your work?

0. None
1. Very little (little planning of your own activities, as in selling tickets at a theater, working on an assembly line, etc.)
2. Little (some planning required, but not a great deal, as in delivering milk, working as a janitor, etc.)
3. Average amount (for example, a carpenter who must plan the best way to build a house, the planning that must be done by a taxi dispatcher, etc.)
4. Considerable (for example, a foreman who must plan what his workers must do, a teacher who must prepare lectures or lesson plans, etc.)
5. Large amount (for example, a department store manager, an executive who must plan the activities of different work groups, an architect, etc.)

_____137. Education: How much education would you want your work to require?

0. Little or none
1. Less than high school
2. High school diploma
3. Some college education
4. College degree
5. Advanced degree (M.S., Ph.D., M.D., L.L.D., etc.)

_____138. Training: How much training, other than the education in number 124, would you want your work to require? Consider such things as on-the-job training, apprentice training, technical and vocational schools, and orientation training.

0. 1 day or less
1. Over 1 day up to 1 month
2. Between 1 and 6 months
3. Between 6 months and 1 year
4. Between 1 and 3 years
5. Over 3 years

_____139. Experience: How much experience in related or lower-level jobs would you like your work to require?

1. Less than 1 month
2. Less than 1 year
3. Between 1 and 3 years
4. Between 3 and 5 years
5. Over 5 years

_____140. Level of mathematics: What is the highest level of mathematics you would want your job to require?

0. None
1. Simple counting, addition and subtraction of numbers smaller than 100
2. Addition and subtraction of numbers up to 1,000, and some multiplication and division
3. Use of fractions, decimals, percentages
4. Use of algebra, geometry, trigonometry, or statistics
5. Advanced use of calculus, topology, vector analysis, factor analysis, probability theory, etc.

___141. Physical exertion: How much physical effort would you want your work to require?

1. Very light (occasional walking or standing, occasionally moving light objects, as might be required of a secretary, watchmaker, telephone operator, etc.)
2. Light (frequently walking or standing and often exerting effort equal to that which would be required to lift between 10 and 20 pounds, as might be done by a sales clerk, bank teller, etc.)
3. Moderate (frequently exerting effort equal to that which would be required to lift between 25 and 50 pounds, for example, auto mechanic, coin vending machine serviceman, bus driver, etc.)
4. Heavy (lifting between 50 and 100 pounds, for example, general laborer, bulldozer operator, baggage porter, etc.)
5. Very heavy (frequently using enough effort to lift 50 pounds, and occasionally using enough effort to lift over 100 pounds, for example, quarry mining, setting up concrete forms, etc.)

___142. Supervision given: How many workers would you want to directly supervise?

0. None
1. 1 or 2 workers
2. 3 to 5 workers
3. 6 to 8 workers
4. 9 to 12 workers
5. 13 or more workers

_____143. Personnel responsibility: How many personnel would you want to be responsible for in your work? As an example, a president of a corporation would be responsible for everyone who worked for the corporation.

0. None
1. 10 or fewer workers
2. 11 to 50 workers
3. 51 to 250 workers
4. 251 to 750 workers
5. 751 or more workers

_____144. Safety responsibility: How much responsibility for the safety of others would you be willing to assume in your work?

0. None
1. Little (working only with small hand tools, machines that are not dangerous, etc.)
2. Limited (responsible to exercise only reasonable care)
3. Intermediate (must be careful to avoid hurting others, as in operating overhead cranes, driving vehicles, etc.)
4. Substantial (must constantly be careful not to injure others, as in handling dangerous chemicals or explosives, etc.)
5. Very substantial (the safety of others would depend entirely upon you, as in piloting the aircraft, performing major surgery, etc.)

_____145. Property responsibility: How much property would you be willing to assume responsibility for?

1. Very little (a few dollars worth)
2. Little ($50.00 to $500.00 worth)
3. Moderate amount ($501.00 to $5,000.00 worth)
4. Substantial amount ($5,001.00 to $25,000.00 worth)
5. Very substantial amount (more than $25,000.00 worth)

____146. General responsibility: How much general responsibility would you want in your work?

1. Very little
2. Little
3. Average amount
4. Substantial
5. Very substantial

____147. Supervision received: How much supervision would you want to receive in your work?

1. Close supervision, including job assignments and close observation of work
2. General supervision
3. General guidance, but quite independent of others
4. Very little direction or guidance
5. No supervision

____148. Job structure: To what extent would you want to follow a routine, or have your work outlined for you?

1. Almost no change from a predetermined job routine (working on an assembly line, etc.)
2. Little change from the work routine possible (bookkeeping, stocking items in a warehouse, etc.)
3. Certain work must be done, but you can determine your own schedule or routine (carpenter, automobile mechanic, machinist, etc.)
4. Little routine work (most of the decisions made by you, for example, store manager, industrial engineer, etc.)
5. No routine (a wide variety of problems must be dealt with, and you would determine your own solutions, for example, corporation vice-president, research chemist, etc.)

____149. Criticality of position: Some positions in a company are especially critical. If not filled properly, such things as the company's earnings or reputation might seriously suffer. With this in mind, what degree of criticality would you want your job or position to have?

1. Very low
2. Low
3. Moderate
4. High
5. Very high

____150. Civic obligations: How important would you want civic obligations to be in your work (serving on zoning boards, helping with United Fund drives, assisting with school activities, etc.)

0. No importance
1. Very minor
2. Low
3. Average
4. High
5. Extreme importance

Appendix C

JOB SATISFACTION QUESTIONNAIRE

Occupational Research Center
Department of Psychological Sciences
PURDUE UNIVERSITY

NOTE: Your responses to this questionnaire will be held in the strictest confidence, and will be used only for statistical analysis purposes. The only information from these questionnaires that will be made available to the Navy will be statistical summaries.

PERSONAL DATA

Last Name	First Name	Middle Name	Social Security Number

Time in Navy		Time on present ship or station		Time in present billet		Time in present rate	
Years	Months	Years	Months	Years	Months	Years	Months

When you eventually leave the Navy, what occupation do you plan on going into?

What are your tentative plans about reenlisting when you complete your present enlistment?

( ) Probably will reenlist
( ) Don't know
( ) Probably will not reenlist

Race/ethnic origin (optional)

( ) Caucasian
( ) Negro
( ) American Indian
( ) Spanish American
( ) Other

JOB SATISFACTION QUESTIONNAIRE

DIRECTIONS

The purpose of this questionnaire is to give you a chance to tell how you feel about your Navy duty. In completing this questionnaire, first read each statement carefully. Then indicate how satisfied you feel about the statement.

Keeping the statement in mind:

VS--If you feel very satisfied, check the space under "VS"

S--If you feel somewhat satisfied, check the space under "S"

N--If you feel neutral (neither satisfied nor dissatisfied), check the space under "N"

DS--If you feel somewhat dissatisfied, check the space under "DS"

VDS--If you feel very dissatisfied, check the space under "VDS"

CONCERNING MY NAVY DUTY, THIS IS HOW I FEEL ABOUT:	VDS	DS	N	S	VS
1. The chance to have other workers look to me for direction					
2. The way my supervisor and I understand each other					
3. The amount of pay for the work I do in my billet					
4. The opportunities for advancement on this job					
5. The technical "know-how" of my supervisor					
6. The chance to be responsible for planning my work					
7. The chance to do new and original things on my own					
8. The chance to do work alone on the job					
9. The chance to do different things from time to time					
10. The chance to do work that is well suited to my abilities					
11. The way my supervisor handles his men					
12. The physical surroundings where I work					
13. The competence of my supervisor in making decisions					
14. The chance to develop close friendships with my co-workers					
15. The way I get full credit for the work I do					

		VDS	DS	N	S	VS
16.	The routine in my work	___	___	___	___	___
17.	Being able to do something worthwhile	___	___	___	___	___
18.	Being able to stay busy	___	___	___	___	___
19.	The chance to do things for other people	___	___	___	___	___
20.	The chance to work independently of others	___	___	___	___	___
21.	The chance to tell people what to do	___	___	___	___	___
22.	The chance to do something that makes use of my abilities	___	___	___	___	___
23.	My pay and the amount of work I do	___	___	___	___	___
24.	The chances for advancement	___	___	___	___	___
25.	The freedom to use my own judgment	___	___	___	___	___
26.	The chance to try my own methods of doing the job	___	___	___	___	___
27.	The working conditions	___	___	___	___	___
28.	The way my co-workers get along with each other	___	___	___	___	___
29.	The praise I get for doing a good job	___	___	___	___	___
30.	The feeling of accomplishment I get from my work	___	___	___	___	___
31.	Being able to keep busy all the time	___	___	___	___	___
32.	The chance to be of service to others	___	___	___	___	___
33.	The social position in the public, nonmilitary community	___	___	___	___	___
34.	My job security	___	___	___	___	___
35.	The chance to be "somebody" in the public, nonmilitary community	___	___	___	___	___
36.	Being able to do things that don't go against my conscience	___	___	___	___	___
37.	The way my job provides for steady employment	___	___	___	___	___
38.	The way Navy policies are put into practice	___	___	___	___	___
39.	The way the Navy treats the people in it	___	___	___	___	___
40.	The chance to do the job without feeling I am cheating anyone	___	___	___	___	___
41.	My billet generally	___	___	___	___	___
42.	My Navy duty generally	___	___	___	___	___

Appendix D

ORDER OF ENTRANCE OF PREDICTORS INTO MULTIPLE REGRESSION EQUATIONS FOR TOTAL SAMPLE. (TABLE 5)

I. Specific PAQ factors predicting:

		R
1.	Intrinsic Satisfaction	
	a. Communications of decisions/judgements	.38
	b. Unpleasant/hazardous physical environment	.42
	c. Unstructured-vs-structured work	.44
	d. Control/equipment operation	.46
	e. Job-related information exchange	.47
	f. Supervisor subordinate relationships	.48
	g. Variable vs. regular work schedule	.49
	h. Attentive/discriminating work demands	.49
2.	Extrinsic Satisfaction	R
	a. Communications of decisions/judgements	.20
	b. Unpleasant/hazardous physical environment	.28
	c. Supervisor-subordinate relationships	.29
	d. Variable vs. regular work schedule	.31
3.	Navy Satisfaction	R
	a. Decision making	.30
	b. Unpleasant/hazardous physical environment	.35
	c. Communications of decisions/judgements	.38
	d. Unstructure vs. structured work	.40
	e. Information processing	.41
	f. Machine/process control	.42
	g. Supervisor-subordinate relationships	.43
4.	Total Satisfaction	R
	a. Communication of decisions/judgements	.34
	b. Unpleasant/hazardous physical environment	.39
	c. Unstructured vs. structured work	.41
	d. Superior-subordinate relationships	.42
	e. Job-related information exchange	.43
	f. Attentive/discriminating work demands	.44
	g. Variable vs. regular work schedule	.45
	h. Control/equipment operation	.46

II. Overall PAQ factors predicting:

		R
1.	Intrinsic Satisfaction	
	a. Decision/Communication/social responsibilities	.35
	b. Equipment/vehicle operation	.39
	c. Physical activities/related environmental conditions	.41
2.	Extrinsic Satisfaction	R
	a. Decision/communication/social responsibilities	.16
	b. Physical activities/related environmental conditions	.22
	c. Equipment/vehicle operation	.24

Appendix D (cont.)

		R
3.	Navy Satisfaction	
	a. Decision/Communication/social responsibilties	.27
	b. Equipment/vehicle operation	.34
	c. Physical activities/related environmental conditions	.36
	d. Skilled activities	.38

		R
4.	Total Satisfaction	
	a. Decision/communication/social responsibilities	.30
	b. Equipment/vehicle operation	.34
	c. Physical activities/related environmental conditions	.36

III. Specific JAPQ factors predicting:

		R
1.	Intrinsic Satisfaction	
	a. Communication of decisions/judgments	.18
	b. Staff/related activities	.27
	c. Decision making	.29
	d. Attentive/discriminating work demands	.31
	e. Information from people	.32
	f. Visual input from devices/materials	.33
	g. Perceptual interpretation	.34
	h. General body activity	.35
	i. Manual control/coordination activities	.36
	j. Use of finger-controlled devices vs. physical work	.36
	k. Information processing	.37
	l. Control/equipment operation	.37
	m. Machine/process control	.38

		R
2.	Extrinsic Satisfaction	
	a. Supervisor-subordinate relationships	.11
	b. Environmental awareness	.14
	c. Attentive/discriminating work demands	.15
	d. Use of finger-controlled devices vs. physical work	.16
	e. General body activity	.17
	f. Job-related information exchange	.19

		R
3.	Navy Satisfaction	
	a. Communication of decisions/judgements	.15
	b. Staff/related activities	.20
	c. Visual input from devices/materials	.22
	d. Evaluation of information from physical sources	.25
	e. Awareness of body movement/posture	.26
	f. Decision making	.28

Appendix D (cont.)

4. Total Satisfaction — R

		R
a.	Communication of decisions/judgements	.16
b.	Staff/related activities	.22
c.	Information from people	.24
d.	Visual Input from devices/materials	.26
e.	Environmental awareness	.27
f.	Decision making	.28
g.	Attentive/discriminating work demands	.30
h.	Control/equipment operation	.30
i.	Machine/process control	.32
j.	Use of finger-controlled devices vs. physical work	.32
k.	General body activity	.33

IV Overall JAPQ factors predicting:

1. Intrinsic Satisfaction — R

		R
a.	Decision/communication/ social responsibilities	.13
b.	Information processing activities	.14
c.	Skilled activities	.15
d.	Physical activities/related environmental conditions	.17

2. Extrinsic Satisfaction — R

		R
a.	Decision/communication/social responsibilities	.09
b.	Information processing activities	.12

3. Navy Satisfaction — R

		R
a.	Decision/communication/social responsibilities	.14

4. Total Satisfaction — R

		R
a.	Decision/communication/social responsibilities	.12

V Specific d^2 factors predicting:

1. Intrinsic Satisfaction — R

		R
a.	Decision Making	.26
b.	Supervisor-subordinate relationships	.39
c.	Staff/related activities	.41
d.	Attentive/discriminating work demands	.43
e.	Information from people	.45
f.	Communication of decisions/judgements	.45
g.	Perceptual interpretation	.46
h.	Unstructured vs. structured work	.46
i.	Control/equipment operation	.47
j.	Public/related contact	.47

2. Extrinsic Satisfaction — R

		R
a.	Supervisor-subordinate relationships	.16
b.	Information from people	.23
c.	Attentive/discriminating work demands	.25
d.	Staff/related activities	.26
e.	Decision making	.27

Appendix D (cont.)

3. Navy Satisfaction

	R
a. Supervisor-subordinate relationships	.24
b. Decision making	.36
c. Perceptual interpretation	.38
d. Visual input from distal sources	.39
e. Unstructured vs. structured work	.40
f. Information from people	.41
g. Businesslike work situations	.42
h. Unpleasant/hazardous physical environment	.43

4. Total Satisfaction

	R
a. Superior-subordinate relationships	.23
b. Decision making	.35
c. Attentive/discriminating work demands	.37
d. Information from people	.39
e. Staff/related activities	.41
f. Perceptual interpretation	.42
g. Communication of decisions/judgements	.42

VI Overall d^2 factors predicting:

1. Intrinsic Satisfaction

	R
a. Decision/Communication/social responsibilities	.21
b. Equipment/vehicle operation	.26
c. Information processing activities	.28
d. Physical activities/related environmental conditions	.30

2. Extrinsic Satisfaction

	R
a. Decision/Communication/social responsibilities	.10
b. Equipment/vehicle operation	.15
c. Physical activities/related environmental conditions	.19
d. Information processing activities	.20

3. Navy Satisfaction

	R
a. Decision/communication/social responsibilities	.16
b. Information processing activities	.21
c. Equipment/vehicle operation	.21
d. Skilled activities	.26

4. Total Satisfaction

	R
a. Decision/communication/social responsibilities	.19
b. Equipment/vehicle operation	.24
c. Information processing activities	.26
d. Physical activities/related environmental conditions	.27

Appendix E

ORDER OF ENTRANCE OF PREDICTORS INTO MULTIPLE REGRESSION EQUATIONS FOR DEVELOPMENT GROUP (TABLE 4).

I. Specific PAQ factors prediting:

		R
1.	Intrinsic Satisfaction	
	a. Communication of decisions/judgements	.41
	b. Unstructured vs. structured work	.47
	c. Unpleasant/hazardous physical environment	.51
	d. Job-related information exchange	.53
	e. General body activity	.54
2.	Extrinsic Satisfaction	R
	a. Unstructured vs. structured work	.20
	b. Unpleasant/hazardous phycial environment	.30
	c. Communication of decisions/judgements	.34
	d. Variable vs. regular work schedule	.37
	e. Visual input from devices/materials	.39
	f. Job-related information exchange	.40
	g. Skilled/technical activities	.41
	h. Visual input from distal sources	.42
	i. Control/equipment operation	.43
3.	Navy Satisfaction	R
	a. Decision making	.31
	b. Unpleasant/hazardous physical environment	.35
	c. Unstructured vs. structured work	.39
	d. Communications of decisions/judgements	.42
	e. Perceptual interpretation	.43
	f. Information processing	.44
	g. Attentive/discriminating work demands	.45
	h. Handling/manipulating activities	.46
	i. General body activity	.46
4.	Total Satisfactions	R
	a. Communications of decisions/judgements	.35
	b. Unstructured vs. structured work	.42
	c. Unpleasant/hazardous physical environment	.47
	d. Job-related information exchange	.49
	e. Variable vs. regular work schedule	.50
	f. General body activity	.50

II. Overall PAQ factors predicting:

	R
1. Intrinsic Satisfaction	
a. Decision/Communication/social responsibilities	.42
b. Equipment/vehicle operation	.44
c. Physical activities/related environmental conditions	.45
2. Extrinsic Satisfaction	R
a. Decision/communication/social responsibilties	.17
b. Physical activities/related environmental conditions	.22
c. Equipment/vehicle operation	.24
d. Skilled activities	.25
3. Navy Satisfaction	R
a. Decision/communication/social responsibilties	.27
b. Physical activities/related environmental conditions	.30
c. Equipment/vehicle operation	.32
4. Total Satisfaction	R
a. Decision/communication/social responsibilities	.35
b. Equipment/vehicle operation	.38
c. Physical activities/related environmental conditions	.39
d. Skilled activities	.40

III. Specific JAPQ factors predicting:

	R
1. Intrinsic Satisfaction	
a. Communication of decisions/judgements	.19
b. Staff/related activities	.26
c. Supervisor-subordinate relationships	.29
d. Environmental awareness	.32
e. Unstructured vs. structured work	.34
f. Visual input from distal sources	.35
g. Control/equipment operation	.37
h. Manual control/coordination activities	.40
i. Personally demanding situations	.41
j. Handling/manipulating activities	.42
k. Job-related information exchange	.42
l. Unpleasant/hazardous physical environment	.43
m. Machine/process control	.44
n. Decision making	.44
2. Extrinsic Satisfaction	R
a. Supervisor-subordinate relationships	.18
b. Personality demanding situations	.20
c. Job-related information exchange	.23
d. Environmental awareness	.25
e. Handling/manipulating activities	.27
f. Control/equipment operation	.30

3. Navy Satisfaction

	R
a. Supervisor-subordinate relationships	.14
b. Environmental awareness	.17
c. Visual input from devices/materials	.21
d. Evaluation of information from physical sources	.24
e. Awareness of body movement/posture	.27
f. Job-related information exchange	.29
g. Control/equipment operation	.31

4. Total Satisfaction

	R
a. Supervisor-subordinate relationships	.20
b. Environmental awareness	.24
c. Visual input from distal sources	.27
d. Control/equipment operation	.29
e. Handling/manipulating activities	.32
f. Machine/process control	.34
g. Personally demanding situations	.35
h. Communication of decisions/judgements	.37

IV Overall JAPQ factors predicting:

1. Intrinsic Satisfaction

	R
a. Decision/communication/social responsibilities	.14
b. Skilled activities	.14
c. Equipment/vehicle operation	.19

2. Extrinsic Satisfaction

	R
a. Skilled activities	.10
b. Equipment/vehicle operation	.13

3. Navy Satisfaction

	R
a. Skilled activities	.10

4. Total Satisfaction

	R
a. Skilled activities	.11
b. Equipment/vehicle operation	.15
c. Decision/communication/social responsibilities	.17

V Specific d^2 factors predicting:

1. Intrinsic Satisfaction

	R
a. Decision making	.31
b. Superior-subordinate relationships	.43
c. Public/related contact	.45
d. Information from people	.46
e. Staff/related activities	.47
f. Unstructued vs. structued work	.48
g. Control/equipment operation	.49
h. Perceptual interpretation	.50
i. Communication of decisions/judgements	.50

2. Extrinsic Satisfaction	R
a. Supervisor-subordinate relationships	.15
b. Information from people	.22
c. Visual input from devices/materials	.26
d. Skilled/technical activities	.29
e. Manual control/coordination activities	.31
f. Public/related contact	.33
g. Control/equipment operation	.35
h. Businesslike work situations	.36
i. Perceptual interpretation	.37
j. Decision making	.38

3. Navy Satisfaction	R
a. Decision making	.23
b. Supervisor-subordinate relationships	.32
c. Perceptual interpretation	.35
d. Evaluation of information from physical sources	.38
e. Unstructued vs. structued work	.40
f. Job-related information exchange	.41
g. Skilled/technical activities	.43
h. Visual input from devices/materials	.44
i. Manual control/coordination activities	.45
j. Information from people	.46
k. Unpleasant/hazardous physical environment	.46
l. Attentive/discriminating work demands	.47
m. Awareness of body movement/posture	.47
n. Control/equipment operation	.48

4. Total Satisfaction	R
a. Decision making	.27
b. Supervisor-subordinate relationships	.37
c. Public/related contact	.39
d. Visual input from devices/materials	.41
e. Information from people	.42
f. Staff/related activities	.44
g. Unstructued vs. structued work	.44
h. Control/equipment operation	.45
i. Perceptual interpretation	.46
j. Communication of decisions/judgements	.47

VI Overall d^2 factors predicting:

1. Intrinsic Satisfaction	R
a. Decision/communication/social responsibilities	.26
b. Information processing activities	.30
c. Equipment/vehicle operation	.32

2. Extrinsic Satisfaction	R
a. Decision/communication/social responsibilities	.10
b. Equipment/vehicle operation	.15
c. Information processing activities	.18
d. Physical activities/related environmental conditions	.20
e. Skilled activities	.22

3. Navy Satisfaction	R
a. Decision/communication/social responsibilities	.17
b. Information processing activities	.20
c. Equipment/vehicle operation	.24
d. Physical activities/related environmental conditions	.25

4. Total Satisfaction	R
a. Decision/communication/social responsibilities	.23
b. Information processing activities	.26
c. Equipment/vehicle operation	.29

Appendix F

ORDER OF ENTRANCE OF PREDICTORS INTO MULTIPLE REGRESSION EQUATIONS FOR LOWER AND UPPER GROUPS (Table 7)

I. Specific PAQ factors predicting:

1. Intrinsic Satisfaction

A. Lower Group

		R
a.	Communication of decisions/judgments	.19
b.	Variable vs. regular work schedule	.23
c.	Superior-subordinate relationships	.26
d.	Job-related information exchange	.28
e.	Control/equipment operation	.30
f.	Machine/process control	.31
g.	Unstructured vs. structued work	.32

B. Upper Group

		R
a.	Communication of decisions/judgments	.24
b.	Businesslike work situations	.33
c.	Unpleasant/hazardous physical environment	.36
d.	Unstructured vs. structed work	.39
e.	Job-related information exchange	.41
f.	Public/related contact	.43
g.	Decision making	.45
h.	General body activity	.47
i.	Skilled/technical activities	.48
j.	Evaluation of information from physical sources	.49
k.	Visual input from distal sources	.50
l.	Handling/manipulating activities	.51
m.	Variable vs. regular work schedule	.52
n.	Use of finger controlled devices vs. physical work	.52
o.	Information from people	.53

2. Extrinsic Satisfaction

A. Lower Group

		R
a.	Variable vs. regular work schedule	.16
b.	Information processing	.21
c.	Control/equipment operation	.22
d.	Supervisor-subordinate relationships	.23
e.	Perceptual interpretation	.24

B. Upper Group

		R
a.	Manual control/coordination activities	.19
b.	Attentive/discriminating work demands	.30
c.	Businesslike work situations	.34
d.	Visual input from distal sources	.37
e.	Personally demanding situations	.40
f.	Decision making	.42
g.	Communication of decisions/judgments	.44
h.	Unstructured vs. structured work	.45
i.	Control/equipment operation	.47
j.	Machine/process control	.48
k.	Skilled/technical activities	.49
l.	Awareness of body movement/posture	.51
m.	General body activity	.53
n.	Unpleasant/hazardous physical environment	.55
o.	Information from people	.57
p.	Evaluation of information from physical sources	.57
q.	Environmental awareness	.58

3. Navy Satisfaction

A. Lower Group

		R
a.	Use of finger-controlled devices vs. physical work	.19
b.	Decision making	.24
c.	Perceptual interpretation	.30
d.	Unstructured vs. structured work	.32
e.	Attentive/discriminating work demands	.33
f.	Information processing	.35
g.	Supervisor-subordinate relationships	.36
h.	Machine/process control	.37

B. Upper Group

		R
a.	Skilled/technical activities	.28
b.	Machine/process control	.37
c.	Handling/manipulating activities	.42
d.	Supervisor-subordinate relationships	.44
e.	Information processing	.46
f.	Businesslike work situations	.49
g.	Awareness of body movement/posture	.50
h.	Decision making	.51
i.	General body activitiy	.52
j.	Manual control/coordination activities	.52
k.	Unpleasant/hazardous physical environment	.53
l.	Use of finger-controlled devices vs. physical work	.54

4. Total Satisfaction

A. Lower Group	R
a. Variable vs. regular work schedule	.15
b. Communication of decisions/judgments	.22
c. Supervisor-subordinate relationships	.24
d. Perceptual interpretation	.26
e. Control/equipment operation	.27
f. Use of finger-controlled devices vs. physical work	.28
g. Manual control/coordination activities	.29
h. Job-related information exchange	.30
i. Unstructured vs. structured work	.30
j. Attentive/discriminating work demands	.31

B. Upper Group	R
a. Communication of decisions/judgments	.21
b. Businesslike work situations	.30
c. Unpleasant/hazardous physical environment	.33
d. General body activity	.36
e. Skilled/technical activities	.39
f. Awareness of body movement/posture	.42
g. Machine/process control	.44
h. Decision making	.45
i. Unstructured vs. structured work	.47
j. Job-related information exchanges	.48
k. Public/related contact	.49
l. Evaluation of information from physical sources	.50
m. Visual input from distal sources	.51

II. Overal PAQ factors predicting:

1. Intrinsic Satisfaction

A. Lower Group	R
a. Decision/communication/social responsibilities	.17
b. Equipment/vehicle operation	.24
c. Information processing activities	.26

B. Upper Group	R
a. Decision/communication/social responsibilities	.22
b. Equipment/vehicle operation	.30
c. Information processing activities	.31

2. Extrinsic Satisfaction

A. Lower Group	R
a. Equipment/vehicle operation	.14
b. Information processing activities	.19

B. Upper Group	R
a. Skilled activities	.13
b. Decision/communication/social responsibilities	.19

3. Navy Satisfaction

A. Lower Group	R
a. Information processing activities	.15
b. Equipment/vehicle operation	.19
c. Decision/communication/social responsibilities	.25
d. Physical activities/related environmental conditions	.26

B. Upper Group	R
a. Decision/communication /social responsibilities	.24
b. Skilled activities	.25
c. Physical activities/related environmental conditions	.26
d. Equipment/vehicle operation	.27

4. Total Satisfaction

A. Lower Group	R
a. Equipment/vehicle operation	.11
b. Decision/communication/social responsibilities	.20
c. Information processing activities	.23

III Specific JAPQ factors predicting:

1. Intrinsic Satisfaction

A. Lower Group	R
a. Job-related information exchange	.15
b. Staff/related activities	.19
c. Businesslike work conditions	.21
d. Visual input from devices/materials	.23
e. Perceptual interpretation	.24

B. Upper Group	R
a. Communication of decisions/judgments	.24
b. Decision making	.32
c. Attentive/discriminating work demands	.39
d. Unpleasant/hazardous physical environment	.43
e. Use of finger-controlled devices vs. physical work	.46
f. Handling/manipulating activities	.48
g. Job-related information exchange	.50
h. General body activity	.53
i. Manual control/coordination activities	.55
j. Control/equipment operation	.56
k. Machine/process control	.57
l. Public/related contact	.59
m. Skilled technical activities	.60
n. Staff/related activities	.60
o. Visual input from devices/materials	.61

2. Extrinsic Satisfaction

A. Lower Group	R
a. Public/related contact	.13
b. Businesslike work situations	.16
c. Information from people	.18
d. Unstructured vs. structured work	.19
e. Information processing	.20
f. Communication of decisions/judgements	.22
g. Job-related information exchange	.23
h. Control/equipment operation	.24
i. Use of finger-controlled devices vs. physical work	.25

B. Upper Group	R
a. Communication of decisions/judgements	.12
b. Decision making	.15
c. Attentive/discriminating work demands	.18
d. Visual input from devices/materials	.20
e. Perceptual interpretation	.25
f. Handling/manipulating activities	.27
g. General body activity	.30
h. Evaluation of information from physical sources	.33
i. Unpleasant/hazardous physical environment	.34
j. Use of finger-controlled devices vs. physical work	.35
k. Manual control/coordination activities	.37
l. Awareness of body movement/posture	.37
m. Staff/related activities	.38
n. Information processing	.39

3. Navy Satisfaction

A. Lower Group	R
a. Job-related information exchange	.17
b. Visual input from devices/materials	.20
c. Perceptual interpretation	.22
d. Businesslike work situations	.24
e. Awareness of body movement/posture	.25
f. Visaul input from distal sources	.27
g. Control/equipment operation	.27
h. Communication of decisions/judgements	.28
i. Personally demanding situations	.29
j. Decision making	.30
k. Information processing	.31

B. Upper Group	R
a. Supervisor-subordinate relationships	.25
b. Decision making	.29
c. Communication of decisions/judgements	.32
d. Awareness of body movement/posture	.34
e. Environmental awareness	.36
f. Unpleasant/hazardous physical environment	.38
g. Staff/related activities	.39
h. Information processing	.40
i. Job-related information exchange	.41
j. Public/related contact	.43
k. Information from people	.43
l. Visual input from distal sources	.44

4. Total Satisfaction

A. Lower Group	R
a. Job-related information exchange	.15
b. Staff/related activities	.18
c. Businesslike work situations	.20
d. Visual input from devices/materials	.22
e. Perceptual interpretation	.24

B. Upper Group	R
a. Communication of decisions/judgments	.21
b. Decision making	.29
c. Attentive/discriminating work demands	.35
d. Unpleasant/hazardous physical environment	.38
e. Handling/manipulating activities	.40

f.	Job-related information exchange	.44
g.	Evaluation of information from physical sources	.46
h.	Staff/related activities	.47
i.	General body activity	.48
j.	Use of finger-controlled devices vs. physical work	.50
k.	Manual control/coordination activities	.51
l.	Visual input from devices/materials	.52
m.	Public/related contact	.52
n.	Perceptual interpretation	.53
o.	Control/equipment operation	.54
p.	Machine/process control	.55
q.	Information processing	.55
r.	Supervisor-subordinate relationships	.56

IV. Overall JAPQ factors predicting:

1. Intrinsic Satisfaction

A.	Lower Group	R
a.	Skilled activities	.14
B.	Upper Group	R
a.	Decision/communication/social responsibilities	.13
b.	Skilled activities	.15

2. Extrinsic Satisfaction

A.	Lower Group	R
a.	Physical activities/related environmental conditions	.07
B.	Upper Group	R
a.	Decision/communication/social responsibilities	.16
b.	Information processing activities	.18

3. Navy Satisfaction

A.	Lower Group	R
a.	Skilled activities	.13
B.	Upper Group	R
a.	Decision/communication/social responsibilities	.21
b.	Skilled activities	.24
c.	Equipment/vehicle operation	.28

4. Total Satisfaction

A. Lower Group	R
a. Skilled activities	.14

B. Upper Group	R
a. Decision/communication/social responsibilities	.16

V. Specific d^2 factors predicting:

1. Intrinsic Satisfaction

A. Lower Group	R
a. Supervisor-subordinate relationships	.22
b. Decision making	.28
c. Perceptual interpretation	.30
d. Businesslike work situations	.32
e. Attentive/discriminating work demands	.33
f. Unpleasant/hazardous physical environment	.33
g. Personally demanding situations	.34
h. Information from people	.35

B. Upper Group	R
a. Information from people	.18
b. Staff/related activities	.30
c. Visual input from distal sources	.33
d. Businesslike work situations	.35
e. Attentive/discriminating work demands	.38
f. Decision making	.39
g. Unstructured vs. structured work	.40
h. Machine/process control	.41
i. Evaluation of information from physical sources	.42
j. Environmental awareness	.42
k. Public/related contact	.43
l. Skilled/technical activities	.44

2. Extrinsic Satisfaction

A. Lower Group	R
a. Perceptual interpretation	.12
b. Supervisor-subordinate relationships	.16
c. Information from people	.20
d. Attentive/discriminating work demands	.23
e. Control/equipment operation	.24

B. Upper Group

	R
a. Businesslike work situations	.12
b. Visual input from distal sources	.16
c. Control/equipment operation	.27
d. Supervisor-subordinate relationships	.26
e. Manual control/coordination activities	.29
f. Handling/manipulating activities	.32
g. Environmental awareness	.33
h. Visual input from devices/materials	.34
i. Public/related contact	.35
j. Unpleasant/hazardous physical environment	.35
k. Job-related information exchange	.36
l. Staff/related activities	.37

3. Navy Satisfaction

A. Lower Group

	R
a. Perceptual interpreation	.18
b. Decision making	.24
c. Supervisor-subordinate relationships	.30
d. Visual input from distal sources	.31
e. Personally demanding situations	.33
f. Information from people	.34
g. Attentive/discriminating work demands	.35
h. Unpleasant/hazardous physical environment	.35

B. Upper Group

	R
a. Supervisor-subordinate relationships	.29
b. Decision making	.32
c. Unpleasant/hazardous physical environment	.34
d. Environmental awareness	.36
e. Control/equipment operation	.37
f. Visual input from distal sources	.38
g. Staff/related activities	.39
h. Evaluation of information from physical sources	.39

4. Total Satisfaction

A. Lower Group

	R
a. Supervisor-subordinate relationships	.20
b. Information from people	.24
c. Perceptual interpretation	.27
d. Decision making	.29
e. Attentive/discriminating work demands	.31
f. Personally demanding situations	.32
g. Unpleasant/hazardous physical environment	.33

B. Upper Group — R

a. Staff/related activities .15
b. Visual input from distal sources .23
c. Businesslike work situations .27
d. Information from people .30
e. Attentive/discriminating work demands .33
f. Handling/manipulating activities .34
g. Decision making .36
h. Environmental awareness .37
i. Public/related contact .39
j. Evaluation of information from physical sources .39
k. General body activity .40
l. Supervisor-subordinate relationships .40
m. Job-related information exchange .41
n. Skilled/technical activities .42
o. Control/equipment operation .42

VI. Overall d^2 factors predicting:

1. Intrinsic Satisfaction

A. Lower Group — R

a. Information processing activities .12
b. Decision/communication/social responsibilities .16
c. Equipment/vehicle operation .22
d. Skilled activities .30
e. Physical activities/related environmental conditions .33

B. Upper Group — R

a. Decision/communication/social responsibilities .13
b. Skilled activities .16

2. Extrinsic Satisfaction

A. Lower Group — R

a. Equipment/vehicle operation .10
b. Skilled activities .16
c. Information processing activities .24

B. Upper Group — R

a. Skilled activities .10
b. Decision/communication/social responsibilities .14

3. Navy Satisfaction

A. Lower Group	R
a. Information processing activities	.18
b. Skilled activities	.20
c. Equipment/vehicle operation	.34
d. Physical activities/related environmental conditions	.39

B. Upper Group	R
a. Decision/communication/social responsibilities	.09
b. Equipment/vehicle operation	.12
c. Skilled activities	.14

4. Total Satisfaction

A. Lower Group	R
a. Information processing activities	.11
b. Equipment/vehicle operation	.15
c. Skilled activities	.28
d. Physical activities/related environmental conditions	.33
e. Decision/communication/social responsibilities	.34

B. Upper Group	R
a. Decision/communication/social responsibilities	.12
b. Skilled activities	.16

END