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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is included. (AG)

TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

FISH CUTTER (fish.) 3-89.04

B-541 S-264

U. S. Employment Service
in Cooperation with
Oregon State Employment Service

June 1963

GATB # 2443

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

FISH CUTTER (fish.) 3-89.04

B-541

Summary

The General Aptitude Test Battery, B-1002B, was administered to a final sample of 51 individuals employed as Fish Cutters 3-89.04 at various seafood Companies in Astoria and Warrenton, Oregon. The criterion consisted of supervisory ratings. On the basis of mean scores, standard deviations, correlations with the criterion job analysis data and their combined selective efficiency, Aptitudes K-Motor Coordination, F-Finger Dexterity and M-Manual Dexterity were selected for inclusion in the final test norms.

GATB Norms for Fish Cutter 3-89.04, B-541 .

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
T	CB-1- G CB-1- K	85	K	Part 8	90
F	CB-1- O CB-1- P	90	F	Part 11 Part 12	85
M	CB-1- M CB-1- N	70	M	Part 9 Part 10	70

Effectiveness of Norms

The data in Table IV indicate that only 63 percent of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the above norms, 74 percent would have been good workers. 37 percent of the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the above norms, only 26 percent would have been poor workers.

TECHNICAL REPORT

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Fish Cutter 3-89.04.

II. Sample

The General Aptitude Test Battery, B-1002B, was administered during the period November 27, 1962 through November 30, 1962 to a volunteer sample of 68 women and 4 men of a potential sample of 110 women and 13 men employed as Fish Cutters 3-89.04 at plants of four employer members of the Seafood Dealer's Association of Oregon. The names and locations of the cooperating employers and the number of workers tested at each company are as follows:

Company	Location	Number Tested
Astoria Fish Factors	Astoria, Oregon	9
Astoria Seafood Company	Astoria, Oregon	19
San Juan Fishing and Packing Company	Warrenton, Oregon	21
Sebastian Stuart Fish Company	Astoria, Oregon	23
		72

The final experimental sample consisted of 50 women and one man. Twenty-one of the tested individuals were eliminated from the final sample because their test results and/or supervisory ratings were considered invalid. In selecting applicants for employment at the above companies there are no age or education requirements and no tests are administered. The minimum training period is approximately two months; all workers in the final sample are considered experienced.

TABLE I

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

N = 51	M	σ	Range	r
Age (years)	43.647	7.824	24-59	-.073
Education (years)	10.353	1.690	8-13	.154
Experience (months)	115.000	68.157	24-258	.287*

*Significant at the .05 level

III. Job Description

Job Title: Fish Cutter (fish.) 3-89.04

Job Summary: Using sharp knife, cuts fillets from fish. Removes skin from fillets and inspects fillets for necessary trimming of edges and removal of skin and viscera. Tosses finished fillet into container or onto conveyor belt.

Work Performed: Stands at work station and lifts or pulls fish, such as sole or cod, onto fillet board from supply in front of station. Using sharp knife, cuts diagonally across fish at the back of the head. Inserts knife point into cut and pushes knife with slicing motion to tail of fish to cut flesh from carcass. Lifts lossened side of fillet with one hand and cuts other side from carcass. Flips fillet over with skin side to board. Holds fillet with fingers and slides knife with slicing motion under flesh next to skin for full length of fillet. Inspects fillet, trims edges, and removes pieces of skin or viscera with knife or water jet. Tosses fillet into container or onto conveyor belt. Turns fish over and cuts fillet from other side by same process. Pushes or scrapes carcass and trimmings from fillet board with hand or knife. Sharpens knife on steel or exchanges dull knife for a sharpened one.

IV. Experimental Battery

All the tests of the GATB, B-1002B , were administered to the sample group.

V. Criterion

The criterion data collected consisted of two sets of independent ratings made by the first-line supervisor on an adaptation of USES Form SP-21, "Descriptive Rating Scale." A period of three weeks elapsed between the first and second ratings. The rating scale consisted of seven items covering different aspects of job performance, with five alternatives for each item. Weights of one through five, indicating the degree of job proficiency attained, were assigned to the alternatives. A reliability coefficient of .87 was obtained for the criterion. Therefore, the two sets of ratings were combined, resulting in a distribution of final criterion scores of 30-68, with a mean of 55.0 and a standard deviation of 9.4.

VI Qualitative and Quantitative Analyses

A. Qualitative Analysis

On the basis of the job analysis data, the following aptitudes were rated "important" for success in this occupation:

Form Perception (P) - required in determining where cuts should be made on fish and in inspecting finished fillets.

Motor Coordination (K) - required in cutting and trimming fillets.

Manual Dexterity (M) - required in handling fish, in using knife to cut fish, in handling finished fillet, and in sharpening knives.

On the basis of the job analysis data, V-Verbal Aptitude, N-Numerical Aptitude, and Q-Clerical Perception were rated "irrelevant" for success in this occupation.

B. Quantitative Analysis:

TABLE II

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB; N = 51

Aptitudes	M	σ	r
G-Intelligence	94.6	16.2	.053
V-Verbal Aptitude	100.2	15.0	.004
N-Numerical Aptitude	88.7	16.7	.116
S-Spatial Aptitude	94.9	15.9	.075
P-Form Perception	97.8	19.3	.094
Q-Clerical Perception	96.8	14.5	.057
K-Motor Coordination	100.3	16.8	.013
F-Finger Dexterity	96.3	20.8	.312*
M-Manual Dexterity	97.9	20.0	.121

*Significant at the .05 level

C. Selection of Test Norms:

TABLE III

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important					X		X		X
Irrelevant		X	X			X			
Relatively High Mean		X			X		X		X
Relatively Low Sigma						X			
Significant Correlation with Criterion								X	
Aptitudes to be Considered for Trial Norms					P		K	F	M

Trial norms consisting of various combinations of Aptitudes P, K, F and M with appropriate cutting scores were evaluated against the criterion by means of the Phi Coefficient technique. A comparison of the results showed that B-1002 norms consisting of K-90, F-85 and M-70 had the best selective efficiency.

Validity of Norms

The validity of the norms was determined by computing a Phi Coefficient between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing 37 percent of the sample in the low criterion group because this percent was considered to be the unsatisfactory or marginal workers.

Table IV shows the relationship between test norms consisting of Aptitudes K, F and M with critical scores of 90, 85 and 70, respectively, and the dichotomized criterion for Fish Cutter 3-89.04. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV

Validity of Test Norms for Fish Cutter 3-89.04.
(K-90, F-85, M-70)

N = 51	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	12	20	32
Poor Workers	12	7	19
Total	24	27	51

Phi Coefficient = .249
χ^2 = 3.162
P/2 < .05

The data in the above table indicate a significant relationship between the test norms and the criterion for the sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes K, F and M with minimum scores of 90, 85 and 70, respectively, have been established as B-1002 norms for Fish Cutter 3-89.04. The equivalent B-1001 norms consist of T-85, F-90 and M-70.

IX. Determination of Occupational Aptitude Pattern

The data for this study did not meet the requirements for incorporating the occupation studied into any of the 35 OAP's included in Section II of the Guide to the Use of the General Aptitude Test Battery, January 1962. The data for this sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.