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ARI ltr 13 Nov 1979

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Correlation Between Parts of Soldier Performance Report.

Problem:

Analysis of Soldier Performance Report: correlation between parts.

Population:

130 men, largely grade V on GCT, considered for special training, J.H. Baker

Variables:

(Scores on S. P. R.)

1. Capacity score
2. Adjustment score
3. Graphic Rating Scale score

Conclusions:

- I. For this group, the scores on the Capacity Test and those on the Adjustment Test are found to be highly correlated ( $r = +.707$ ,  $\sigma_p = .044$ ). This correlation indicates that these two tests are measuring either the same characteristics of the population or characteristics which are themselves highly related in men at this GCT level.
- II. Blakeman's test of linearity points to a curvilinear relationship between GRS and capacity scores. A study of the scatterplot of these two scores shows that a man who is rated high on both the Adjustment and Capacity Tests may be placed at almost any level of the GRS. This fact seems to be the basis for the curvilinear relationship; if the high end of the distributions is cut off (scores 3 to 15 on the Capacity Test and the corresponding GRS scores) the regression approaches linearity.
- III. Capacity and adjustment scores and adjustment and GRS scores correlate highly and to approximately the same degree ( $r = +.707$  and  $+.683$  respectively). Capacity and GRS scores correlate lower than do the others—the difference approaching significance ( $GR > 2$  in both instances). This difference may be a function of: (a) The GRS and adjustment tests measure more similar characteristics than do the GRS and Capacity tests or (b) each test is affected by the scoring on the previous test for a given man; a halo effect is operating.

Procedure:

Pearson product-moment correlations and  $\sigma_p$  were computed between the 5 pairs of the variables. Eta's were computed between GRS and each of the other variables; and tests of linearity were made for these relationships.

Results:

## I: Intercorrelations of the 3 Variables

	<u>Capacity</u>	<u>Adjustment</u>	<u>GRS</u>
Capacity			
Adjustment		$+07(\sigma_r^2 = .044)$	$+543(\sigma_r^2 = .062)$
GRS			$+683(\sigma_r^2 = .047)$
	$\bar{x}$ 28.5	25.9	7.7
	$\sigma$ 15.7	14.9	2.05

II: Eta's of GRS with Adjustment and with Capacity Scores  
and tests of linearity

	<u>GRS</u>	<u>Blakeman's test of linearity*</u>
Adjustment	$\approx 716$	14.6
Capacity	$+638$	6.0

$$* (n^2 - r^2) =$$

$$130(.112) = 14.6$$

$$130(.046) = 6.0$$

A regression is said to be non-linear if  $N(n^2 - r^2) > 11$

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