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THE RECRUIT TEMPERAMENT SURVEY (RTS) AS A PREDICTOR OF  
PARA-MEDICAL EFFECTIVENESS CRITERIA <sup>1</sup>

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The Recruit Temperament Survey (RTS) was devised by Waite and Barnes (1968) to identify naval enlistees who are likely to experience either psychiatric or administrative difficulties while in the U. S. Navy. The results from past research conducted with this instrument have indicated that the RTS has considerable potential for predicting both diagnostic and effectiveness criteria (Bucky, Edwards, and Berry, 1973; Bucky and Edwards, 1973; Waite and Barnes, 1968; Hoiberg, Hysham, and Berry, 1973). Until recently, however, most of this research has been undertaken using samples drawn from the Navy enlisted population at large. Little consideration has been given to evaluating the usefulness of RTS responses for identifying individuals who are unlikely to adjust satisfactorily to working in a particular occupational specialty.

One Navy occupational group having a comparatively high incidence of psychiatric hospitalization and a relatively low level of effectiveness is that of Hospital Corpsman (HM). Plag, Arthur, and Goffman (1970) have reported that the proportion of HMs was about two and a half times greater among Navy psychiatric patients than among a control sample of Navy personnel. Furthermore, Plag, Goffman, and Murphy (1970) have found that when effectiveness was defined as completion of an initial term of obligated service with a recommendation for reenlistment, the rate of effectiveness for HMs (82%) was significantly lower than the rate of effective-

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ness for sailors graduated from other service schools (90%). The potential consequences of this problem have become evident as more and more of these Navy para-medical personnel, in response to the growing shortages of health care professionals, are being assigned to increasingly responsible tasks, including patient-related activities formerly reserved exclusively for physicians and nurses. One approach to preventing a decline in the quantity and quality of health care delivery is to develop improved procedures for screening out potential psychiatric casualties and poor performers prior to classification into the Navy para-medical specialties.

Classification into the HM occupational group is presently based upon a demonstration on standard Navy tests of sufficient academic aptitude to absorb the information and techniques which are presented during occupational training (Thomas, 1972). Noncognitive characteristics such as psychiatric symptoms, attitudes, and past behavior of the individual are considered by classifiers only in a cursory and highly subjective manner. The RTS, however, has been designed to assess these characteristics in an objective manner. By adding the RTS to the present combination of aptitude measures, it may be possible to reduce the incidence of psychiatric hospitalization significantly and increase the level of effectiveness for HMs.

Two studies which were recently completed have shown that RTS responses are predictive of psychiatric hospitalization among HMs (Booth, Bucky, and Barry, 1973) and can be used to differentiate effective HMs from noneffective HMs (Booth, Bucky, and Edwards, 1973).

The purpose of this study was 1) to determine whether the RTS adds to the accuracy of predicting corpsman effectiveness beyond what can already be achieved by using aptitude measures alone, and 2) to determine the validity of RTS responses for predicting a combined psychiatric hospitalization and noneffectiveness criterion.

#### METHOD

##### Sample.

The subjects used for this study included 1315 Navy enlisted men who entered the Navy Hospital Corps School, San Diego, between October 1966 and September 1967.

##### Measures.

The measures used in this research included the RTS and two aptitude tests. The RTS contains 105 "true/false" items which focus on personality, attitudinal, and background characteristics of the individual. The General Classification (GCT) and Arithmetic Reasoning (ARI) tests were employed as indices of aptitude. All of these measures were administered to the subjects at the beginning of basic training.

Three empirically-derived RTS scales which had been developed in previous investigations were used in this study to evaluate the unique contribution of RTS responses to the prediction of para-medical effectiveness criteria. The first two scales, the EFF and AO scales, contain 22 and 36 items, respectively, and were developed by Booth, Bucky, and Edwards (1973) for the purpose of discriminating effective HMs from noneffective HMs and all other Navy enlisted personnel. The third scale, the PSY scale, contains 19 items and was developed by Booth, Bucky,

and Berry (1973) to discriminate between HMs who became psychiatric casualties and those who did not. In addition, a simple sum of the GCT and ARI aptitude scores was employed as the benchmark against which to determine the contribution of RTS responses. These two aptitude scores were summed because this combined index, which was developed to predict final school grade in HM training (Thomas, 1972), corresponds most closely with the way in which classifiers presently use this information in evaluating potential HMs.

#### Criteria.

Two dichotomous criteria were employed for the purposes of this study: an effectiveness criterion and a combined psychiatric hospitalization and effectiveness criterion. On the effectiveness criterion, those subjects who had completed an initial term of obligated service with a recommendation for reenlistment were classified as effective (78% of the sample) whereas the remaining subjects were classified as noneffective. To develop the combined criterion, those subjects who had a record of one or more admissions to the psychiatric sick list were combined with the noneffective subjects and contrasted with the remaining effective subjects (75% of the sample). It should be noted that HMs who had been prematurely separated from the service for reasons unrelated to effectiveness (e.g., physical disability, hardship, or death) were not included in this sample.

#### RESULTS

The sample was stratified on both criteria and divided randomly into validation and cross-validation groups. Relationships between

the three RTS scales, the aptitude index, and the two criteria were then studied in the validation sample. The intercorrelations among these six variables are shown in Table 1. These figures indicate that the predictor/criterion relationships were generally low but statistically significant ( $p < .05$ ).

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Insert Table 1 about here  
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The unique contribution of RTS scale scores to predicting the effectiveness criteria was evaluated by using stepwise multiple regression analysis. Increases in the multiple correlation which accrue as successive variables are added to a regression equation provide an index of the extent to which each new variable adds to the composite validity for predicting a particular criterion. The first predictor variable included in the multiple regression analysis computed against each criterion was the aptitude index. The results from this stage of the accretion process indicated that the aptitude index taken alone was correlated .16 with the effectiveness criterion and .14 with the combined hospitalization/effectiveness criterion.

The three RTS scale scores were then added to the aptitude index in each analysis. The multiple correlations were .25 for weighted composites of all four variables against both criteria; the regression weights developed in these analyses are shown with the intercorrelations in Table 1. Both multiple Rs were significant at the .001 level of confidence ( $F = 10.85$ ,  $df = 4, 653$ ) and represent a highly significant increase ( $p < .001$ ) over the accuracy of prediction that was possible

by using aptitude alone. The F-ratios for this increase were 8.99 and 9.79 (df=3,653).

When the equations developed in these analyses were cross-validated with the remaining subjects, no evidence of shrinkage was found. Cross-validity coefficients for the effectiveness criterion were .18 and .28. Comparable coefficients for the combined criterion were .16 and .28.

#### DISCUSSION

The results of this study indicate that personality, attitudinal, and background characteristics, as measured by the RTS, can contribute significantly to the prediction of Navy para-medical effectiveness criteria. Furthermore, the magnitude of this contribution appears to have practical as well as statistical significance. By combining the RTS and aptitude measures, the percentage of explained variance was nearly tripled on both criteria. It should be noted, however, that the percentage of explained variance was still rather low even after RTS measures had been added to the aptitude composite.

Combining psychiatric casualties with noneffective HMs did not modify the predictive validity to any significant degree. One reason for this finding may have been that the number of HMs who were admitted to the psychiatric sick list, but who went on to perform effectively after returning to duty, was actually quite small. Only 37 of the psychiatric casualties (about 40%) went on to complete an obligated term of service with a recommendation for reenlistment. The remaining casualties had already been included among the 291 noneffective HMs.

The small number of additional casualties, therefore, added little new variance to the effectiveness criterion.

The low validities which were found in this study indicate not only the need for improved predictors, but also the need for additional para-medical effectiveness criteria. The criteria used in this research were primarily indices of withdrawal from the job. Psychiatric hospitalizations and premature separations from service represent clear-cut and quite serious withdrawal behaviors. Unfortunately, no criteria were available on these subjects which could be used as indices of on-the-job performance. Among those subjects classified in this study as "effective" were HMs who were performing at levels of effectiveness which undoubtedly ranged from marginal to outstanding. Ignoring these performance differences severely curtailed the variance on these criteria and the validity which could have been achieved in predicting them. Research to develop new criteria is presently underway with the goal of making further improvements in the selection and utilization of Navy para-medical personnel.

#### FOOTNOTES

<sup>1</sup> This study was supported by the Bureau of Medicine and Surgery, Department of the Navy, under Research Task M4305.07-3011DXB5. The opinions expressed are those of the authors and are not to be construed as those of the Department of the Navy.

REFERENCES

- Booth, R. F., Bucky, S. F., and Berry, N. H. Predictors of psychiatric illness among Navy hospital corpsmen. Research report no. 73-40. San Diego: Navy Medical Neuropsychiatric Research Unit, 1973.
- Booth, R. F., Bucky, S. F., and Edwards, D. Personality and attitudinal characteristics of effective hospital corpsmen. J. Community Psychol., 1973, In press.
- Bucky, S. F. and Edwards, D. The Recruit Temperament Survey (RTS) as it discriminates between psychoses, neuroses, and personality disorders. J. Clin. Psychol., 1973, In press.
- Bucky, S. F., Edwards, D., and Berry, N. H. Predictors of psychiatric hospitalization. Research report no. 73-51. San Diego: Navy Medical Neuropsychiatric Research Unit, 1973.
- Holberg, A. L., Hysham, C. J., and Berry, N. H. Predictors related to premature attrition of Navy recruits. Research report no. 73-48. San Diego: Navy Medical Neuropsychiatric Research Unit, 1973.
- Flag, J. A., Arthur, R. J., and Goffman, J. M. Dimensions of psychiatric illness among first-term enlistees in the United States Navy. Military Medicine, 1970, 135, 665-673.
- Flag, J. A., Goffman, J. M., and Murphy, L. E. The military effectiveness of naval enlistees serving as medical specialists. Research report no. 70-4. San Diego: Navy Medical Neuropsychiatric Research Unit, 1970.
- Thomas, P. J. The relationship between Navy classification test scores and final school grades in 98 class "A" schools. Research report SSR 72-22. San Diego: Navy Personnel and Training Research Laboratory, 1972.
- Waite, R. R., and Barnes, E. H. Predicting success or failure in the Navy, a longitudinal study. Unpublished manuscript. Great Lakes, Ill.: Recruit Evaluation Unit, 1968.

Table 1

Intercorrelations and regression weights for  
the HM validation group (N = 658)

Predictor variables	Intercorrelations				Weights <sup>a</sup>		
	PSY	EFF	AO	Effec. Crit.	Comb. Crit.	Effec. Crit.	Comb. Crit.
Aptitude Index	-.05	-.15	.10	.16	.14	.13	.12
PSY scale		.74	.13	-.15	-.18	-.07	-.16
EFF scale			-.08	-.20	-.19	-.12	-.05
AO scale				.10	.09	.09	.10

<sup>a</sup> Standard score rather than raw score regression weights were shown in this table because they provide a more readily apparent index of a variables relative contribution to prediction of the criterion

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criteria. By adding the three RTS scale scores to this aptitude under the composite cross-validity for predicting these criteria was raised to .28 ( $p < .001$ ). This increase was highly significant ( $p < .001$ ) and indicates that personality, attitudinal, and background characteristics, as measured by the RTS, can contribute to the prediction of Navy para-medical effectiveness criteria.

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