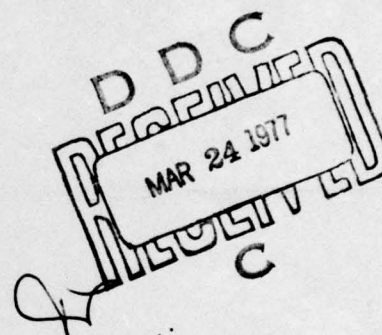ADA037321

NON-COGNITIVE CHARACTERISTICS AS A BASIS FOR

GUIDANCE INTO THE NAVY PARA-MEDICAL SPECIALTIES

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NON-COGNITIVE CHARACTERISTICS AS A BASIS FOR
GUIDANCE INTO THE NAVY PARA-MEDICAL SPECIALTIES[1]

Richard F. Booth and Anne L. Hoiberg[2]

The quantity and quality of Navy health care delivery depends to
a great extent upon the performance of Hospital Corpsmen (HMs) and
Dental Technicians (DTs). Unfortunately, the results of past research
have revealed relatively low levels of job effectiveness within these
two occupational groups. When effectiveness is defined as completion
of an obligated term of service with a recommendation for reenlistment,
the combined rate of effectiveness for HMs and DTs (82%) is signifi-
cantly lower than the rate of effectiveness for other sailors graduated
from service schools (90%). Furthermore, noneffectiveness has been
found to be a consequence of medical and psychiatric difficulties much
more frequently among HMs and DTs than among other service school
graduates. (Plag, Goffman, and Murphy, 1969; Plag, Arthur, and Goffman,
1970) Findings such as these have suggested that there is a need for
more careful screening of potential HMs and DTs in an attempt to iden-
tify those individuals predisposed to poor performance and psychiatric
illness.

A large percentage of the personnel who fail to perform effectively
in the HM and DT rating groups may do so simply because they entered an
occupational specialty for which, on the basis of their pattern of
attributes, they were ill-suited. Profiles of background and personality
characteristics "typical" of job incumbents have been found in many
studies to differ significantly when compared across occupations (Crites,
1969; Gunderson and Nelson, 1966). It is hypothesized, therefore, that

young men and women who choose to become HMs and DTs can be differentiated
from personnel who enter non-medical occupations on the basis of these
non-cognitive characteristics.

The classification of Navy recruits into para-medical specialties
should be improved significantly by developing procedures for assessing
the degree of similarity between a recruit's non-cognitive characteris-
tics and the collective characteristics of HMs and DTs already perform-
ing effectively on the job. Current Navy classification procedures
rely largely upon aptitude measures for guiding individuals into the
various occupational specialties. The background and personality of an
individual are considered only roughly during this process and any
assessments which are made by the classifier are highly subjective ones.
Therefore, supplementing current classification procedures with objec-
tive non-cognitive measures should bring about an increase in the numbers
of qualified recruits encouraged by classifiers to enter the para-medical
specialties as well as an improvement in the accuracy of screening out
prospective HMs and DTs who are predisposed to poor performance and
psychiatric illness.

The study reported in this paper constitutes an exploratory
investigation to establish the feasibility of this approach to classi-
fication. It was designed to identify objectively measured background
and personality characteristics which discriminate in potentially useful
way between samples of effective HMs and personnel performing effectively
in deck and mechanical specialties. Specifically, the objectives of this
study were 1) to derive a set of background and personality items which
discriminates between personnel in these two occupational groups and

2) to demonstrate that a scale developed from these items could be a useful supplement to cognitive measures already in the hands of classification personnel.

METHOD

Subjects.

The sample employed for this study included 85 Hospital Corpsmen who were attending an advanced training course at Balboa Naval Hospital, San Diego, eight Hospital Corpsmen serving on the crew of the U.S.S. Kitty Hawk, and 52 personnel serving in deck and mechanical specialties on board the U.S.S. Kitty Hawk. In order to make the comparisons on individuals who were performing effectively and who were apparently satisfied with their line of work, only sailors who had reenlisted at least once were sampled.

Measures.

Two questionnaires were constructed for the purposes of this study. The Personal History Inventory (PHI) contained 225 personality items drawn from a wide range of tests and scales. A dichotomous "true" or "false" response format was used in this questionnaire. The second questionnaire was a biographical inventory (BI) which contained items pertaining to experiences prior to entering the Navy.

Procedure.

Administration of the questionnaires was conducted by a civilian research psychologist in a classroom at the Naval Hospital and in an enclosed messing area on board the U.S.S. Kitty Hawk. Instructions given to the subjects made clear that responses to the items were for

research purposes and would not become a part of the man's service
record.

RESULTS AND DISCUSSION

The first objective of this study was to identify differences in
the PHI and BI responses of men serving effectively in medical as op-
posed to deck and mechanical occupational specialties. Using the chi-
square test, it was found that 39 of the PHI and 23 of the BI items
discriminated significantly ($p < .05$) between the men in these two groups.
Representative items are shown in Table 1. The content of these items
was, in general, consistent with occupational stereotypes. The response
differences indicated that the HIs were generally more sensitive,
tolerant, flexible, and independent than the deck and mechanical personnel.
The HIs were also oriented toward interpersonal relationships, academic
activities, and the attainment of long-term goals more frequently than
were personnel in the deck and mechanical specialties. Furthermore, the
HIs reported fewer personal regrets about things they had done and
reported less cynicism about what the future holds for them than did the
deck and mechanical group. Finally, the HIs were better educated and
were from homes of a higher socio-economic status (as indicated by
parents education and family income) than were the deck and mechanical
personnel.

(Table 1 about here)

The next step in this study was to determine how well a combination
of these 62 items could discriminate between the men working in these

two occupational groups. To do this, unit weights were assigned to significant alternatives and all items were reflected so that an affirmative response indicated a likelihood of membership in the HM rating group. A score was then computed on this combination of items for each man in the sample and the distributions of these scores for both occupational groups were compared. It was found that with a cut-off score of 27 on this scale, 92% of the HMs and 90% of the deck and mechanical personnel were correctly classified.

Finally, it was necessary to demonstrate that this non-cognitive measure could be a useful supplement to the cognitive measures already available to the classifiers. The aptitude measures presently used by classifiers are the General Classification, Arithmetic Reasoning, Mechanical, and Clerical tests. Scores on these tests, which were extracted from the records of each man in the sample, were entered into a multiple regression analysis with the composite scale scores and the dichotomous group-membership criterion. It was found that the aptitude scores alone could be used to predict occupational group with a multiple R of .58. When the non-cognitive scale score was added to the four aptitude scores, however, the multiple R was increased to .80 ($F = 113.10$, $p < .001$). Aptitude alone then accounted for approximately 34% of the between-group variance whereas the combination of cognitive and non-cognitive measures accounted for 64% of the between-group variance.

The results of this exploratory study have indicated the value of using objective, non-cognitive measures as a supplement to current

classification procedures. Research is presently needed to identify
additional non-cognitive characteristics, e.g., attitudes and values,
which differentiate effective HMs and DTs from other Navy enlisted
personnel. Furthermore, comparisons should be made between para-
medical personnel and the personnel in occupational specialties other
than those sampled in this study, e.g., the construction and clerical
specialties. Effective first-term enlistees should also be included
in future comparisons.

SUMMARY

Background history and personality questionnaires were administered
to 93 effective HMs and 52 personnel serving effectively in deck and
mechanical specialties. Sixty-two items discriminated significantly
between the personnel in these two occupational groups. These items
were combined into a single non-cognitive measure which was keyed to
identify the HMs. By using regression analysis, it was found that
this non-cognitive measure nearly doubled the accuracy of predicting
group membership over what could be achieved with cognitive (aptitude)
measures alone. As a methodological matter, these results provided
support for the hypothesis that using objective, non-cognitive measures
as a supplement to current classification procedures will bring about
a significant reduction in the high rates of poor performance and
psychiatric illness among Navy para-medical personnel.

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FOOTNOTES

[1] This study was supported by the Bureau of Medicine and Surgery,

Department of the Navy, under Research Task MF51.524.02-BBBB. The

opinions expressed are those of the authors and are not to be construed

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tation of this study.

Table 1

Representative items from the PHI and BI

PHI:

(-)[a] 16. I am in favor of a very strict enforcement of all laws, no matter what the consequences. (14.33)[b]

(+) 19. I like to be able to come and go as I please. (3.84)

(+) 28. In school I always looked far ahead in planning what courses to take. (5.13)

(+) 50. I must admit I find it very hard to work under strict rules and regulations. (8.86)

(-) 55. I enjoy doing things that involve quite a bit of physical exercise. (20.10)

(+) 117. I like to be independent of others in deciding what I want to do. (4.59)

(-) 134. People often talk about me behind my back. (7.73)

(-) 147. With things going as they are, it's pretty hard to keep up hope of amounting to something. (5.88)

(+) 177. I would like to devote my life to the service of others. (9.71)

(-) 185. I have had more than my share of things to worry about. (15.76)

(-) 190. I seem to do things that I regret more often than other people do. (8.34)

BI:

16. Before you turned 17 years of age, did you participate in any of the following activities? (Circle "Yes" or "No")

(-) 11. Mending the cord of an electrical appliance (10.26)

(-) 22. Hunting and butchering a small animal (rabbit, deer, etc.) (9.35)

(-) 23. Using power tools for metal-working or woodworking (6.45)

(+) 25. Attending a summer camp (13.60)

(+) 30. Playing chess or checkers (8.53)

(+) 31. Collecting stamps or coins (10.18)

[a] keying of an affirmative response in scoring the non-cognitive scale
[b] chi-square statistic with one degree of freedom

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Background history and Personality questionnaires were administered to 93 effective Hospital Corpsmen and 52 personnel serving effectively in Navy deck and mechanical specialties. Sixty-two items discriminated significantly between the personnel in these two occupational groups. These items were combined into a single non-cognitive measure which was keyed to identify the Hospital Corpsmen. By using regression analysis, it was found that this non-cognitive measure nearly doubled the accuracy of predicting group membership over what could be achieved with cognitive (aptitude) measures alone. As a methodological matter, these

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results provodied support for the hypotheisis that using objective, non-cognitive measures as a supplement to current classification procedures will bring about a significant reduction in the high rates of poor performance and psychiatric illness among Navy para-medical personnel.