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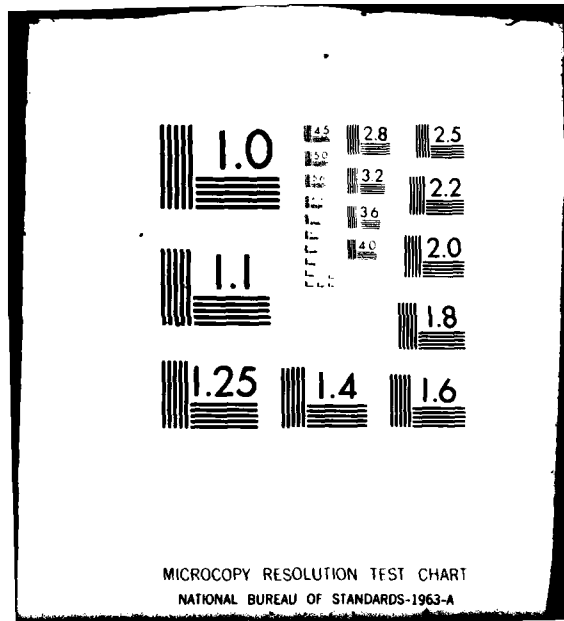   DEC 79   R G SALAS
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A More Realistic Approach to the Measurement
of Occupational Interests in a Service Setting.

Part 1 Form EZ

DTIC
SELECTED
SEP 1 1 1980

R. G. Salas
Dept of Defence (Navy Office)

C   Commonwealth of Australia

December 1979.

APPROVED

FOR PUBLIC RELEASE

This Directorate of Psychology publication has been prepared by Mr
R. G. Salas (Navy Office) and 1 Psychological Research Unit and is authorised
for issue by DPSYCH-A.

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Abstract

Argument is forwarded in favour of a reappraisal of the value and use of occupational preference data in Service psychology. Two new interest blanks designed to facilitate this are presented. Form EZ is structured for use on non-academic, non-officer-like populations; JOBLIST provides vocational expression for academic, professional, officer-like populations.

The present paper describes the aims, development and use of Form EZ.

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Writer's Foreword

The interest blanks described in this note are experimental and development is ongoing. Those interested are invited to initiate research in this area and to participate in the production of further versions of these instruments. Reproduction and use of blanks however is subject to the writer's approval and inquiries should be directed to R. G. SALAS, Defence Force Recruiting Centre, 301 Flinders Lane, Melbourne 3000. (Tel. 03 - 613731 Extn. 26)

Selection for all three Services is based on the cognitive ability-adjustment model. Cognitive test levels are "Laid down" in Technical Instructions and their application is partially discretionary. Practitioners seem to be fairly much at home with the more fuzzy "adjustment" end of it and deal routinely with data reflecting "maturity", "motivation", "peer acceptance" and other constructs considered relevant in the Defence Force Recruiting Centre and other Service situations. The predictive validity of this model has never been ultra-convincing in psychometric terms and it probably never will be. In spite of this, however, the process chugs along guided by feedback from the training institutions if consensually validated acceptance levels are explicitly (or implicitly) manipulated downwards.

This system has operated for over 30 years. It is a matter for surprise that during that time not too much attention appears to have been given to officially increasing the data pool available for decision making by addition of non-cognitive or non-adjustment data. Things seemed to st rt to change with the emergence of Holland's "theory ridden, computerless impersonal vocational guidance system" (J. Voc. Behav 1971, 1, 167-176b. A more developed statement is found in "Making Vocational Choices - a theory of Careers" John L. Holland, Prentice Hall, N. J., 1973, paperback).

Holland links vocational choice with personality type and has thereby transformed the rather dull, actuarial approach to vocational guidance typefied by the Rothwell Miller Interest Blank (RMIB) into a live, ongoing affair possessing all kinds of heuristic possibilities.

The Royal Australian Air Force Psychology Service, apparently activated by S. Bongers, introduced the Holland Vocational Preference Inventory (VPI) for use with all entry types in 1974 and instructions were issued concerning the recording of results on their Psychological Record Card (PRC). As with the familiar Self Description Inventory (SDI; Miles et al 1946) the approach to the results is discretionary except that they may not be used as a screen.

Occupational/vocational interest data, per se, appear to have been treated with traditional reserve to date by Service practitioners. The Royal Australian Navy Psychology Service does not appear ever to have employed a direct measure of occupational interests. The Australian Army Psychology Corps employs the Rothwell Interest Blank/RMIB at the apprentice selection point and with Royal Military College applicants but their approach to the results in practice is, at least, equivocal. At any rate little written reference to the recorded results has been noted on Service PRCs and one assumes that the data are ignored in most instances. Even the more interesting and streamlined approach offered by Holland has failed to raise enthusiasm with any but a handful of RAAF practitioners. Research has been confined to officer and apprentice samples in the RAAF Service (Bongers 1977) and apprentice selection.

The indifference towards occupational interest data evinced by Service psychologists could be due to a number of reasons including lack of results of prime research into their use across ALL Service employments, lack of a conviction transmitted from above that these data are legitimate and at least as valid as some of our fuzzy "adjustment" projections and the unattractive response tasks and laborious scoring conventions of available instruments, some of which, including the RIB/RMIB are quite inappropriate for large group application especially in the DFRC situation.

A source of irritation to the present writer is the inconvenience involved in getting back to the individual items used by a respondent in creating his category scores (RIB/RMIB/VPI). This applies equally to any blank or inventory using answer blanks and scoring keys. One feels distanced from the raw data. The SDI might be a psychometric hash (O'Gorman 1972) but highly visible scored items and item groups about which the interviewee can be questioned often prove valuable, as most practitioners will testify.

What seems to be needed, especially at the DFRC point, is a kind of "vocational SDI". Who knows, with such data more easily available, service practitioners might even come, in time, to accord them status equivalent to "adjustment" data. At least they should prove no more difficult to validate.

This paper, then, aims to present and explain a pair of locally developed occupational interest blanks based on the Holland rationale, and hopefully free of the above limitations and to invite readers to try them for themselves.

EXISTING MEASURES

Some drawbacks regarding mass DFRC use of RIB/RMIB/VPI have been mentioned above and are obvious. Use of these measures also represents a significant increment in total testing, scoring and recording times. In terms of the apparent lack of recognition of results this increment appears not justified. Other less glaring objections exist.

Out of its occupationally relevant 84 items only about 8 or 10 VPI items seem devoted to sub-tertiary level occupations available to early school leavers. The instrument, implicitly at least, is addressed to the Year 12 and above segment of the population. RIB/RMIB cover a wider spectrum of employments but the response convention forces evaluation of such occupations as "auditor", "physiotherapist", "statistician" etc. VPI contributes such stereotypes as "anthropologist", "juvenile delinquency expert", "inventory controller" to say nothing of "ventriloquist", "mind reader" and "counter-intelligence man". No matter what supporters might argue about the role of these and other items, the unmotivated Year 9/10 school leaver must contemplate and somehow deal with such material on presentation. For some it might be a stultifying experience. The Americanese of the VPI is not an attraction. RIM/RMIB instructions are lengthy and lack of respondent comprehension is not uncommon. In general, level of respondent vocabulary and language skills appear to have been factors set aside in the construction of most conventional occupational interest/preference measures.

Regarding the VPI, Holland himself does not recommend its use on persons younger than 14 years of age or those of less than average intelligence. (Holland 1973). While no Service applicants are less than 14 years of age, a lot of them are of less than "average" intelligence.

As far as Navy goes quite a number of employments are available to applicants scoring below this measured level and who also fulfil other requirements. The same situation holds in the Army and in the RAAF.

Bonger's (1973) results suggest also that VPI response data behave in an unusual way for duller RAAF apprentice applicants although they behave

according to convention when used on brighter apprentice applicants and RAAF Academy applicants (older and brighter and better educated). His conclusions appear to reinforce those reached earlier by others [1] that the VPI may not be successful in measuring the occupational preferences of non-academic individuals who aim to (or have) quit secondary school for the work force. As far as we are aware these individuals constitute the majority of applicants for enlistment in the Australian Services.

The criticisms of available vocational measures have not the aim of belittling them. They are tried, true and thoroughly respectable. The position held by the present writer claims that they are cost ineffective for mass application, i.e. at the DFRC, and inappropriate for use on the majority of those processed at these Centres.

These conclusions, hardly mind bending, may go part of the way towards making articulate the reasons behind the apparent indifference of Service psychologists to the whole area of vocational interests and preferences. However, to contemplate the abandonment of the use of existing measures of this quite legitimate domain raises the danger of throwing out the baby with the bath water. This possibility is already forshadowed. (Armstrong 1978, Kelley 1978).

At this point the present writer claims that a case <u>does</u> exist for the involvement of vocational interest data at the DFRC and other contact points in Service psychological practice and further, that two individual instruments should be available to measure these, one for non-academic non-officer type personnel and one for academic, professional, officer type personnel.

It is maintained that the approach to the measurement of occupational interests suggested here is more realistic than that of available alternatives because it recognizes the differential occupational interests and aspirations of two obvious occupational groupings (academic vs non-academic) and provides a quicker and less demanding method for the explication of these occupational interests and aspirations.

Existing blanks and inventories appear to cater more successfully for the (minority) academic group and less successfully to the (majority) non-academic group. Where such existing measures actually do attempt to provide a sample of the full occupational spectrum, e.g. RMIB, the format and methodology fail to meet the requirements of mass application under time pressure.

The blunt realities of Service psychological practice feature:

a.   a mainly non-academic applicant and training population; and

b.   a measurement environment predisposed towards the generation of maximum data in minimum time, a fact which finds expression in the application of group/mass test administration techniques. These are most notably focussed on selection and employment classification procedures.

THE CASE FOR USING OCCUPATIONAL PREFERENCES

Applicants are actually civilians and the mere fact of their presentation at DFRCs does not auomatically invalidate any measure made of their

_____
[1] FOLSOM (1978)

vocational interests and preferences. These exist, they are usually measurable, and as data, the results are legitimate and relevant to the whole matter of career choice.

By confining the use of vocational interest measures to restricted interest groups such as apprentices, psychology directors might have excluded something of relevance to Service screeners. However, one reels at the prospect of applying, say, RMIB across all Navy and Army applicants, a circumstance which again seems to call for the development of more convenient techniques for getting at these data. In this regard the VPI is a step in the right direction but one seen to fall short for reasons already presented.

Claims are made that the Services do not offer the wide range of employments available in civilian life so that the usual vocational interest data can therefore have limited value only. However, many employing institutions offer a much more restricted range of options than do the Services e.g. banks, hospitals, sales, the law. Such data may not always present as intelligible for any particular Service applicant but on many occasions it appears clearly appropriate to applicant choice and hope for a particular service employment area. Once it becomes appreciated that occupational interest blank data tend to suggest general areas of employment preference rather than necessarily specifying particular jobs or tasks then their likely utility becomes more apparent. Most Navy and Air Force employment categories/musterings can be located in one of the six conceptually broad Holland interest categories (Realistic, Investigative, Social, Clerical, Enterprising and Artistic).

Using a double-barrelled cognitive testing approach to assessment, AA Psych Corps practitioners help allocate trainees to employments towards the end of recruit training. The Navy and Air Force selection models tend to lock individuals into their future employment at the DFRC level, hence the more critical nature of the employment-type counselling provided by the psychologists and Recruiting Staff Officers (RSO) for those Services and the greater the value of some knowledge of an applicant's general vocational orientation (if any). Neither would such data necessarily go astray in formulating Australian Army Psychology Corps' advice to Army employment allocators especially if they were conveniently available and the measure did not add significantly to the length of the Classification Battery.

In each Service a circumstance occurs frequently enough in which an individual wishes to switch categories of employment or to move to another job type within the same category. Further psychometric testing is not likely to be of use in most of these situations. However, use of a convenient interest blank could provide some basis for a psychologist's opinion. In addition, members striving for free discharge prior to the expiry of their engagement who use a specific outside job opportunity in support could have the reality of their plans evaluated by either previously recorded or presently obtained occupational interest data.

The use of interest blanks in pre-discharge counselling is obvious.

In the case of making a choice between equally attractive individuals in terms of cognitive test profile, education, training reports etc, relevant occupational interest data might provide the extra input to facilitate a decision or provide a basis for ranking.

Material from the Technical Co-operation Program Subgroup U, Action Group UAG5 Final Report July 1977, recently to hand, identified 7 population

groups "which at one time or another must constitute the human resources on which the (manpower) planner works". Group 3 (applicants) and Group 4 (entrants undergoing basic training) are of interest here. In a survey of the research needs thought relevant for each group "occupational vocational interests" (p.8) is a specified factor for applicants and an "expanded assessment of aptitudes and interests" a factor for new recruits (p.9).
The Canadian Defence Work Program report contributed to the TTCP Subgroup U - dated June 1979, - recently received, mentions amongst its brief abstracts of individual projects under the heading Item 1 "Selection and Classification Procedures for Men":

    a.   collection of criteron data for validation of their Vocational Interest Inventory, and

    b.   "confirmation of the relationship between the characteristics of a trade/training course and the vocational interest scales used in assigning the individual to the trade".

Item 7 entitled "Counselling Procedures" leads off "A computer based vocational counselling program developed for use by the Canadian Employment and Insurance Commission is being assessed for use in military trade assignment and for retirement assistance Counselling. Validation work continues on a vocational interest inventory designed for military occupations...........".

The US Air Force Human Resources Laboratory issued a report dated October 1978, author W. E. Alley, entitled "Vocational Interest - Career Examination (VOICE): use in application in counselling and job placement". This instrument is contrasted by Alley with the Strong-Campbell Interest Inventory (Campbell 1974) and the SVIB (1966) as follows "Whereas most of these inventories focus on college-oriented professional occupations, the VOICE concentrates on clerical, service and blue collar careers that typically do not require general education beyond the high school level although some technical training may be involved." (p. 16) Shades of the EZ.

Cronbach (1970) assigns his Chapter 14 to interest inventories (p.455 - 488) and notes the following;

"Interest tests can discriminate men satisfied in a job from those who are dissatisfied (Perry 1955)" p.472
".... interests forecast satisfaction; interests and ability taken together give an excellent prediction." p.472

(NOTE: 1 Psychological Research Unit, AA Psych Corps has published a number of studies using measures of satisfaction with Service life (O'Gorman 1972 (a)(b), Owens 1969, Salas 1967,1973) and its consequences but at no time were occupational interest data ever contemplated as a possible explanatory variable).

On p.475 Cronbach refers to interests in terms of predicting job success. "He (Clark, 1961) suggests that perhaps interests predict grades of students (in vocational training) in the middle range of the ability distribution if not elsewhere" and "Interest cannot save the uncapable; lack of interest cannot spoil the chances of those with high aptitude. In the middle range perhaps interests matter more".

Cronbach concludes "Perhaps the most reasonable summary is this: a person with interests and abilities suitable for an occupation can and will do well in it, a person with suitable abilities but unsuitable interests can do well but may not and a person with low aptitudes will do badly." (p.476)

SUMMARY

Little comment seems necessary on the attitudes displayed and actual projects now under way overseas concerning vocational interest data in the military setting except to add that these do tend to support the present writer's opinions about the desirability of greater local Service use of these data and his contention that existing measures of vocational interests are not fully appropriate for DFRC and other Service uses. Further, as a participant in the Technical Co-operation Programme of the Sub-Committee on Non-Atomic Military Research and Development (NORAD), the presentation of a fresh approach to the measurement of occupational interests in a general military setting could well be a timely contribution by the Royal Australian Navy Psychology Service.

EZ AND JOBLIST

Background and Development

Some years ago the present writer experienced an urgent need for a more readable, shorter and less method-ridden alternative to the RMIB. Holland's system possessed immediate appeal but experience in the particular setting showed that the VPI was not the answer. This latter was initially suggested by an Occupational Check List (OCL) devised by Anthony Crowley and published by Tudor Press for the Careers Research and Advisory Centre, a UK organization. The format of the EZ is based on this instrument. OCL items took the form of job activities, many of them quite lengthy and obviously pitched at the usual Year 12 and above audience. In fact Crowley declares in his manual that OCL items are devised for students of above average ability, avoiding "occupations or activities which ... are unacceptable to most young adults or students of above average ability e g. 'operate a knitting machine', 'collect garbage'".

An attraction of the OCL was that it used the Holland six category approach. However, if the aims of the exercise were to be met, items reflecting occupations requiring Year 12+ entry or training qualifications were to be avoided. Since all VPI and OCL category "I" (Investigative) items pertained to such occupations as "chemist", "astronomer" and "independent research scientist" the whole category was deemed conceptually inappropriate for EZ. It was replaced originally by a category of items which is today labelled "r" ("little r"). "r" comprised the types of occupations Crowley thought of as below the social threshold of his respondents e.g. "pack chocolates in a factory", "repair motor mowers" and so forth. This modification in effect gave the proposed blank a double load of Realistic category items but in view of the assumed occupational aspirations of the target population this was, and still is thought of as an appropriate feature for a blank of this nature. (NB: "R" occupations are also over represented on RMIB i.e. MECH + PRAC + OUTD). It remains the one major departure from the Holland orthodoxy taken by the present writer and it effectively reduces the six original Holland categories to five with an anticipated distortion of the circumplex pattern of category intercorrelations which has been repeatedly deomonstrated on VPI data over a variety of samples. (Holland, 1973) (This consideration does not apply to JOBLIST where the "I" Category has been retained intact).

After this decision the task ahead lay in generating items representative of the remaining five Holland categories (Realistic, Enterprising, Clerical, Artistic and Social) which featured a high level of readability (i.e. "easy" = EZ) and were pitched at the assumed occupational aspiration level of non-academic school leavers located at around the Year 9/10 educational level.

Because of the relative difficulty found in generating EZ items, it became apparent why most existing occupational interest inventories might appear to be exclusively pitched for use on a Year 12+ population. Not only have they been, in the main, prepared by academics for use on academics but the items for these are quite easy to generate i.e. "doctor", "accountant" "biologist ", "engineer" etc. (In fact a panel of psychologists could probably produce a reasonable pilot version of a new blank in half a day using unaided memory).

After EZ, JOBLIST practically wrote itself with items easily obtained from Commonwealth Employment Service (CES) lists, dictionaries and other sources and which seemed most representative of the particular Holland category under consideration. The remainder of this paper however is confined to an explanation of the development of EZ.

DEVELOPMENT OF EZ

The following table, with acknowledgements to Bongers (1977) sets out the Holland personality types and their preferred (and rejected) activity options, with the exception of "I". As described above, the usual Category "I" (Investigative) has been replaced by "r" in the construction of EZ.

Table 1

Holland's Personality Types with Outline of

Some Activity Preferences and Aversions

Form EZ

Personality Types		Activity Preferences and Aversions
Realistic	(R)	A preference for manipulating objects, tools, machinery, or things and an aversion for educational or therapeutic activities.
realistic	(r)	A preference for semi-technical or semi or unskilled practical activities which are often linked to an out-doors work environment and an aversion to educational or therapeutic activities.
Artistic	(A)	A preference for broadly artistic or creative employment and an aversion to activities of an explicit, systematic, or ordered kind.
Social	(S)	A preference for supportive, therapeutic, or educational activities and an aversion to ordered, systematic work involving objects, tools, or machines.
Enterprising	(E)	A preference for directing or manipulating people with a view to attaining organizational goals or economic gain and an aversion to observational or symbolic activities.
Conventional	(C)	A preference for clerical type activities which entail the systematic handling of data or records and an aversion to ambiguous, exploratory, and unsystematic tasks.

On the Crowley OCL each Holland category is represented by eighteen items. This number seemed reasonable in terms of reliability in this context and was retained giving EZ a total of 108 items (RMIB has 144, VPI has 160 (only 84 are occupationally keyed) and the prestigious SVIB (Strong 1966) no less than 399).

Departing from the usually preferred convention of presenting independent checklist items in randomized sequence each group of 18 EZ category items is presented in three blocks of six items all contained in three columns, each of six blocks presented in the vertical order R.E.r.C.A.S. This is the format in which Crowley arranged his items and its appeal is immediate and vast in terms of overall category scoring and scored individual item visibility. A glance at the attached EZ will illustrate. The price paid will be a chorus of objections to non-random, block item presentation but unless either EZ or JOBLIST (same structure) prove a psychometric disaster the relative crudeness of item presentation is claimed to be offset by such a high level of convenience and an administration speed unknown with previous occupational inventories as to make the advent of these blanks something of a breakthrough.

Since the matter of EZ item selection, development and interaction is necessary but perforce dull this will be relegated to a separate section. However reference must be made at this point to major elements in the first revision of EZ. (EZ Revised)

After consideration of the Service environment and also the mystique surrounding Service apprentice selection, the following changes were made to Category R (Realistic) and Category r (also realistic). Of the 18 Items in the original EZ R Category twelve different trades were covered by as many items. The remaining six items all referred to outdoors located employments of a semi or unskilled kind.

It was decided to replace these latter six by six trade items giving R a full complement of trade items. The six replaced items were shifted en bloc into category r replacing over or under endorsed – items there.

The result may have been an improved differentiation between R and r. Both are Realistic but every R item is now a proclaimed trade with the usual technical and manual craft overtones. Category r now reflects outdoors, semi and unskilled realistic occupations.

A format change occurred in the replacement of the original invitation for the respondent to freely write in "your favourite job activity if you do not see it listed" by an equivalent device used in the RMIB i.e. "Now write the 3 occupations you would like best of all".

1 _____   2 _____   3_____

The effect of this has been notable. Much more use has been made of this section than was ever addressed to the previous one and main EZ users agree that the data obtained are a useful addition to the data obtained from the list proper at DFRCs. In the matter of expressed vocational preferences vs. those obtained by structured inventories Holland states that the former are as valid in terms of prediction as inventory results. Others including local authors[2] also comment favourably on the validity of freely expressed vocational preferences compared with those instrumentally derived.

[2] Athanasou, J. A. and Evans, J. C.

The second revision EZ (Jan 79) which is in current use here and there saw items in R which suffered too high or too low endorsement rates being replaced this time in a conscious effort to employ Navy oriented items in lieu, e.g. "plastics technician", (underendorsed) was replaced by "communications technician" in a gesture towards some of the ETs[3]. Additions to the format of the Jan 1979 version of EZ included a place on the front cover for the writing in of Navy Employment preferences and extension of the three scoring code cells to six. The former addition is often found handy as the category preferences entered (or often NOT entered) on the DR1 are out of date or have become changed. Differences between EZ and DR1 in this regard can often reveal a development in applicant thinking or attitude.

EZ Item Selection and Validation

Not too many sources suggested EZ items. Most were author generated. Commonwealth Employment Service practitioners [4] engaged in parallel work provided significant assistance in the matter of item validation. Over 100 prototype EZ items were given validation runs over CES procured samples and these workers' own items were made freely available to the present writer in the course of these amiable transactions. Other validation runs were made on male and female students at Victorian technical and high schools across Forms 1 to 6, urban and country. Respondents were given a list of randomly allocated items and a brief description of the Holland categories. Each was asked to assign individual items to the category (or categories) to which they thought it best belonged. CES workers used a larger number of categories according to their own rationale but this did not noticeably affect the meaning of their results for EZ.

The first version of EZ was run by the writer in DFRC(V), some observations were made and a revised version produced. Data such as frequency of item endorsement and overall mean preference patterns for males and females were computed. Sydney practitioners (K.De Josselin, P. J. Oswald) evidenced interest and introduced EZ into their procedures. R. Paviour started using it at this centre and A. Gallimore (Brisbane) and A. Eassie "HMAS LEEUWIN" and V. Stevens (WADFRC psychologist) also adopted it. Annette Eassie supplied an item endorsement frequency count on 200 serving Junior Recruits plus some data on the use of EZ at JR categorization. Alan Gallimore produced a "civilianized" version and had it administered to several Brisbane male and female high and technical school students. Cheryl Gedling and Richard Paviour helped in item analyses and with statistics and Richard also contributed significantly in the generation of replacement items for the first EZ item revision and format change. Robert Nixon contributed. 80 completed EZs from serving apprentices.

The layout format is not easy to accomplish on a normal steam driven typewriter and for these efforts I thank Cheryl Gedling of this Office. Judy Chapman ran EZ across applicants in her recent recruiting tour after sailors for Recruiting Duties and has supplied tabulated EZ and other data.

Thank you all.

Concurrent Validation

LTCOL Dennis Armstrong, CO 1 Psychological Research Unit, AA Psych Corps kindly ran EZ and JOBLIST across serving Army Apprentice samples concurrently with his RIB/RMIB evaluation programme. Factored data on this are now to hand

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[3] at the suggestion of P. J. Oswald

[4] Nita Cherry, Linda Gatiss, John Urbano

(11)

and will be discussed in the next section.   Other correlational data were kindly
processed by CO and other members of the Research Unit in collaboration with
the present writer prior to the move of 1 Psychological Research Unit.   The
local RAAF Psychology Service, via S. Harkness and staff agreed to run EZ (and
later JOBLIST) with VPI across their normal selection groups and several 100+
samples were obtained.   Their contribution is also much appreciated.

Some Comments on the EZ in Practice

Practitioner acceptance at DFRC has appeared fairly readily, doubtless
aided by the relevance of the EZ rationale and format to the non-officer app-
licant population.   Brevity of scoring and directness of access to items also
has its appeal.

The fact that EZ can often be administered pre-or post-interview at
one's table by the psychologist who may be briefly engaged recording or summ-
arizing PRC data is a convenience where individual referrals are concerned.
A special room/desk/chair need not be found and the psychologist can score the
protocol in a matter of seconds.

The Holland rationale is easily absorbed after a minute's reading and
the actual categories easily remembered.   As noted earlier most service employ-
ments can be fitted into one of the Categories without too much strain although
some unclear instances will always remain arguable one supposes.

The least agreeable, yet probably one of the most meaningful tasks
connected with EZ use is the faithful recording of results on the PRC.   Apart
from their statistical use in possible validational research, practical utility
of these is easily foreseen in future occasions by other psychologists e.g.
if an applicant's original category preference which is supported by EZ results
does not eventuate and the person is otherwise categorized future attempts at
Transfer of Branch back to the originally desired employment would hold more
realism in light of these data.   Consistent support from EZ administered at
the time of attempted TOB would be some value to the interviewing psychologist.
The same situation occurs much more frequently with repeated applications at
DFRC.   Often an apparently developmental theme emerges over the course of re-
peated applications by juniors.

Interpretation and Observations

No norms exist.   In brief - the interpretation is open to the indiv-
idual practitioner in much the same fashion as is the SDI and the generation
of personal hypotheses and observations is invited.   Tables attached to this
paper provide summary statistics on mean category preference for a number of
samples.

An individual protocol with none or one or two only scattered endorse-
ments is as meaningless as one in which most items are endorsed.   However,
recording such data is worth-while particularly in the case of junior applicants
(NA, JR) where changed patterns often occur with reapplication.   If this occurs
in what seems a productive, more meaningful direction a degree of maturation
might be inferred.

Working perforce from the Navy recruiting literature the following
tentative EZ Category allocations of Navy General Enlistment (GE) employments
are made:

Table 1a

Realistic   (trade, skilled, technical)

ETS, ETC, ETW, ETP, ATW, ATC, WM, MTD, MTH, ATA, COMS, SR, MET

Enterprising

Nil but possibly sailors for PTI: Recruiting Duties

r (realistic, semi/unskilled)

SE, UC, AVN, WM, CD, QMG, CK

Clerical

WTR, SN, SAV

Artistic

PH, MUS, (CK possibly)

Social

DA, MED, STD

The present writer requests informed comment on the above allocation.

SUMMARY

EZ data are to be seen only as another, limited, input to the variables upon which DFRC practitioners base their recommendations to the RSO.   At times they seem clear cut either in support or against, at others they have little or no meaning in spite of item scrutiny.   However, if you decide to employ EZ across as many non-officer samples (including individuals) as encountered you will probably find, as some of us already have, that you don't want to do without it.

Table 2

EZ Category Scores (males)
($\bar{x}$ respondent scores per category)

EZ CATEGORY	RAN APPLICANTS				RAN SERVING			RAAF APPLICS
	GE[a] n = 100	GE "OLD"[a] n = 50	GE "YOUNG"[a] n = 50	JR n = 100	NA[c] n = 100 $\bar{x}$ IQ 107	NA[b] n = 80	JR[b] n = 100 $\bar{x}$ IQ 105	GE MALE n = 124
R Realistic (trades)	3.64	3.08	4.2	3.51	7.32	6.20	4.55	4.95
E Enterprising	1.45	1.34	1.56	1.57	1.43	1.10	1.49	2.44
r Realistic (Outdoors, semi/unskilled)	3.03	3.06	3.00	3.41	3.55	3.10	4.01	3.10
C Clerical	0.76	0.82	0.70	0.47	0.71	0.40	0.72	1.34
A Artistic	1.94	2.00	1.88	1.99	1.83	1.80	2.43	2.83
S Social	2.10	2.38	1.82	1.60	2.77	1.50	2.27	3.40
Ranking	RrSAEC	RrSAEC	RrASEC	RrASEC	RrSAEC	RrASEC	RrASEC	RSrAEC

a. same sample   b. per favour Annette Eassie and Robert Nixon   ⚡ RAAF DPRC(V)   c. 50 ex DFRC(V) 50 ex DFRC(Q)

RAAF APPLICS	NA APPLICS	Serving JR	$\bar{x}$ subject score per blank Serving NA	GE (Young) <18 yrs	GE (all)	GE (old) >18 yrs	JR APPLICS
18.06	17.61	15.47	14.2	13.16	12.92	12.66	12.55

Glossary: GE = General Entry   JR = Junior Recruit   NA = Navy apprentice

Table 3

EZ category scores
($\bar{x}$ respondent score per category)
male non service respondents

EZ CATEGORY	Academic Course[a] Q. Form 4, n = 45	Technical Course[a] Q. Form 4, n = 80	Acad + T.S. n = (45 + 80) = 125	1978 WND appr applics n = 277
R Realistic (trades)	2.82	4.69	4.02	7.07
E Enterprising	2.49	1.44	1.82	1.61
r Realistic (Outdoors/ semi/unskilled)	2.36	3.11	2.86	3.73
C Clerical	1.20	0.62	0.66	0.59
A Artistic	2.38	2.03	1.78	2.82
S Social	1.22	0.82	0.82	2.62
Ranking	REArSC	RrAESC	RrEASC	RrASEC

a. per favour Alan Gallimore from Brisbane schools   WND = Williamstown Naval Dockyards

$\bar{x}$ respondent score per blank

Non acad	Acad	WND Appr
12.71	11.94	18.45

Table 4

EZ category scores (females)

($\bar{x}$ respondent scores per category)

EZ CATEGORY	WRANS APPLICANTS			SCHOOL STUDENTS	WRAAF
	GE[a] n = 200	GE "OLD"[a] n = 100 >18 yrs	GE "YOUNG"[a] n = 100 <18 yrs	Form 4 females $\bar{x}$ age = 15 3/12 yrs n = 39 ("academics")[b]	GE applicant[c] n = 70
R Realistic (trades)	1.74	2.00	1.46	0.49	3.27
E Enterprising	3.04	3.38	2.67	3.44	4.13
r Realistic (Outdoors, semi/unskilled)	2.87	3.35	2.35	2.08	1.60
C Clerical	4.17	3.94	4.33	3.31	5.41
A Artistic	4.18	4.40	3.94	5.85	4.84
S Social	6.60	7.13	6.02	5.23	7.76
Ranking	SC/AErR	SACErR	SCAErR	ASECrR	SCAErr

a. = same sample   b. = per favour Alan Gallimore from Brisbane schools   c. = per favour DPRC(V) RAAF Psych staff

$\bar{x}$ subject score per blank

WRAAF	WRANS (OLD)	WRANS (YOUNG)	FORM 4 FEMALES
27.01	24.2	20.70	20.38

Comments on Tables 2, 3, and 4

The most striking feature is the modification to response patterns according to the sex of the responder. The ranking of category preferences for male service applicants fall roughly RrA/SEC; for females roughly SC/AErR. The women tend to have higher mean overall response levels than men with some possible differences in response level between older and younger female sub groups. This effect does not appear with males.

With males there is an almost total preference for Realistic categories and almost total rejection of Enterprising and Clerical categories. With female service applicants the Social category is the most preferred and Realistic categories are uniformly rejected. The male non-service applicant also features Realistic as most preferred with Clerical most rejected.

Although subsamples are small there seems a trend for male technical school students' and Williamstown Naval Dockyard (WND) apprentice applicants' ranking patterns to be similar with both at variance with those of male, academic, high-school students. Both WND and Technical School student rankings appear similar to those of Navy applicant groups.

Intercorrelation of EZ scales

	R	E	r	C	A	S
Male RAAF GE applicants; N = 124

	R	E	r	C	A	S
R						
E	38					
r	78	51				
C	27	49	32			
A	36	49	36	18		
S	43	49	48	38	51	

Intercorrelations of Holland VPI scales scores (N 1234)

	R	E	I	C	A	S
R						
E	30					
I	46	16				
C	36	68	16			
A	16	35	34	11		
S	21	54	30	38	42	

To compare values in Table 5 to those in the standard Holland VPI intercorrelation model (Table 6) (occupational scales only) the correlations in both matrices were converted to Z scores (Guilford 1956 pp 325-6) and compared arithmetically. See Table 7 for results.

Table 7

Z score differences between Holland's VPI scale intercorrelations, (n = 1234) and those for EZ scales intercorrelations on a RAAF GE applicant sample (n = 124)

	R	E	C	A	S
R	-				
E	09				
C	10	29**	-		
A	22*	17	07	-	
S	25**	06	00	11	-

NOTE: VPI "I" scale and EZ "r" scales have been omitted

Comments

As Table 7 indicates, seven of the ten possible comparisons between EZ scale intercorrelations and the model intercorrelations between VPI scales do not differ significantly. Where this does occur (E vs C, R vs A, R vs S) the following observations might be of relevance.

Scrutiny of E and C items reveal some C items which, while office-bound, do have personal contact (E) overtones i.e. "make appointments for people to see a doctor", "make hotel room reservations".

R and A interactions could be too close due to the fact that several Artistic items are highly manual craft oriented i.e. "carve objects out of wood", "design jewellery", "paint signs and advertisements"; the latter two are in fact trades in Victoria. A number of Social items appear to have Realistic overtones despite their altruistic aims i.e. "be in a search and rescue team", "be a firefighter".

The S items mentioned have been dropped or reallocated in the latest version of EZ solely on observational grounds. Since the correlational data are only freshly to hand the E and C and R and A closeness was only highlighted recently and dropping or reallocation of the Clerical items thought responsible will occur in the next version of EZ.

It should be appreciated that VPI scale intercorrelations from the same sample also reflect a closer relationship between VPI scales than does the Holland model as Table 8 discloses.

Table 8

Matrix of Z score difference between Hollands VPI scale intercorrelation model (n = 1234) and those for VPI scale intercorrelations on a RAAF GE applicant sample (n = 124)

	R	B	I	C	A	S
R	-					
B	09	-				
I	06	44**	-			
C	-07	19	36**	-		
A	16	34**	23*	29**	-	
S	06	29**	37**	33**	17	-

Table 9

Intercorrelation of EZ scales WRAAF GE applicants (n = 70)

	R	B	r	C	A	S
R	-					
B	20	-				
r	72	22	-			
C	02	54	13	-		
A	49	59	32	21	-	
S	34	46	32	32	46	-

Eight of the possible fifteen intercorrelations are seen to differ significantly from those of the Holland model. However, in both the EZ and VPI cases in this instance, other samples may well produce different results. Intercorrelations for a female sample suggest this strongly. (see Tables 9 and 10 and 10a).

Table 10

Matrix of Z score difference between Holland VPI scale intercorrelation model (n = 1234) and those for EZ scale intercorrelations on a sample of WRAAF GE applicants (n =70)

	R	B	C	A	S
R	-				
B	-11	-			
C	-36**	-23	-		
A	38**	31*	10	-	
S	14	-10	-07	05	-

Table 10a

Matrix of Z score difference between the Holland VPI scale intercorrelation model (n = 1234) and those for VPI scale intercorrelations on a sample of WRAAF GE applicants (n = 70)

	R	B	I	C	A	S
R	-					
B	08	-				
I	05	42**	-			
C	-14	00	18	-		
A	34**	26*	50**	10	-	
S	11	-01	35**	16	01	-

Table 11

EZ vs VPI

Male RAAF GE applicants (n = 124)

	R	E	r	C	A	S
R	_51_	13	_41_	18	19	25
E	13	_48_	13	31	35	35
I	18	23	13	27	31	30
C	09	27	08	_43_	16	27
A	04	25	03	13	_58_	21
S	-01	26	00	26	30	_51_

Table 12

EZ vs VPI

WRAAF GE applicants (n = 70)

	R	E	r	C	A	S
R	_59_	09	_52_	01	27	24
E	06	_56_	08	33	36	33
I	46	43	27	19	62	47
C	-09	45	-001	_66_	05	27
A	40	43	27	09	_73_	38
S	19	55	15	44	29	_63_

Table 13(a)

Intercorrelations -

RMIB vs EZ

Serving AAS apprentices (n = 96)

a. Initial administration of RMIB on application for AAS in year 1974. EZ administered in year 1977 to same sample.

1974	R	E	r	C	A	S
OUT	35**	-09	30**	-12	-02	-02
MECH	27**	-07	27**	05	-19	-02
COMP	-18	04	-17	11	-35	-08
SCI	-09	00	-01	07	-05	03
PERS	-18	-06	-13	11	-17	-07
AESTH	03	-09	-05	-09	19	-20
LIT	-22	-07	-27	-09	29**	-04
MUS	-11	06	C1	04	40**	01
SS	-05	19	-07	06	13	29**
CLER	-15	00	-20	00	-28	-02
PRAC	38**	-08	22*	-13	-05	-12
MED	-12	16	03	10	05	22*

Sign r @ df 90

5% = 0.21

1% = 0.27

Table 13(b)

b. RMIB readministered to 96 serving AAS apprentices in 1977 with concurrent administration of EZ (n = 96)

1977	R	E	r	C	A	S
OUT	35**	00	21*	-39	-17	-12
MECH	19	-05	10	-10	-38	-12
COMP	-14	00	-04	35**	-33	-03
SCI	-06	07	00	02	-06	-10
PERS	-22	-11	-15	07	00	-17
AESTH	-07	07	-03	-17	57**	-03
LIT	-17	-09	-20	-08	52**	04
MUS	02	-04	-04	03	49**	06
SS	-20	-03	-08	12	09	41**
CLER	-08	05	01	32**	-33	-05
PRAC	31**	-08	02	22	-29	-14
MED	00	17	05	06	02	21*

Sign r @ df 90

5% = 0.21

1% = 0.27

Concurrent Validation

Appropriate cell values in Tables 11 - 13b suggest that EZ items and those measuring VPI and RMIB categories are roughly comparable and within the limits described by Cronbach for intercorrelations between differing occupational interest blanks.

A factor analysis of RMIB vs EZ (1977 AAS apprentice data) revealed that 5 eigenvalues greater than unity accounted for 92% of the variance. Rotated for seven factors the data fell as follows:

TABLE 14

1	2	3	4	5	6	7
OUTD	AESTH	COMP	SS	SCI	MED	PERS
MECH	LIT	C	S			
PRAC	MUS	E				
R	A					
r	E					

Apart from the equivalent loading of E on factors 2 and 3 (and not on 7) the results appear fairly intelligible.

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FORM EZ

Title	:	Occupational Interest Blank Form EZ.
Background	:	Developed by R.G. Salas, Area Psychologist (Navy) for use in all non-officer screening and where indicated in in-service counselling & assessment situations.
Type	:	An inventory measure of occupational interests based on the Holland rationale.
Form	:	Each of the six Holland interest categories is represented by 18 items giving an item total of 108 in a throwaway booklet.
Range	:	For use on males and females aged above 14 years.
Application	:	Designed specifically for use on individuals devoid of interest in and/or ability for occupations requiring educational qualifications higher than Year 11.
Retest period	:	At practitioners' discretion.
Parallel Forms	:	None
Time limits	:	None. Takes six to seven minutes overall including identification and test instruction tasks.
Marking	:	Subjects underline items of interest to them.
Scoring	:	Simple tally of underlined items, as follows.

The top six items in each column purport to reflect
interest in REALISTIC (R) occupations (i.e. items 1-6,
37-42 and 73-78). The next six items in each column
are ENTERPRISING (E) items; the next six are "little r"
(r) items; the next are CONVENTIONAL (C), the next
ARTISTIC (A) and the last six items in each of the three
columns measure interest in SOCIAL (S) occupations.

References : a. Holland, J. L. Making Vocational Choices:
              a theory of careers. Eaglewood Cliffs,
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           b. Salas, R. G. A more realistic approach to the
              measurement of occupational interests in a
              Service setting. Part I Form EZ
              1 Psych Research Unit, Campbell Offices,
              CANBERRA, ACT.

Documentation	:	1.	EZ Category scores and expressed free preferences are to be entered in the last four lines of page 2 of Navy PP126 (below section 40) as follows.

(example)

EZ		EXP	
R 6	C 0	1.	Carpenter
E 0	A 2	2.	Build furniture
r 3	S 1	3.	_____

Results of subsequent administrations of EZs are to be entered alongside original results accompanied by the date of re-administration.

2. In the case of SCR1A ("trailer cards") results of EZ are to be entered in a space in Section 7.

DIRECTIONS FOR ADMINISTRATION

HAND OUT TESTS AND HAVE SUBJECTS COMPLETE APPROPRIATE IDENTIFICATION DATA.
READ TEST INSTRUCTIONS ALOUD TO SUBJECTS, PAUSE FOR QUESTIONS

SAY

"Open booklet and start work.   (pause)   Remember to work down the page"

OCCUPATIONAL CHECK LIST - FORM EZ (JAN 79)

SURNAME ....

INITIALS .... MALE/FEMALE ....

DATE OF BIRTH .... AGE ....

DATE TODAY ....

INSTRUCTIONS

Read through the list carefully. When you come to an
activity which you think you would like to do if you had
a chance, UNDERLINE it.   Do not worry about wages or
whether you think you could succeed in these activities,
but just pick out the kinds of things you would like to
do and underline them.

NAVY EMPLOYMENT PREFERENCES

1st ....

2nd ....

3rd ....

WORK DOWN THE PAGE

1. Make and repair scientific instruments
2. Spray-paint automobiles
3. Repair refrigerators and air conditioners
4. Be a communications technician
5. Make steel tools
6. Construct furniture

7. Sell goods in a store
8. Advise people on travel arrangements
9. Survey shoppers about their product preferences
10. Operate a sideshow at an amusement park
11. Sell new or used cars
12. Take peoples' orders for meals in a cafe

13. Feed and groom horses
14. Be a builder's labourer
15. Drive a truck
16. Be a gardner or farmer
17. Catch fish for a living
18. Search for gold in the bush

19. Prepare bills to post to customers
20. Be a receptionist
21. Collect and sort mail in an office
22. Order goods over the telephone
23. Use an adding machine
24. Be a courtroom stenographer

25. Paint pictures
26. Design jewellery
27. Paint signs and advertisements
28. Carve objects out of wood
29. Take colour photographs for a magazine
30. Decorate wedding and birthday cakes

31. Work for a charity
32. Help raise money for a pensioners' home
33. Care for sick animals
34. Be a member of a church welfare group
35. Take handicapped people on outings
36. Help to arrange jobs for released prisoners

37. Repair TV or radio sets
38. Weld metal
39. Wire houses for electric light and power
40. Service and repair car engines
41. Install gas and water pipes
42. Work with timber as a carpenter

43. Manage a touring sports team
44. Own and operate a service station
45. Sell houses and real-estate
46. Manage a public relations firm
47. Organize people at conferences
48. Lead and direct a sales team

49. Control airport car traffic
50. Drive a railway train
51. Cook food in a cafe or hotel
52. Repair motor mowers
53. Operate a power shovel
54. Be a security guard

55. Answer telephones and take messages
56. Be a secretary in a business
57. Write out airline tickets
58. Keep a firm's books
59. Make appointments for people to see a doctor
60. Be an accounts clerk

61. Be a newspaper reporter
62. Design modern furniture
63. Write a book or play
64. Design TV or theatre sets
65. Write short stories for magazines
66. Work with books in a library

67. Care for sick people in a hospital or home
68. Help give first aid to accident victims
69. Help to run a youth club
70. Try to assist families in trouble
71. Help people to choose a career
72. Help injured people through exercises

73. Service and repair office machines
74. Test and service aircraft engines
75. Build with bricks and mortar
76. Work with sheetmetals
77. Build boats and other seacraft
78. Be an airframe mechanic

79. Greet tourists and guide them around
80. Be a door-to-door salesperson
81. Run a radio talkback show
82. Interest customers in a new product
83. Manage a car rally
84. Work at a store Inquiry Counter

85. Operate a fork-lift
86. Be a firefighter
87. Install TV aerials
88. Be in a search and rescue team
89. Operate a drive-in movie projector
90. Be a tradesman's assistant

91. Work in a bank
92. Make hotel room reservations
93. Type police reports
94. Work in a school office
95. Accept money and write receipts
96. Work in the office of a garage

97. Sing or play in a musical group
98. Design fashions for men or women
99. Make up tunes and words for songs
100. Be an actor on TV, film or stage
101. Dance in a ballet
102. Lead a pop group

103. Plan interesting activities to help sick people recover
104. Try to help people with marriage problems
105. Train blind persons to use guide-dogs
106. Care for sick children
107. Assist young offenders on probation
108. Help migrants with their problems

Now write the 3 occupations you would like best of all:
(need not appear above)

1._____
2._____
3._____

R _____
E _____
I _____
C _____
A _____
S _____

CODE