

Medical Psychological Research Lab.
National Defence Medical Centre

5 February, 1964.

Report on a Special Project

Reference (a): Previous report by Dr. F.R. Wake (undated)

The following is a report of progress on the special project outlined by Dr. Wake in reference (a). This report covers the period 16 September, 1963 to the present time.

Personnel

LCDR J. C. Lawless, RCN, was appointed to the project on 16 September, 1963, and P1MA4 R. Moore, RCN, was drafted to the National Defence Medical Centre as a technician to assist LCDR Lawless effective 21 October, 1963. Both have been employed on the project on a full-time basis since that time. Dr. F. R. Wake continues on a part-time basis as Consultant Psychologist, as does Dr. F. R. Chalke as Consultant Psychiatrist.

Facilities

A Medical Psychological Research Laboratory has been set up in rooms 630-632-634 of the National Defence Medical Centre and is under the charge of Group Captain A. M. Beach, RCAF, Chief of Psychiatry.

Major T. Roy and Flight Lieutenant N. Vaness will also be using these facilities for research which is quite independent of the special project. However, arrangements will be feasible in this situation to keep the special project secure from any personnel not intimately connected with it.

Equipment

The procurement of equipment has been slow and difficult for three reasons. The laboratory has to be established with no basic equipment to begin with. Secondly, as some of the major items of equipment will be used by other members of the staff for research independently of this project, it was necessary to consider each research project from this point of view. Lastly, the lack of familiarity of the staff with the type of equipment to be used has entailed a great deal of data gathering from several manufacturers. The decision to order a 4 channel Type R Dynograph Recorder and associated equipment from the Beckman Instrument Corporation was taken on 21 December and this will be installed by 31 March, 1964.

All other equipment necessary to construct a Hess-Polt type apparatus was demanded through normal Armed Forces supply channels in November. This was done in order to reduce the direct costs against the project, as well as to make use of equipment which is normally held by the Armed Forces. Two such items have already been delivered and further items are expected daily.

While awaiting delivery of equipment, considerable work has been done in investigating the most practical methods of photographing the pupillary reflex. The RCAF Photographic Unit at RCAF Station

Uplands has co-operated in this, and their advice and assistance has been invaluable in determining both methods and types of equipment required. Initial plans for the installation and connection of this apparatus have also been made, as well as plans for the construction of equipment to analyse the photographic data.

It is anticipated that all the apparatus will be installed and in working order by 15 April, 1964, and that processing of subjects can begin on or about that date. It is intended to build up as large a sample as possible during the summer months.

The Custance apparatus for the measurement of sweat has been investigated and might well produce some results for this project. Dr. Custance has indicated that, prior to an outright purchase of this equipment for project use, he would be prepared to lend us a portable apparatus for trial on its return from evaluation at the Royal Aeronautical Establishment, Farnborough, in April.

Financial

Part of the difficulty in obtaining equipment, notably the polygraph, was caused by having too small a research grant. This has been rectified by the Office of the Surgeon-General and the Defence Research Board and adequate funds for this year's major requirements were made available to the project in early January. An application for an appropriation of \$3,500.00 has been made for 1964-65 to continue the special project as well as the other research to be initiated in the Laboratory.

Progress Summary

The following is the state of research at present, with each method of investigation listed in the order of priority assigned by Dr. Wake in his abstract to reference (a):

- a) The Polygraph - Equipment to arrive by 31 March; arrangements are being made for PlMA4 Moore to obtain training in use and maintenance.
- b) The Hess-Polt Method - Equipment has begun to arrive; investigations have been made into most practical methods of construction, as well as into relevant stimuli.
- c) The Zamansky Approach - No research begun yet.
- d) The Palmar Sweat Test - Being investigated by Dr. Wake at the University. Immediate applications are not clear, but some progress has been made.
- e) Projective Tests - One study is being conducted at NDMC.
- f) Masculinity-Femininity Tests - One study is being conducted at NDMC.

Dr. Wake and LCDR Lawless visited the Institute of Aviation Medicine in Toronto in October to establish a liaison in the event of need for technical assistance in psychophysiology. Authority has been given to the project by Surgeon-General for direct liaison with IAM in matters of concern to the project, as well as for IAM to produce and construct any items of equipment which may be necessary. Dr. Wake attended the annual meeting

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of the American Association for the Advancement of Science in Cleveland, Ohio, in December for the purpose of investigating new developments in equipment which might be of use in this project.

A great deal of literature is being researched. Much of it bears only peripherally on the special project, while very little of it bears directly on it. The phases of research listed in Dr. Wake's original report are being adhered to as, thus far, no developments are reported in the literature which indicate any reason to change either the general approach to the project or the specific methods of investigation.

Current Thinking

The projective test and the masculinity-femininity investigation have been combined into a single project which got underway early in December. To date, 64 normal subjects have been used in this investigation and it is intended to enlarge this sample at a later date. While it had not been anticipated that the M-F and Projective Test would have any real value, some of the leads are sufficiently interesting as to make us mildly optimistic and to warrant further research. It will be necessary to attempt to streamline some of the projective tests, and further testing of subjects will continue in the direction of the most promising leads.

It is intended that the Hess-Polt apparatus will be combined with various psychophysiological measures on the polygraph, and that a sweat measuring device, such as the Custance apparatus, will be coupled in at a later date if it shows promise. The initial measures to be made with the polygraph will be the galvanic skin response, skin potential, heart rate, and respiration rate, with the pupillary reflex being recorded

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simultaneously. (The polygraph is capable of recording four responses initially, and is wired to record up to eight. The versatility is such that many other responses can be measured simply by procuring other couplers and transducers which are relatively inexpensive.)

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for F. R. Wake
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J.C. Lawless
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ADDENDUM

Since this report was written, Dr. Wake has attended the annual meeting of the Ontario Psychological Association, where he obtained information on three promising leads which bear on the project. It is intended to follow these leads up concurrently with the present work.

J.C.L.

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