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SOFTWARE PSYCHOLOGY AND THE COMPUTERISATION  
OF THE WEIGHTED APPLICATION BLANK

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ABSTRACT.

This study investigated the use of a Weighted Application Blank (WAB) for selecting candidates likely to pass the first year of a comprehensive nursing course. A subject pool of 415 comprehensive nursing course applicants was drawn from 1980 to 1985 first year Polytechnic classes. A discriminant analysis on the application form responses made by these subjects was performed. Computer software was then developed incorporating results from Human Factors research. The software aimed to computerise the WAB method of classifying applicants following principles of software psychology. A group of 50 computer naive subjects participated in an experimental evaluation of the software. Five subjects took part in initial pilot study trials of the software. The remaining 45 subjects' were divided into three equally sized groups. The subjects task was to enter eight sets of nursing course application form data. The "computerised" group received instructions on how to do this from the screen, the "written" group from a manual and the "verbal" group verbally from the experimenter. Time taken to complete the task and the number of errors made were recorded. Three ANOVAs were performed to establish if group exerted an influence on trial times or error rates. In addition, applicants were required to complete two questionnaires. The first prior to the experimental trials and the second following them. Results indicated that group influenced time taken on the task ( $F(1,294) = 7.43, p < .001$ ). Group did not exert an influence on errors made on each question

( $F(32,672) = 1.022, p > .05$ ). The interaction between errors made on each application form and group was significant ( $F(14,294) = 2.809, p < .001$ ) however the main effect for group of this comparison was insignificant ( $F(2,294) = 0.045, p > .05$ ). Responses to the questionnaires were evaluated and an assessment was made of the responses. It was concluded that the fields of human-computer interface design and personnel selection had been successfully combined. Leading to the expectation that an area of great research potential had been opened up.

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## CHAPTER ONE

### GENERAL INTRODUCTION

#### Overview.

The recent phenomena of widespread computer use means that many occupations now routinely incorporate computers. Tasks as diverse as the monitoring of a chemical plant and intermediate school education are two examples. It seems a small step therefore to suggest that the area of personnel selection should also be looking at the computerisation of some of its functions.

How this computerisation is carried out is something that few researchers have directly addressed. Techniques for personnel selection have long been discussed, as have guidelines for designing systems for interactive use, but how to design software to aid in the selection of people is a new area.

Personnel psychology is concerned with fitting people to jobs. Ideally then, organisations wishing to fill vacancies will use a technique, promoted by personnel psychologists, in the hope of eventually hiring an individual capable of performing the job. In practice selection does not often follow this ideal. Seldom is an Occupational Psychologist employed, instead reliance is placed on techniques found to exhibit dubious reliability and validity. Interviewing (Arvey, 1977) and testing (Muchinsky & Tuttle, 1979) are particular favourites, work samples (Robertson & Kandola, 1982) and trainability tests (Downs, 1977) are two alternatives. Use of work samples and trainability tests is often limited however due to the expense of administering them.

One promising method of selection is the Weighted Application Blank (WAB). The WAB offers several features other techniques lack. Most important is its low cost and ease of use. The WAB is based on information gleaned from the application form an organisation uses for recruitment. Often therefore the introduction of WAB processes mean that little additional effort or money must be allocated by the organisation. Using application forms filled out by past applicants it is possible to identify characteristics that distinguish between successful and unsuccessful job performance (England, 1971).

Human Factors engineering, also known as Ergonomics, is concerned with "fitting the job to the person". Rouse (1979) defines the field as addressing issues related to the design and evaluation of the interface between people and machines.

Too often Human Factors practitioners are involved in solving problems with existing person-machine systems. It would seem to make more sense for systems to originally be designed using Human Factors principles. The person-machine system to be examined here is the human-computer interface. This interface presents something of a challenge to Ergonomists, as the individuals for which the computer interface must be designed are extremely diverse in their expectations of and expertise in computer use. From information presented it is hoped it will be possible to design software appropriate for use by novice computer users.

Considering the large numbers of applications many organisations sift through each time they wish to fill a vacancy, it seems a logical step that some parts of this process become computerised. The present study aims to computerise a specific selection method. The measured

success of this adaptation will indicate whether this approach is appropriate. Further, it is intended that the software eventually designed will be usable by anyone, this includes individuals with no computer experience. Having set the goal of developing software for novice computer users it becomes necessary to acknowledge the particular needs of this group. Human Factors guidelines should help in fulfilling this goal.

The present study must address issues and describe the main techniques of personnel selection. It must also discuss the popular methods of computer software design. The marrying of these two areas of Occupational Psychology must then be evaluated through a study of both the predictive success of the selection method chosen and the most easily used version of the selection software.