THE EFFECT OF ENCODING AND RETRIEVAL MANIPULATIONS ON THE RETENTION OF 'SUBJECT-PERFORMED TASKS' IN NORMAL AGING AND ALZHEIMER'S DISEASE

A Thesis presented in partial fulfilment of the requirements for the degree of Master of Arts in Psychology at Massey University.

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ABSTRACT

This research examined a technique termed the 'Subject-Performed Task' (SPT) in which subjects physically enact a verbal instruction and are subsequently adminstered recall tests to determine what information is retained. SPT is consistently found to produce superior recall to verbal instruction alone in several populations which experience memory difficulties with standard memory tasks, such as older adults and those with Alzheimer's Disease (DAT). The present study examined three issues, the first of which concerned what type(s) of information encoded in SPTs might be responsible for this effect. The second concerned the manner in which SPT was thought to instigate automatic activation of semantic category information. Finally, a comparison was made between DAT and older adult subjects to examine the ability of both groups to retain SPT information in memory.

A total of 112 subjects (56 DAT subjects and 56 older adults) were presented with a series of 25 SPTs. The SPTs were presented visually and auditorally and were also demonstrated by an actor. Following presentation, subjects either performed the SPTs (motoric encoding condition) or verbally rehearsed (multisensory encoding condition) the randomly presented SPTs. Examination of automatic activation of semantic category information was assessed by comparing a relational recall condition which required categorisation of the SPTs into five semantic categories, with a free recall condition.

DAT group subjects showed very low levels of recall and no significant effects of encoding or recall manipulations were found. The older adults showed higher levels of recall and both motoric encoding and relational recall enhanced performance. Reasons for the failure of DAT subjects to benefit from SPT are discussed, and the re sults obtained by the DAT group and the older adults are evaluated in the context of three predominant theories of SPT and memory.

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INTRODUCTION

Overview

The past ten years have seen increasing interest in memory performance and the aging process. Many older adults experience a variety of memory problems, which create an unfortunate impact on their everyday lives. Other older adults experience similar problems, compounded by various disease processes which affect this age group predominantly. One serious disorder is Alzheimer's Disease or DAT (Dementia Alzheimer's Type). The introduction (section 1 and 2) presents literature detailing memory problems and their possible sources in both older adults and those with DAT.

There is some evidence that in spite of the presence of impaired memory performance, other areas of memory demonstrate preserved function. For example, while memory for verbal information may be affected adversely by the aging process, memory for sensory and motor information may be somewhat resistant. Furthermore, these preserved areas can be used to help compensate for impaired functioning. The present study examined preserved memory performance in older adults and those with DAT using a technique termed the 'Subject-Performed Task' (SPT).

In SPT, subjects are required to physically enact a verbal instruction. For example, when the verbal instruction of "fold your arms" is given, the subject is required to move their arms accordingly. The SPT can also involve the use of objects, the subject being asked in this case to "button the coat", or "lift the cup" and so on. After performing these actions, verbal recall tests are given to determine how much of the information in the SPT is remembered. Recall using SPTs is consistently found to be quantitatively superior to verbal instruction alone, in both DAT subjects and older adults. This is known as the SPT effect and section 3 presents a literature review of studies utilising SPT. These research findings are evaluated in the context of three predominant theories of SPT and memory. These are the multi-code model developed by Zimmer and Engelkamp (1989); the multi-modality model proposed by Backman, Nilsson & Chalom (1986), and the common-code model of Helstrup (1987).

The present study had three goals. The first was to determine more precisely the locus of the SPT effect. From other studies, it was not clear whether the locus of the effect was due to the total amount of information encoded in an SPT or whether a smaller set of motor features, perhaps those involved in movement, was responsible. The second goal was to determine if the retention of SPTs could be improved by the addition of advance semantic category information (relational processing). Results of other studies had found that category cues given at recall increased the level of recall. The third goal was to compare recall performance between DAT subjects and older adult subjects to examine the ability of both groups to retain SPT information in memory. Section four presents the rationale and design of the present study.