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**Age Differences in Recognition Memory: The Effects of  
Stimulus Presentation Mode, Stimulus Type, and Trial Difficulty**

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

Forty young and 40 older adults completed a verbal and non-verbal recognition task to determine whether there were age differences in recognition memory for three factors. The between-group factors included the age of the participant (young vs. older) and the mode of stimulus presentation (one-alternative, forced choice vs. two-alternative, forced choice). The within-group factors were the type of stimulus (words vs. shapes) and the level of trial difficulty, as indicated by the degree of target-distractor similarity (similar vs. dissimilar). Signal detection analyses indicated that recognition accuracy declined with age. Older adults showed consistently poorer recognition than their younger counterparts. In contrast to the pictorial superiority effect, recognition accuracy was impaired across the lifespan for non-verbal as opposed to verbal stimuli. In accordance with previous studies, items that were high in target-distractor similarity were recognised at lower rates than items that were low in target-distractor similarity. When the two-alternative, forced choice data were transformed to  $d'$  and adjusted for comparison with the one-alternative, forced choice data, the effect of Presentation Mode disappeared. This result is in accordance with the predictions of signal detection theory. In addition to the main effects, a significant Stimulus Type x Trial Difficulty x Presentation Mode, and Presentation Mode x Age interaction emerged, which qualified the interpretation of the main effects.

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## PREFACE

The rationale for the present study was to add to and clarify the findings generated by the Parkinson's disease programme being conducted under the guidance of Dr John Podd at Massey University. Parkinson's disease is an extrapyramidal disorder which is caused by the degeneration of dopamine-containing axons in the brain (Kalat, 1992). The symptoms characteristic of this disease include resting tremors, rigidity and slow movements (Kaplan, Sadock, & Grebb, 1994). Usually manifesting itself in older adults, Parkinson's disease has been associated with a decline in cognitive functioning (Breen, 1993; Dewick, Hanley, Davies, Playfer, & Turnbull, 1991). At present, there are disparate views as to the precise extent and course of cognitive impairment. While some argue that substantial decrements are observed (e.g., Ogden, Growdon, & Corkin, 1990, cited in Owen *et al.*, 1993) others maintain that there are no differences in cognitive ability between people with Parkinson's disease and age- and sex-matched controls (e.g., Flowers, Pearce, & Pearce, 1984). It is often reported that recall memory is significantly impaired, while recognition memory remains largely intact (Breen, 1993; Gabrieli, Singh, Stebbins, & Goetz, 1996; Owen *et al.*, 1993). The focus of the research programme at Massey University is to determine both the quantitative and qualitative nature of recognition memory in people with Parkinson's disease.

As part of his doctoral dissertation on recognition memory in Parkinson's disease, Mr Craig Whittington is currently developing a verbal and non-verbal test of recognition memory. He has been comparing the recognition performance of people with Parkinson's disease with age- and sex-matched controls using a two-alternative, forced-choice (2AFC) procedure. The motivation for the present study was two-fold. The primary objective was to collect supplementary data on the recognition performance of older, normal adults compared to a more youthful sample using Whittington's recognition memory test. A second objective of the study was to determine whether the mode of stimulus presentation in the recognition memory task would affect performance. While Whittington's study has used a 2AFC presentation mode,

the present study adopted both 1AFC and 2AFC presentation modes. Thus, the focus of the present study was more methodological than theoretical.