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The effect of ageing on confrontational naming ability

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Abstract

The change in confrontational naming ability accompanying normal ageing has been widely studied. However, inconsistent findings have been reported. Our study reexamined this issue by adopting both accuracy and response latency as indices for reflecting the effect of normal ageing on confrontational naming. Sixty normal and healthy, Cantonese-speaking Chinese volunteered for this study. Thirty of them belonged to the Young Age Group (YOUNG; $M = 19.77$ years, $S.D. = 1.5$ years) and 30 to the Old Age Group (OLD; $M = 71.47$ years, $S.D. = 6.51$ years). The instrument used was the Chinese Naming Test (CNT) for measuring confrontational naming. The findings indicated that younger people performed much better than older people on the test in terms of accuracy as well as response latency. The observed different performance between the young and old participants could not be explained by their different levels of education. No gender difference in performance on the test was observed. Our findings supported our initial hypothesis that normal ageing does have a negative impact on confrontational naming. The decline in naming ability with ageing may be multifactorial.

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1. Introduction

The act of naming is important for our understanding of objects in the world (Howes, 1979). The process of naming is immensely complex in its ramifications. To name an object, firstly, we have to detect the stimulus, find a suitable word representing the object, and respond through speaking out the corresponding word. In other words, in addition to the normal visual–perceptual function, successful naming requires effective semantic and phonological

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processing (Bowles, 1993)—functions that are highly indicated in the frontal and temporal regions for memory, retrieval, and executive functions. There have been numerous models proposed to understand naming (Amrhein, 1995; Bowles, 1993; Howes, 1979). Goodglass and Wingfield (1997) hypothesized that naming is a two-stage process. The first stage is the quick access of a direct link between the concept of an object and its name. If, for some reason, the link is disturbed, as in the case of tip-of-the-tongue or brain damage, the second stage takes place and a slower associative process takes over. The individual then attempts to self-prompt, using associated concepts or sounds (Tartter, 1998).

Naming difficulty, or anomia, is commonly observed in clinical groups with various neurological conditions, e.g., semantic dementia (Papagno & Capitani, 2001), head trauma, e.g., temporal damage (Miceli et al., 2000), and frontal damage (Papagno & Muggia, 1999). Naming difficulty is also a common complaint among the elderly. The decline in naming ability with ageing, if observed, may be multifactorial. One of these factors could be the decline in general cognitive ability accompanying normal ageing. Indeed, according to some researchers (Albert, Heller, & Milberg, 1988; Goulet, Ska, & Kahn, 1994), age decline in picture-naming abilities can be attributed to nonlinear modifications in cognitive function related to selective changes in the brain evolving at differential rates across the life span. There are findings that show various changes happening in old age. La Rue (1992) summarized different changes in the sensory, neurological, musculoskeletal, immunological, cardiovascular, respiratory functions, etc. of the elderly. The neurological changes include reduced brain weight and volume, loss of neurons and changes in dendritic arbors, increased neurofibrillary tangles and neuritic plaques, and other microscopic changes. All these changes may lead to possible intellectual changes, which could in turn affect naming ability.

In a PET study of the verbal recognition memory between people in the younger and older age groups, analyses of the performance data yielded evidence of age-related slowing of encoding and retrieval processes, and age-related decline in the accuracy of yes/no recognition. Investigation of regional cerebral blood flow (rCBF) associated with both encoding and retrieval showed bilateral prefrontal activation for older adults, but primarily right frontal activation for young adults. This increased activation could be a sign of inefficient processing as people age (Madden et al., 1999). According to Salthouse (1985), the slowing of the processing rate of mental operation accompanying normal ageing would make many cognitive strategies no longer effective or available for use. Brooks, Friedman, Gibson, and Yesavage (1993) found that although both younger and older adults used mnemonic strategies in remembering proper names, the younger adults recalled more names than did the older subjects. Van Gorp, Satz, Kiersch, and Henry (1986) observed that the mean scores of subjects aged between 59 and 69 years were commensurate with the norms of the Boston Naming Test (BNT) provided (Kaplan, Goodglass, & Weintraub, 1983) for younger individuals, whereas the scores for subjects in their 70s and older were consistently lower.

Schacter, Curran, Galluccio, Miberg, and Bates (1996) and Schacter, Osowiecki, Kasniak, Kihlstrom, and Valdiserri (1994) have pointed out that the frontal lobes are critically involved in effortful memory retrieval, which may fail in older subjects because they establish an unfocused representation of the encoding context when searching for the target information. Indeed, decreased performance on measures of frontal lobe functions associated with normal ageing has been widely speculated (Ardila & Rosselli, 1989). Morphological and other neurophysiological

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