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Long-term effects of memory training in the elderly: A longitudinal study

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Abstract

The effects of different types of memory training in young and older adults reported in a previous study [Cavallini, E., Pagnin, A., Vecchi, T., 2003. Aging and everyday memory: the beneficial effect of memory training. Arch. Gerontol. Geriatr. 37, 241–257] were again investigated from a longitudinal perspective 2 years after the original memory training sessions. The authors retested the original participants to measure the long-term effectiveness of two mnemonic strategies: the loci technique and strategic training. Three groups of participants (13 adults, $M = 24.1$, 13 younger elderly, $M = 64.2$ and 13 older elderly, $M = 74.4$) were tested using a battery of seven tasks and four questionnaires, to evaluate memory performance and meta-memory variables. The three age groups and the two trainings showed similar results on memory performance. Long-term effects were found only on two memory tasks, both were highly related to everyday life showing that, without additional practice, memory performance tended to go back to the original level. Moreover, the beneficial effects of the previous training sessions were particularly evident for older adults in metamemory knowledge and for strategic training in memory complaints. Results partially support the durability of memory training in improving memory performance.
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Keywords: Memory training in elderly; Aging and metamemory; Longitudinal study

1. Introduction

The benefits of strategy training for improving older adults' memory performance have frequently been supported by experimental research (for a review, see Verhaeghen et al.,

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1992). However it is not clear yet whether the benefits of the training can be maintained throughout the years.

Usually researches on memory training (e.g., Yesavage et al., 1983; Scogin et al., 1985) are interested on short-term effects. On the contrary we know little about the long-term effects, and the literature on this topic is not homogenous. Scogin and Bienas (1988) evaluated long-term effects after 3 years from memory training sessions, both considering memory performance and complaints. After the follow-up, older adults' performance returned to baseline levels and memory complaints did not change across this period of time. However, other researchers (Kliegl et al., 1990; Neely and Bäckman, 1993a, 1993b) reported long-term effects due to training even after some years. Oswald et al. (2002) demonstrated long-term beneficial effects up to 5 years after baseline examination. A similar trend was found by Ball et al. (2002) after a 2-year follow-up period.

These contradictory results on long-term effects may be explained on the basis of the difficulty for participants to re-use learned strategies in everyday life (Herrmann and Searleman, 1992). Elderly subjects often do not apply learned strategies after training because their employment in daily life requires great practice and exercise (McEvoy and Moon, 1988), or, alternatively, they tend to modify the learned strategies using them in a personal fashion (Anschutz et al., 1985, 1987). As a consequence, only subjects who incorporated trained skills into their repertoire of strategies and use them for the everyday learning were likely to exhibit long-term training effects (Anschutz et al., 1985). Nevertheless, a crucial aspect for analyzing long-term effects is related to spontaneous practice after the follow-up period. Meyer et al. (1989) introduced older adults to the use of an organizational strategy in order to learn a text. This strategy allows participants to read the text whilst at the same time discovering the structure of each passage, which proved to be useful in maintaining long-term gains. The beneficial effect of this type of training could also be associated with the fact that it could be easily employed in everyday memory practice such as reading a newspaper or a book (Dunlosky and Hertzog, 1998).

Regarding the effect of memory training on metamemory variables it seems that memory beliefs are resistant to modification (Scogin et al., 1985; McDonald-Miszczak et al., 1995; Pearman and Storandt, 2004) if training is focused on memory performance only (Verhaeghen et al., 1992). Different considerations concern metamemory knowledge since, compared to memory beliefs, the former can be gained through personal experience. Troyer (2001) demonstrated that memory knowledge, metamemory and objective memory performance can be effectively improved in old age through appropriate training.

In a previous study we investigated the effects of two different types of memory training in improving memory functions in old age by taking into account ecological and laboratory memory tasks and metamemory questionnaires (Cavallini et al., 2003). The data set of our previous experiment confirmed the validity of both memory trainings in improving memory performance and in reducing complaints about memory problems. Furthermore, our study showed that participants were able to re-use learned strategies in transfer tasks, thus improving their performance.

In the present paper, our aim is to evaluate the beneficial long-term effects of memory training in young and old people. Subjects who participated in a previous training regime (Cavallini et al., 2003) were re-tested 2 years after the training sessions. The study takes into account different training effects in both experimental and everyday memory tasks

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