

Learning and memory in school age: a neuropsychological approach

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Learning and memory are systemic processes mediated by the integrated activity of different cerebral areas.

Neuropsychological evaluation of mnemonic functions must provide a qualitative approach to the structural organization of memory and oriented toward the cognitive processes rather than the final score.

This study offers a qualitative profile of learning and memory, both for verbal as well as visuospatial modalities, of primary school children and examines whether, in prepuberal group, age and sex differences are already present in verbal and non verbal memory and in the ability to use a semantic clustering strategy.

The California Verbal Learning Test (CVLT) and the Biber Figure Learning Test (BFLT) were administered to 40 attending the second year and 40 attending the fifth year in primary school children, of which 38 boys and 42 girls.

In CVLT, both in the entire sample and age and sex groups, was shown an increasing learning rate across trials. However, girls and older children performed better. Proactive interference appears to be limited.

In memory trials, the entire sample showed a good retention of information in short and long delays. It may be probably ascribed to the presence of semantic categories that improves recall.

Girls and older group performed better also in free and cued recall. Recall performance by category cuing was better than free recall. Recognition testing was the simplest one. Clustering scores, generally, appears to be very low and it might refer to physiologic immaturity of cortical posterior associative areas and prefrontal regions. However, in older children and in girls group it was shown a more increasing clustering semantic scores in learning trials. More consistent differences were found in trials with better performances in terms of amount of learned words as a consequence of a larger use of semantic strategy.

Free recall, especially in long term memory, registered better scores of semantic clustering, more evident in older group and girls.

Thus, in this sample, a semantic clustering strategy was not much visible at 7 years, however it was seen more consistent around the age of 10.

In BFLT, an increasing rate of learning across the immediate-recall trials was shown both in the sample as a whole and in age and sex groups. Age and gender reached again statistical significance: older children perform always better than the younger group, whereas boys show better scores than the girls. Immediate and delayed recognition were the simplest trials. Delayed free recall and immediate reproduction showed better performances in boys group and in the older one. However, in this sample, verbal and non verbal learning and memory, as well as the ability to use a semantic clustering strategy, are correlated both with age and gender. Gender differences are already visible at 7 years of age, and become more consistent around the age of 10.

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