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Computer-based mapping therapy in sentence comprehension : nine case studies

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Among the literature in aphasiology, several *mapping* therapies have been published both in production and comprehension, but lots of questions remain unanswered and theories of therapies still need to be developed (Byng, Nickels & Black, 1994).

We developed a computerized therapy relating to mapping in sentence comprehension in french (Python, 2011), inspired by the work of Crerar, Ellis and Dean (1996) and Beveridge and Crerar (2002), addressing 3 types of sentences (actives, passives and relative object clauses). The task consists in associating the syntactic elements of 54 abstract sentences (18 of each type) with their thematic roles, to achieve a pictorial representation corresponding to the target sentences.

We compared two treatment conditions in nine aphasic patients. Four patients in chronic stage followed a *serial* training during eight 1-hour sessions (ie. 2 sessions for actives, 3 for passives and 3 for relatives) and five other patients a *simultaneous* training during fifteen 1-hour sessions (ie. 15 sessions mixing randomly actives, passives and relatives). In the first group, patients also followed an alternative computerized therapy during eight 1-hour sessions, in order to make sure that the changes observed, if any, are specifically due to our mapping therapy. All patients worked at home on their own computer, with regular monitoring.

Assessments were conducted before treatment, after treatment and 1 or 2 months after the end of treatment. At the subject level, statistical analysis with Pearson's Chi Square Test was used to quantify the extent of improvement.

Most of the participants improved in comprehension of abstract sentences, however, in a heterogeneous way (see figure 1 for written comprehension). In the first group, 3/4 patients statistically improved in written comprehension of sentences (the last one showed only a tendency) and 2/4 in oral comprehension. In the second group, 3/5 patients statistically improved in written comprehension of sentences (and one more showed a tendency) but none did in oral comprehension (only one showed a tendency). A ratio of errors committed during each treatment session was calculated and pointed out that 3/9 patients made a lot more mistakes during the treatment sessions than the others.

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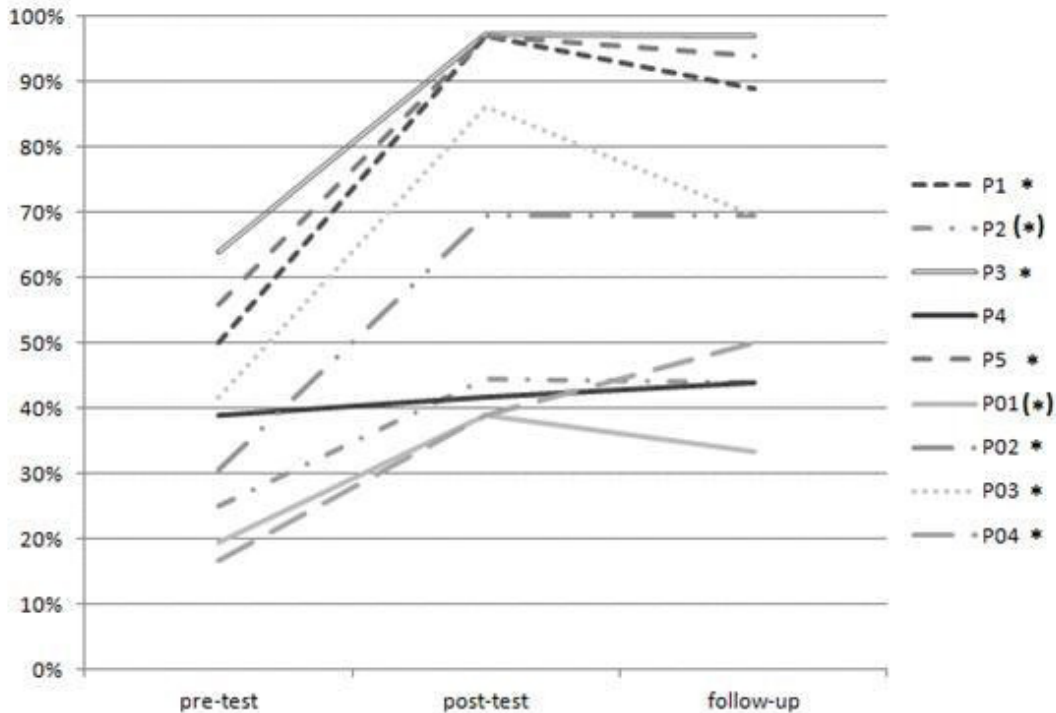


Fig. 1 : Performance in written sentence comprehension, pre and post mapping therapy (n=36)
* indicates a significant improvement (*) indicates a tendency

We couldn't find an obvious difference in our results between the two groups of patients (ie. serial vs. simultaneous treatment and 8 vs. 15 hours of therapy). But we found out that the patients committing less errors from the beginning (ratio between 0-0.5) showed better results than those having a higher error ratio (between 0.5-1). This variable seems to be a good indicator about the predictable effectiveness of our therapy.

References

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