CACR in depression: targets and treatment modalities.

Preliminary results

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① Introduction

Computer Assisted Cognitive Remediation (CACR) is progressing in psychiatric disorders. Regarding depression, its relevance seems obvious considering cognitive disorders in this pathology. They affect mainly sustained attention, episodic and working memory, cognitive control [1]. They can persist after improvement of mood symptoms and have deleterious effects on functional outcomes.

The present study describes a web service providing cognitive remediation specialized for depression. This program "ReCoD" is based on the pre-existing HAPPYNeuron software provided by the Scientific Brain Training Company (www.sbt.fr). Computers are reported to hold practical advantages for delivering cognitive remediation, as they facilitate drill and practice on structured, customizable and standardized tasks in a multimedia and stimulating environment [2].

② Method

Participants: 27 adults diagnosed with a MDE in the last 6 months.

Procedure: Participants were randomly assigned in two groups: one remediation group (n=15) and one comparison group (n=12). The remediation group attended 7 weeks of training using 14 different cognitive exercises accessible on the web (Fig. 1). One session per week was scheduled with a therapist in the hospital. The patient trained at home for 3 more sessions per week. Pre-post tests include neuropsychological measures and mood and personality questionnaires.
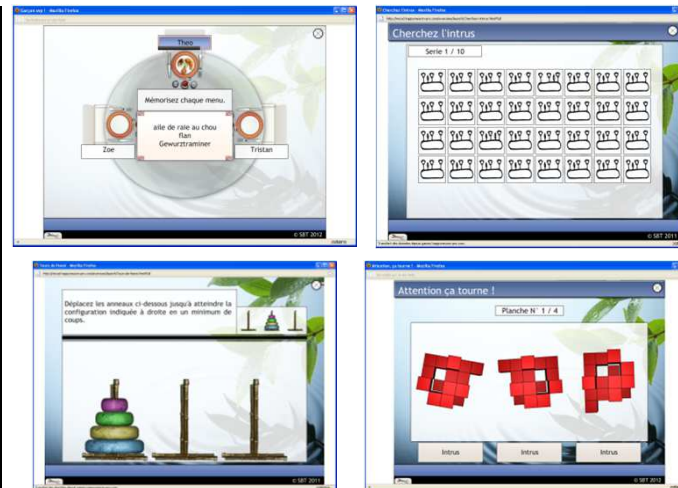
Figure 1: Examples of the cognitive exercises from the Web service. Top left: a visual and verbal memory task requiring to recognize shapes and colors; top right: an attentional task requiring to find an intruder in the grid; bottom left: a planning task requiring to build the tower displayed on the above image; bottom right: a visuo-spatial task requiring to find if figures are identical or not.


Figure 2: The Web service enables the patient and the therapist to view the current status of the patient's performances (left) and a detailed log of the past training sessions (right).

③ Preliminary Results

Neuropsychological measures (Grober & Buschke, Digit Span, Letter Digit, TMT, CPT, WCST) have been compared for the 2 groups with a t-test on pre-post score differences. Results show significant improvements for the remediation group on measures of anxiety, working memory and speed of processing.(Fig. 3).

④
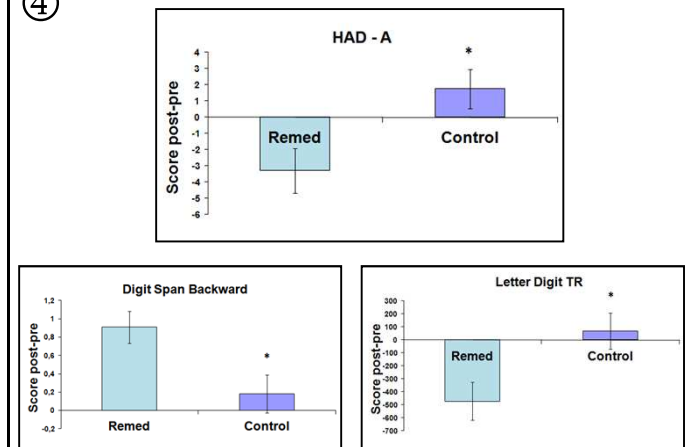
Figure 3: Δ scores post/pre tests for the 2 groups. Top : anxiety scales; bottom left: working memory; bottom right: speed of processing. *p < 0.05

⑤ Discussion

In our results, both following aspects of depression can be a target for CACR: cognitive functions and anxiety. Although our study denotes improvements in measures of working memory and speed of processing, the question remains whether cognitive remediation can influence executive disabilities strongly associated with depressive profiles such as flexibility and effortful processing. Other symptoms, for instance self-esteem and ruminations, will be explored in future research.

References

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