# Web Service for Cognitive Remediation in Depression

Ouriel Grynszpan[1]*, Odile Komano[1], Pierre Leboucher[1], Roland Jouvent[1], Julie Guertault[2], Franck Tarpin Bernard[2]

[1]Centre Emotion, CNRS USR 3246, Université Pierre et Marie Curie, Hôpital de La Salpêtrière, Paris, France
[2]Scientific Brain Training, Villeurbanne, France, *Corresponding author, ouriel.grynszpan@upmc.fr

## ① Introduction

Depression is the most prevalent of all psychiatric disorders. It is considered a chronic disease with devastating effects on social and professional functioning. Major Depressive Episodes (MDE) are associated with acute sadness, significant loss of pleasure and motivation, fatigue and concentration difficulties. Cognitive alterations are also reported, concerning sustained attention, working memory and cognitive control [1].

The present study describes a web service providing cognitive remediation specialized for depression. 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]. To our knowledge, there have been very few studies on Computer Assisted Cognitive Remediation (CACR) in depression [3,4]. Our program differs from previous attempts, by offering the opportunity to train at home in addition to sessions with a therapist.

## ② Method

**Participants:** 17 adults diagnosed with a MDE in the last 6 months. Recruitment is still ongoing.

**Procedure:** Seven weeks training using 14 different cognitive exercises accessible on the web (Fig. 1). One session per week is scheduled with a therapist in the hospital. The patient trains at home for 3 more sessions per week. Pre-post tests include neuropsychological measures and mood and personality questionnaires.
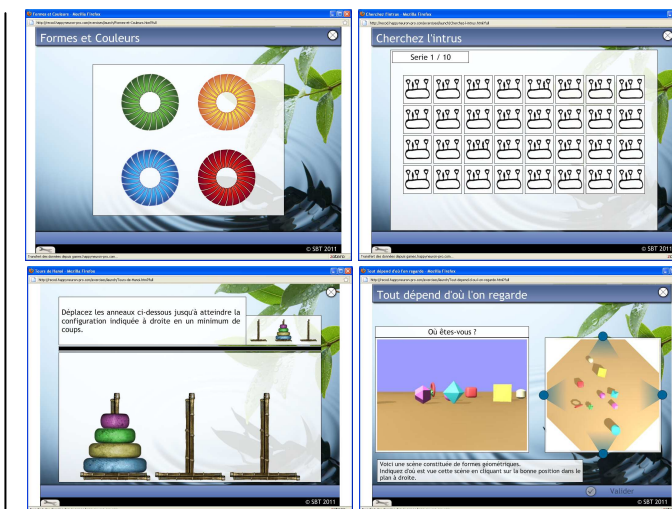


**Figure 1**: Examples of the cognitive exercises from the Web service. Top left: a visual memory task requiring to recognize shapes and colors; top right: an attentional task requiring to find an intruder in the grid; bottom left: a planning task requiring to build the tower displayed on the above image; bottom right: a visuo-spatial task requiring to find the viewpoint on the right panel that matches the perspective of the left panel.
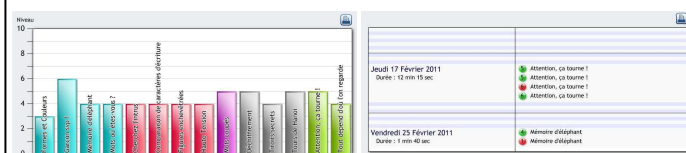


**Figure 2**: The Web service enables the patient and the therapist to view the current status of the patient's performances (left) and a detailed log of the past training sessions (right).

## ③ Preliminary Results

One participant discontinued the treatment due to long travelling distance. The compliance as indicated on the web service for the other 16 participants has been satisfactory. To date, 14 participants completed the procedure. Results show significant improvements on measures of anxiety, verbal memory, sustained attention and working memory (Fig. 3).
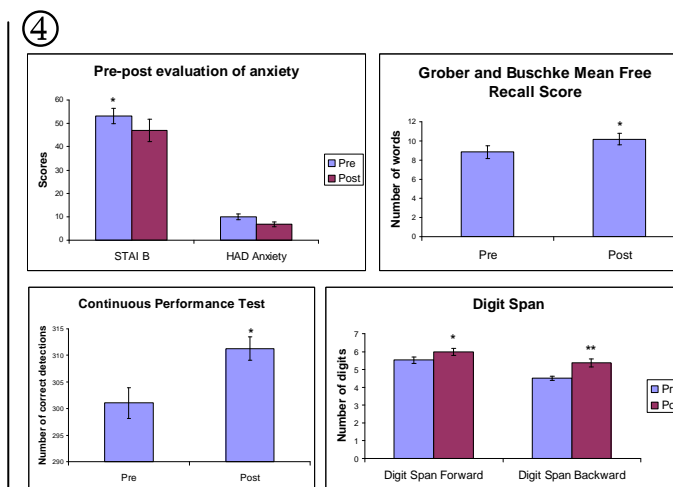
## ④



**Figure 3**: Pre-post tests comparisons. Top left: anxiety scales; top right: verbal memory; bottom left: sustained attention; bottom right: working memory. *$p < 0.05$ **$p < 0.001$

## ⑤ Discussion & Conclusion

Boosting the cognitive functioning of depressed individuals should facilitate successful acquisition of new cognitive strategies that favor quicker recovery. CACR could be seen as a co-therapy enabling the introduction of more cognitively effortful forms of therapy.

## References

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