COGNITIVE PERFORMANCE AND 12-MONTH CLINICAL OUTCOME IN FIRST-EPISODE OF DEPRESSION

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Background

Cognitive dysfunction has been described in First Episode of Depression (FED), affecting: **ATTENTION, PROCESSING SPEED, MEMORY and EXECUTIVE FUNCTIONS.** [1, 2]
Findings are still scarce and show discrepancies on the specificity or the degree of such cognitive deficits.

Among the factors related with the inconsistencies in cognitive impairment in FED, the consideration that the patients would have a unique neuropsychological profile (i.e. averaging neurocognitive performance of all patients could be the most relevant one.) It might be necessary to **define subgroups of patients** taking into account their **cognitive characteristics**, as some patients could present cognitive deficits while others could not.

Aims:

1. Determine the cognitive performance of FED patients in order to explore the presence of different cognitive profiles.
2. Investigate whether cognitive deficits at illness onset could predict baseline clinical profile and follow-up clinical outcomes.

Methods

• **PARTICIPANTS**:

- **40 patients with a diagnosis of FED** (DSM-IV-TR) and 20 healthy controls were included.
- Patients were antidepressant treatment-naïve or had taken antidepressants for less than two weeks prior of the study inclusion.
- **Depressive symptoms** were evaluated using the 17-item Hamilton Depression Rating Scale **(HDRS-17)** at the beginning and 12-months after.

• **NEUROPSYCHOLOGICAL ASSESSMENT:**

- A comprehensive neuropsychological battery was administered to all participants at the beginning of the study.
- Neuropsychological tests covered the domains of language, attention, verbal and visual memory, and executive functions.

• **DATA ANALYSES:**

- To investigate cognitive variability in FED patients a **Principal Component Analysis (PCA)** was used and cognitive dimensions were obtained.
- Cognitive dimensions were then used in a **Hierarchical Cluster Analysis**, so as to define different cognitive profiles (clusters).
- To predict clinical outcomes (HDRS-17 scores at baseline and change in HDRS-17 at 12-months), two **Generalized Linear Models** were run.

Table 1. Results of PCA.

Component 1:	Component 2:	Component 3:	Component 4:	Component 5:
VERBAL MEMORY	**VISUAL MEMORY**	**ATTENTION / WORKING MEMORY**	**EXECUTIVE FUNCTIONING**	**LANGUAGE**
Immediate Recall RAVLT	Visual Reproduction Immediate WMS-III	Digit Span Forward WAIS-III	TMT Part A	Semantic Fluency
Delayed Recall RAVLT	Visual Reproduction Delayed WMS-III	Digit Span Backward WAIS-III	TMT Part B	Phonetic Fluency
			Tower of London	
			WCST Perseverative Errors	

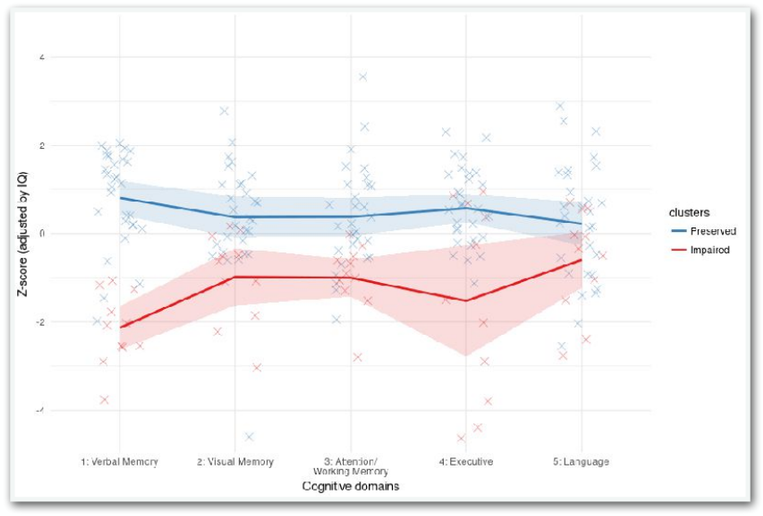

Figure 1. Graph illustrating mean z-scores of each cluster in each cognitive component (five dimension solution in PCA). The **blue line** represents **preserved** patients, and the **red line** represents **impaired** patients. Blue and red shaded areas represent standard deviation of means. Crosses represent patients of each cluster.

Results

• ***Principal Component Analysis*** of Intelligence Quotient-adjusted neuropsychological data offered five orthogonal dimensions which corresponded to **five** identifiable **cognitive domains**. (Table 1)
• The five selected components explained a cumulative variance of 78,85%.

• The ***Hierarchical Cluster Analysis*** revealed a two-cluster solution, and patients were classified as **cognitively preserved** (29 patients) and **cognitively impaired** (11 patients). (Figure 1)

• Patients with cognitive deficits showed subtle impairments in attention/working memory and visual memory (≤1SD) and significant impairment in verbal memory and executive function (>1SD).

• ***First Linear Regression Model*** showed that females (β=-0.74) and patients with sick leave (β=-1.09) and more educated (β=0.33) has significantly higher HDRS-17 scores at baseline. (Table 2)

• In addition, patients with lower education by worse executive functioning (β=0.28) had higher scores in HDRS-17, as well as being on sick leave by having executive dysfunction (β=0.73).

• When predicting change in HDRS-17 at 12 months (***Second Linear Regression Model***), the model showed that better cognitive performance; executive component (β=-0.51) and attention/ working memory component (β=0.07), was associated with greater improvement of depressive symptoms.

• Additionally, being on sick leave by having executive dysfunction (β=-2.005) was associated with greater worsening.

Table 2. Cognitive, demographic and psychosocial predictors of clinical outcomes.

HDRS-17 score at baseline	HDRS-17 change at follow-up
Gender (Wald χ^2=8.77; p=0.003)	**Executive Component** (Wald χ^2=4.93; p=0.03)
Years of schooling (Wald χ^2=4.02; p=0.04)	**Attention/Working Memory Component** (Wald χ^2=3.95; p=0.047)
Verbal Memory Component (Wald χ^2=6.14; p=0.01)	**Work status x Executive** (Wald χ^2=8.01; p=0.046)
Executive Component (Wald χ^2=3.76; p=0.05)	
Years of schooling x Executive (Wald χ^2=12.03; p=0.001)	
Work status x Executive (Wald χ^2=9.66; p=0.02)	

Conclusions

- The cluster analysis revealed that within patients' group there were two different profiles: **preserved** and **impaired**, indicating that only some patients displayed cognitive deficits.
- Patients in the impaired cluster showed deficits in **verbal memory** and **executive functioning** suggesting a key role in the clinical manifestation of depression, as well as in the clinical course.
- Cognitive assessment at illness onset, in particular ***verbal memory, attention/working memory and executive functioning***, has proven to be useful in predicting depressive symptoms at baseline and long term together with other demographic and psychosocial variables. Therefore, cognitive assessment should be included in clinical settings so as to capture the characteristics of a FED that may further determine the course of the illness.
- **Treatment interventions** for depression should be directed to **improve cognitive performance** so as to reach cognitive remission together with clinical remission, which in turn, may improve psychosocial functioning. [3] Possibly, an early intervention may improve patient's quality of life and even prevent new episodes, although no evidence is available yet._

References

[1] Lee R.S.C, Hermens D.F, Porter M. A., Redoblado-Hodge M.A. (2012). A meta-analysis of cognitive deficits in first-episode Major Depressive Disorder. . Elsevier B.V. Journal of Affective Disorders 140, 113–124.
[2] Ahern E., Semkovska M. (2017). Cognitive functioning in the first-episode of major depressive disorder: a systematic review and meta-analysis. Neuropsychology 31, 52–72.
[3] McIntyre R.S., Cha D.S., Soczynska J.K., Woldeyohannes H.O., Gallaugher L.A., Kudlow P., Alsuwaidan M., Baskaran A. (2013). Cognitive deficits and functional outcomes in major depressive disorder: Determinants, substrates, and treatment interventions. Depression and Anxiety 30, 515–527.

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