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Exploring cognitive symptoms in patients with unipolar and bipolar major depression: A comparative evaluation of subjective and objective performance

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ABSTRACT

Aim: This cross-sectional observational study aimed to assess objective and subjective cognitive deficits in patients with unipolar (UD) and bipolar depression (BD), focusing on their insight into actual cognitive abilities.
Methods: A total of 124 participants were recruited: 84 patients with a current major depressive episode (43 with UD, 41 with BD) and 40 age- and gender-matched healthy controls. Cognitive assessments were conducted using the Screen for Cognitive Impairment in Psychiatry (SCIP) for objective evaluation and the Perceived Deficits Questionnaire-Depression-5-item (PDQ-D-5) for subjective assessment. Comparisons were performed using χ^2 tests for categorical variables and ANCOVA for continuous variables (to compare the severity of cognitive complaints and impairment, while controlling for illness duration and age at onset). The Pearson correlation coefficient was used to examine the relationship between subjective and objective measures.
Results: In the objective assessment, 72.1 % of UD patients and 68.3 % of BD patients showed cognitive symptoms, with nearly half classified as moderate to severe. No significant differences were found between UD and BD in objective cognitive profiles. In subjective assessments, 39.5 % of UD patients and 46.3 % of BD patients scored below the median. BD patients reported worse subjective cognitive performance than UD patients, with lower total scores (11.1 ± 3.2 vs. 7.9 ± 4.4, $p < < 0.001$) and poorer performance in planning (2.8 ± 1.5 vs. 1.9 ± 1.4, $p < < 0.001$) and attention (3.4 ± 0.9 vs. 2.3 ± 1.5, $p < .001$) domains.
Conclusion: This study confirms significant cognitive symptoms in both UD and BD patients. The discrepancy between subjective and objective cognitive performance in BD patients suggests a disconnect between perceived and cognitive abilities.

1. Introduction

Cognitive impairment during a major depressive episode (MDE) stands out as a key feature linked to worsening disease trajectories and diminished functional capacities (Kapczinski et al., 2016). Notably, cognitive deficits show a stronger association with psychosocial and occupational functioning than clinical symptoms alone (Krug et al., 2020). Cognitive impairments are evident not only during periods of euthymia but are particularly pronounced during major depressive episodes (MDEs) (Szmulewicz et al., 2017; Burdick et al., 2014). This underscores the critical need to evaluate various cognitive domains, including attention, executive functioning, memory, learning, verbal fluency, and psychomotor processing (Ahern et al., 2017; Dickinson et al., 2017; Rock et al., 2014). Furthermore, an accurate assessment requires the integration of both subjective and objective cognitive measures (McIntyre et al., 2013). The existing literature on the cognitive profiles of individuals with depressive and bipolar disorders presents conflicting findings. While some studies report no significant differences in objective cognitive impairment between the two groups (Maalouf et al., 2010; Taylor Tavares et al., 2007; Daniel et al., 2013), others suggest that patients with bipolar disorder exhibit more pervasive, trait-related cognitive deficits (Matsuo et al., 2021; Poletti et al., 2017;

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Wang et al., 2023). The study by Galimberti et al. (2020) focused on evaluating cognitive deficits in unipolar and bipolar patients during MDEs using exclusively objective measures. This study consistently identified more pronounced deficits in executive functions among bipolar disorder patients; however, findings on memory impairments were conflicting. In general, research confirms that depressed individuals experience cognitive impairment, with a significant proportion showing clinical deficits during objective assessments (Szmulewicz et al., 2017; Bourne et al., 2013; Burdick et al., 2014; Rock et al., 2014).

Moreover, while discrepancies often arise between patients' perceived symptom severity and their actual cognitive performance, research addressing this specific issue remains limited. Patients affected by bipolar disorders often report more severe cognitive complaints than subjects with depressive disorders, despite showing similar objective performance (Lin et al., 2019; Miskowiak et al., 2012; Xiao et al., 2015). Subjective evaluations have been primarily conducted during euthymic or remission phases. Such assessments have shown that bipolar patients exhibited greater deficits in executive functioning and processing speed, whereas unipolar patients experienced more significant impairments in attention and memory (Miskowiak et al., 2012). More recently, no notable differences in perceived cognitive deficits between unipolar and bipolar patients during the euthymic phase have been observed (Szmulewicz et al., 2017).

However, the relationship between subjective complaints and objective cognitive performance remains inconsistent (Moritz et al., 2004; Mowla et al., 2008).

What is currently lacking is a comprehensive comparison of cognitive deficits between patients with bipolar disorder (BD) and major depressive 'unipolar' disorder (UD) during a major depressive episode, specifically addressing the discrepancies between subjective and objective cognitive symptoms. Our study aims to fill this gap by pursuing two primary objectives: (1) estimating the prevalence of cognitive deficits within a sample of UD and BD patients using a clinically applicable screening tool, and (2) evaluating whether the severity of self-reported cognitive symptoms differs between UD and BD patients, thereby assessing their level of insight into their cognitive abilities.

2. Methods

2.1. Study design and patients

Data were derived from an independent cross-sectional observational study conducted on patients with major depressive and bipolar disorders during a major depressive episode (MDE). To be enrolled, patients had to meet the following inclusion criteria: (a) aged between 18 and 65 years; (b) a minimum of eight years of education; (c) a primary diagnosis of MDE within a longitudinal diagnosis of major depressive or bipolar disorders, according to DSM-5-TR criteria: participants were recruited from all patients with UD or BD consecutively referred to the Psychiatric Unit of San Luigi Gonzaga University Hospital (University of Turin, Italy) between December 2022 and May 2023; (d) written consent to participate in the study, provided after receiving thorough information about the aims and procedures of the study.

We also included a sample of healthy controls (HC) matched by gender and age. These individuals were required to have no psychiatric diagnosis based on DSM-5-TR criteria and no depressive symptoms (HAM-$D \leq 7$).

Exclusion criteria were as follows: (a) a history of cerebral organic diseases or head trauma; (b) intellectual disabilities; (c) a diagnosis of alcohol or substance use disorders; (d) dementia or other neurodegenerative disorders.

The study was approved by the local Ethics Committee.

2.2. Assessments and procedures

Certified psychiatrists, psychologists and psychiatry residents - under the supervision of senior psychiatrists - conducted the clinical assessments of patients. At study entry, socio-demographic information and clinical data were collected for each participant. Clinical characteristics were obtained from medical charts and through the administration of a semi-structured interview, which we developed and have routinely used in clinical practice and previous studies (Di Salvo et al., 2023; Rosso et al., 2020).

Depressive and cognitive assessments were carried out using both subjective and objective tools. Specifically, for self-rated measures, we employed the Perceived Deficits Questionnaire-Depression- 5-item (PDQ-D-5) for cognitive functioning and the Beck Depression Inventory – Second Edition (BDI-II) (Beck et al., 1996; Montano et al., 2006) for the severity of depressive symptoms. The PDQ-D-5, initially developed to assess cognitive impairments in patients with multiple sclerosis (Christodoulou et al., 2005), has been subsequently validated for mood disorders (Fehnel et al., 2016; Lam et al., 2018). This instrument evaluates four cognitive domains, reflected in the following subscales: attention/concentration, retrospective memory, prospective memory, and planning/organisation. We used the Italian short version (5-item) of the PDQ, which is practical for rapid assessment (Manchia et al., 2020).

Objective measures included the Screen for Cognitive Impairment in Psychiatry (SCIP) to evaluate cognitive performance and the Hamilton Depression Rating Scale (HAM-D) (Hamilton, 1967) as a psychopathological measure of severity. The SCIP is a pencil-and-paper tool designed for the rapid and objective quantification of cognitive impairment in psychotic and affective disorders (Gomez et al., 2013; Schmid et al., 2021). We used the Italian version of the SCIP, which assesses five major cognitive domains often affected in psychiatric illnesses: verbal learning test – immediate (VLT-I), working memory test (WMT), verbal fluency test (VFT), verbal learning test – delayed (VLT-D), and processing speed test (PST) (Belvederi Murri et al., 2020). This instrument required approximately 15 min. The cut-off scores provide a straightforward method to identify impairments, with a total SCIP score above 74 indicating normal cognitive function. Scores of less than 75, 65, or 55 suggest mild, moderate, or severe impairment, respectively. Normality thresholds for specific SCIP cognitive domains are defined as follows: VLT-$I \geq 23.52$; WMT $\geq$20.66; VFT $\geq$17.44; VLT-$D \geq 7.65$; and PST $\geq$14.26.

2.3. Statistical analysis

Socio-demographic and clinical features of the patients were summarized as means and standard deviations (SD) for continuous variables and frequencies and percentages for categorical variables. Subjects were divided into three groups according to the main psychiatric diagnosis: patients suffering by UD, patients affected by BD, and HC.

The rates of cognitive impairment were calculated using the median value of the empirical distribution of each scale score as symptomatic cut-off. Comparisons into the three groups were performed using χ^2 analyses for categorical variables and one-way ANCOVA for the continuous variables (specifically, to compare the severity of subjective and objective cognitive impairment whilst controlling for duration and age at onset of illness). Furthermore, Pearson correlation coefficient was utilized to identify the correlation between subjective and objective cognitive performance.

A two-tailed $p < .050$ was considered statistically significant for all comparisons. Statistical analyses were performed using Statistical Package for the Social Sciences (SPSS - Version 28.0., IBM Analytics).

3. Results

3.1. Clinical characteristics of the sample

The sample comprised 124 participants: 43 patients with UD, 41 patients with BD, and 40 HC. A comparison of socio-demographic

characteristics between the BD and UD groups revealed no statistically significant differences in age, sex, and educational level. The UD group showed a significantly higher number of suicide attempts (42.4 % vs 21.4 %, $p = .001$) and a longer duration of the current major depressive episode compared to the BD group (132.0 ± 255.2 days vs 73.1 ± 84.9 days, $p = .020$). Conversely, the BD group had significantly higher rates of hospitalizations (2.6 ± 2.3 vs 1.2 ± 0.9, $p < .001$), as well as a greater number of previous depressive episodes (6.4 ± 4.7 vs 2.7 ± 1.7, $p < .001$) and total affective episodes (13.1 ± 17.7 vs 2.7 ± 1.7, $p < .001$), compared to the UD group. No significant differences were observed between the two patient groups regarding age at onset of mood disorder, prevalence of psychiatric family history, and medical and psychiatric comorbidities. Furthermore, no statistically significant differences were observed in the severity of Additionally, no statistically significant correlations were found between depressive symptom severity (measured by HAMD-D) and cognitive performance (assessed through SCIP scale) in both patients groups (rho = 0.011, p-value = 0.945 in the UD group; rho = −0.03, p-value = 0.653 in the BD group).

Additional details of the sample's socio-demographic and clinical characteristics are provided in Tables 1 and 2.

3.2. Subjective and objective cognitive performance in UD and BD patients

The rates of objective and subjective cognitive assessments into the three groups are presented in Table 3. The objective analyses of cognitive impairment, assessed using the SCIP battery, indicated that 72.1 % ($n = 31$) of UD patients and 68.3 % ($n = 28$) of BD patients scored below the normative threshold. Cognitive impairment was clinically evident in approximately one-third of patients, with nearly half of these cases categorized as moderate to severe (46.5 % in UD and 51.2 % in BD, respectively). The detailed distribution of impairment severity is illustrated in Fig. 1.

A comparison of the mean scores across each specific cognitive domain assessed by the SCIP battery revealed no significant differences between the two groups of depressed patients in any cognitive domain (see Table 4). Subsequently, we analyzed the number of UD and BD patients with scores below the normative threshold for each specific cognitive domain assessed by the SCIP battery. Statistically significant differences were observed in the memory domains VLT_I (92.7 % vs 86.0 %, $p = .049$) and VLT_D (82.9 % vs 72.1 %, $p = .018$), with a higher proportion of sub-normative outcomes in the BD group. Conversely, in the verbal fluency domain (VFT), the UD group showed a significantly greater number of sub-normative outcomes (76.7 % vs 51.2 %, $p < .001$) (see Fig. 2).

Using the median value of the empirical distribution as the symptomatic cut-off for the self-rated PDQ-D-5 assessment, the following rates were observed: 17 UD patients out of 43 (39.5 %) and 19 BD patients out of 41 (46.3 %) scored below the median. Significant differences emerged between the UD and BD groups, with BD patients exhibiting worse performance in the total score (11.1 ± 3.2 vs 7.9 ± 4.4, $p < .001$), planning (2.8 ± 1.5 vs 1.9 ± 1.4, $p < .001$), and attention domains (3.4 ± 0.9 vs 2.4 ± 1.5, $p < .001$) (see Table 3).

Table 1
Socio-demographic characteristics of the sample.

	UD ($n = 43$) Mean ± SD or n (%)	BD ($n = 41$) Mean ± SD or n (%)	HC ($n = 40$) Mean ± SD or n (%)	*F*	*p-value*
Age	51.8 ± 14.9	51.9 ± 15.5	49.4 ± 15.4	0.487	.616
Sex (female)	22 (66.7)	20 (71.4)	22 (55.0)	1.919	.151
Years of education	12.6 ± 3.2	13.8 ± 3.5	13.9 ± 3.2	2.277	.107
Married	17 (51.5)	13 (46.4)	22 (55.0)	0.817	.444
Current employed	18 (54.5)	14 (47.8)	28 (70.0)	1.888	.156
Living alone	9 (27.3)	7 (25.0)	10 (25.0)	0.192	.826
Smoker	5 (15.2)	9 (32.1)	16 (40.0)	3.952	**.022**
Physical Activity	6 (18.2)	6 (21.4)	32 (79.5)	26.283	**<0.001**

Table 1: SD: Standard Deviation; UD: Unipolar Depression; BD: Bipolar Depression; HC: Healthy Controls.

Table 2
Clinical characteristics of the sample.

	UD ($n = 43$) Mean ± SD or n (%)	BD ($n = 41$) Mean ± SD or n (%)	*p-value*
Age at onset	39.2 ± 14.9	27.6 ± 11.9	.123
Number of hospitalizations	1.2 ± 0.9	2.6 ± 2.3	**<0.001**
Number of total episodes	2.7 ± 1.7	13.1 ± 17.7	**<0.001**
Number of hypomanic episodes	_	1.8 ± 2.6	_
Number of manic episodes	_	0.6 ± 1.9	_
Number of depressive episodes	2.7 ± 1.7	6.4 ± 4.7	**<0.001**
Suicidal attempts	14 (42.4)	6 (21.4)	**.001**
Duration of current depressive episode (days)	132.0 ± 255.2	73.1 ± 84.9	**.020**
Duration of untreated illness (years)	6.6 ± 10.3	17.1 ± 19.6	.070
Family history of psychiatric diseases	16 (48.5)	17 (60.7)	.235
Medical comorbidity	24 (72.7)	17 (82.1)	.082
Psychiatric comorbidity	11 (33.3)	9 (32.1)	.846
HAM-D score	17.0 ± 6.7	20.3 ± 9.2	.051
BDI-II score	28 ± 3.4	31 ± 4.5	.089

Table 2: SD: Standard Deviation; UD: Unipolar Depression; BD: Bipolar Depression; HAM-D: Hamilton Depression Rating Scale; BDI-II: Beck Depression Inventory – Second Edition;.

Table 3
Subjective and objective cognitive performance.

	BD ($n = 41$) Mean ± SD	UD ($n = 43$) Mean ± SD	HC ($n = 40$) Mean ± SD	*p-value*	*Post-hoc Tukey HSD*
PDQ-D-5 total score	11.1 ± 3.2	7.9 ± 4.4	4.7 ± 3.4	**<0.001**	**BD > UD > HC***
Item 1 - Organization	2.8 ± 1.5	1.9 ± 1.4	1.1 ± 1.0	**<0.001**	**BD > UD > HC***
Item 2 – Attention	3.4 ± 0.9	2.3 ± 1.5	1.0 ± 1.0	**<0.001**	**BD > UD > HC***
Item 3 – Orientation	2.2 ± 1.4	1.8 ± 1.6	0.9 ± 0.8	**<0.001**	BD, UD > HC
Item 4 – Memory	1.3 ± 1.3	1.1 ± 1.3	0.8 ± 0.9	.099	BD, UD, HC
Item 5 – Memory	1.3 ± 1.2	0.9 ± 1.2	0.7 ± 0.7	**.046**	BD, UD > HC
SCIP total score	64.2 ± 15.5	64.2 ± 14.8	83.9 ± 12.2	**<0.001**	BD, UD < HC
VLT_I	16.9 ± 4.5	18.3 ± 4.2	22.7 ± 3.7	**<0.001**	BD, UD < HC
WMT	18.7 ± 3.8	19.3 ± 4.5	22.5 ± 1.6	**<0.001**	BD, UD < HC
VFT	16.7 ± 5.7	14.7 ± 4.9	19.4 ± 5.5	**<0.001**	UD, BD < HC
VLT_D	4.2 ± 2.5	5.0 ± 2.2	7.2 ± 2.3	**<0.001**	BD, UD < HC
PST	8.2 ± 3.5	7.4 ± 3.3	11.5 ± 2.9	**<0.001**	BD, UD < HC

Table 3: SD: Standard Deviation; UD: Unipolar Depression; BD: Bipolar Depression; HC: Healthy Controls; PDQ-D-5: Perceived Deficits Questionnaire – Depression – 5 items; *: statistically significant between unipolar and bipolar depressed patients.

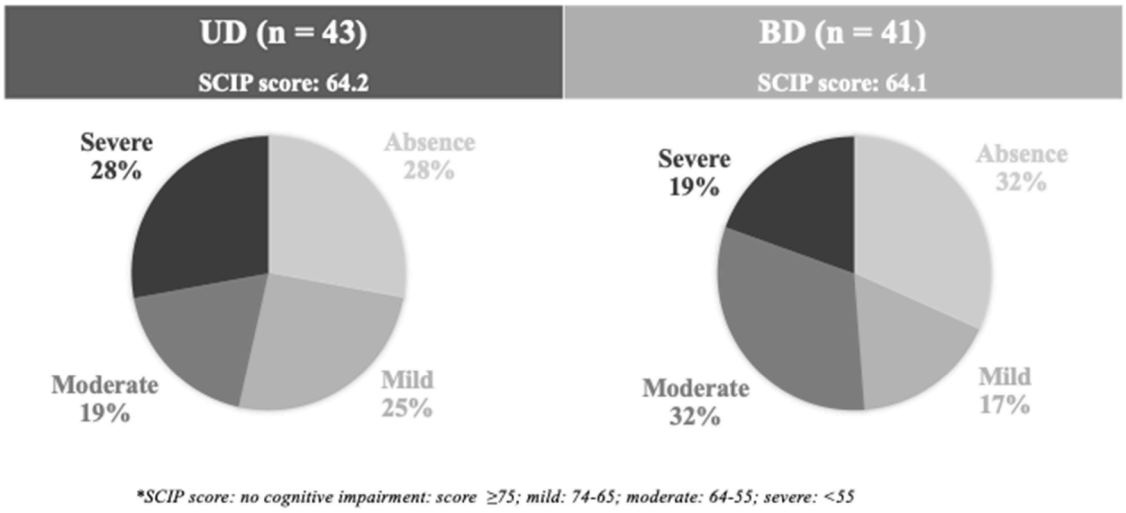

Fig. 1. Objective cognitive performance.

Table 4
Objective cognitive performance at SCIP battery.

SCIP domains	**BD** ($n = 41$) Mean ± SD	**UD** ($n = 43$) Mean ± SD	***p-value***
VLT_I	16.9 ± 4.5	18.3 ± 4.2	.953
WMT	18.7 ± 3.8	19.3 ± 4.5	.294
VFT	16.7 ± 5.7	14.7 ± 4.7	.105
VLT_D	4.2 ± 2.5	5.0 ± 2.2	.214
PST	8.2 ± 3.5	7.4 ± 3.3	.630
SCIP total score	64.2 ± 15.5	64.2 ± 14.8	.593

Table 3: BD: Bipolar Depression; UD: Unipolar Depression; SCIP: Screen for Cognitive Impairment in Psychiatry; VLT_I: Verbal Learning Test Immediate; WMT: Working Memory Test; VFT: Verbal Fluency Test; VLT_D: Verbal Learning Test Delayed; PST: Psychomotor Speed Test;.

3.3. Correlation between subjective and objective measures of cognitive performance

Pearson correlation analyses were performed between the subjective perception of cognitive deficits (assessed by the PDQ-D-5) and the objective measures of cognitive impairment (assessed by the SCIP). The analyses revealed a statistically significant negative correlation in UD patients (PDQ-D- 5 vs. SCIP, rho = −0.412, $p = .006$) and in HCs (rho = −0.73, $p < .001$). Specifically, as SCIP scores decreased (indicating greater clinical impairment), PDQ-D-5 scores increased (indicating greater self-rated perception of deficits). Conversely, no correlation was observed between subjective and objective performance in BD patients (rho = 0.048, $p = .765$) (see Fig. 3).

4. Discussion

Despite growing evidence in the field of cognitive functioning in mood disorders, the neurocognitive profiles of patients affected by UD and BD still require further characterization. Patients' subjective experience of cognitive difficulties is poorly understood, and it remains unclear whether UD and BD patients report different cognitive difficulties (Miskowiak et al., 2012).

The present study provides original data on the objective and subjective cognitive performance of subjects during a major depressive episode (MDE), as well as the degree of insight patients have into their real cognitive dysfunction. The analyses were conducted on a cohort of real-world UD and BD patients. The socio-demographic and clinical characteristics of the study sample are representative of the broader population of patients with bipolar and depressive disorders and are consistent with the findings of the majority of studies in the existing

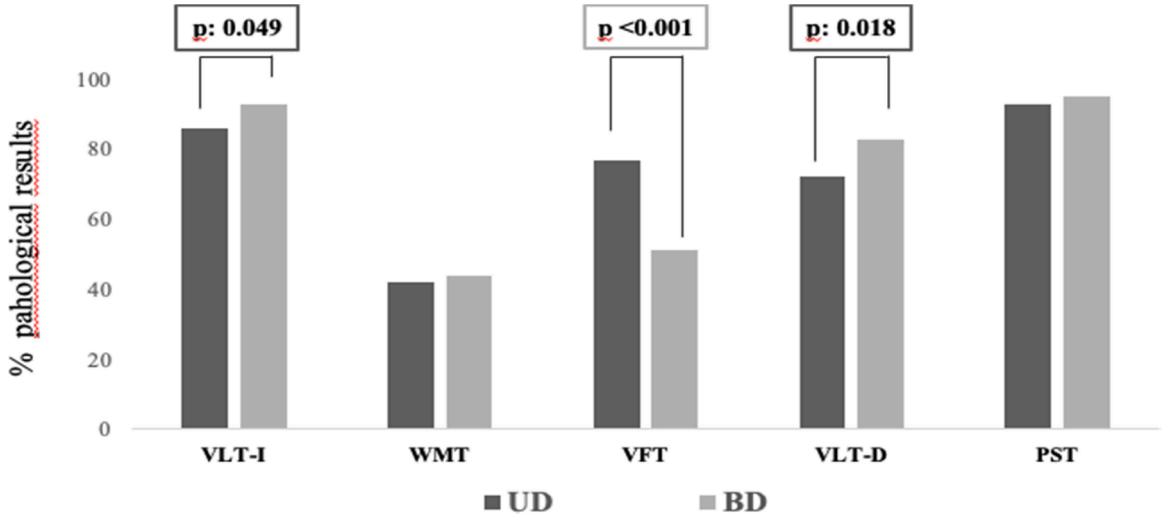

Fig. 2. Objective cognitive performance in each specific cognitive domain.

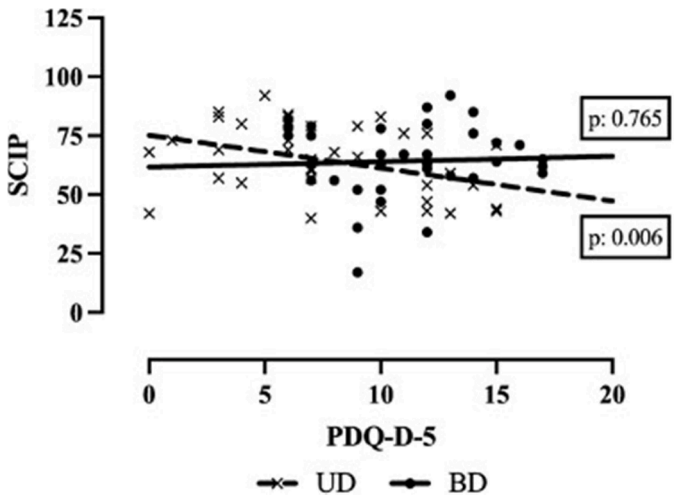

Fig. 3. Correlation between subjective and objective cognitive performance.

literature.

The results of our study confirm the high prevalence of cognitive impairment in individuals with MDE. (Szmulewicz et al., 2017; Bourne et al., 2013; Burdick et al., 2014; Rock et al., 2014). Specifically, 72.1 % of UD patients and 68.3 % of BD patients showed clinical cognitive performance below the normative threshold during objective assessment. This result is not totally consistent with Galimberti et al. (2020) study, which reported a lower prevalence of cognitive impairment. A potential explanation for the observed discrepancy between our findings and the existing literature may be attributed to methodological differences. Galimberti et al. (2020) employed the MoCA screening tool to assess cognitive deficits in patients with unipolar and bipolar depression. However, the MoCA is a significantly less sensitive instrument for detecting cognitive impairments within psychiatric populations compared to the SCIP battery utilized in the present study.

Regarding participants' objective cognitive functioning, both UD and BD patients demonstrated significantly lower scores on the SCIP battery compared to the healthy control group, consistent with previous findings (Szmulewicz et al., 2017; Bourne et al., 2013; Burdick et al., 2014; Rock et al., 2014). However, no significant differences were detected between the BD and UD groups in the severity of cognitive deficits, indicating a largely overlapping profile of cognitive dysfunction in these two affective disorders.

In terms of objective assessment, a higher prevalence of suboptimal outcomes was identified in the verbal fluency domain within the UD group, whereas deficits were more pronounced in the memory domains among the BD group. These findings align with the study by Miskowiak et al. (2024), which reported that individuals with bipolar disorder, even during full or partial remission, exhibited lower-than-expected performance on memory tasks, including working memory assessments.

Concerning subjective evaluation, both UD and BD patient groups reported significantly greater cognitive difficulties on the PDQ-D-5 test compared to healthy controls, consistent with prior research (Svendsen et al., 2012). Notably, BD patients reported more pronounced subjective cognitive difficulties than UD patients, a finding that aligns with some studies (Lin et al., 2019; Miskowiak et al., 2012) but contrasts with others (Szmulewicz et al., 2017). This discrepancy may be explained by the tendency of BD patients, particularly those with BD type II, to view hypomanic episodes as periods of cognitive well-being or even enhanced cognitive functioning, making the subsequent cognitive decline MDEs more noticeable (King et al., 2019).

Furthermore, we analyzed the correlation between subjective and objective cognitive measurements in the UD and BD groups. In our sample, we found that the relationship between self-reported cognitive functioning and psychometric performance was strong in UD patients, but weak in BD patients. The correlation between patients' perspectives and objective assessments is of significant interest and warrants further exploration through methodologically rigorous studies, given its crucial clinical implications and the inconsistency within the available literature (Moritz et al., 2004; Mowla et al., 2008). If confirmed, our findings may support studies suggesting that BD patients tend to report a subjective experience of poorer cognitive functioning during depressive episodes (Zhu et al., 2019). The detection of cognitive deficits and patients' perspectives during MDEs is crucial both for clinical treatment and for predicting psychosocial functional levels in the further course of the illness. Our findings underscore the importance of conducting thorough assessments of both objective and subjective cognition when managing depression. Tailored management and care strategies could be developed to address the specific depressive symptoms reported by patients, thereby advancing more personalized and precision-based psychiatry.

The results of this study should be interpreted considering several limitations. Firstly, the impact of pharmacological treatment on the course of depression was not evaluated. However, the comparison between the BD and UD groups did not reveal significant differences in either the number or types of medications being used. Another limitation concerns the relatively small sample size. Future research with larger cohorts is required to enable more precise interpretations and broader generalizations of the findings. Additionally, a longitudinal follow-up was not conducted to assess changes in cognitive functioning over time in patients with depression.

In light of above, in future research, we aim to conduct more in-depth studies with larger and more representative samples and prospective observational designs, taking into account potential confounding factors, such as pharmacological treatments. Increasing the sample size is expected to reduce random variability, minimise errors, and enhance statistical power (De Prisco and Vieta, 2024). Therefore, future research should incorporate power calculations to ensure sufficiently large sample sizes and improve statistical robustness. Furthermore, prospective observational approaches will facilitate the systematic collection of longitudinal data and will enhance the methodological rigour and reliability of the findings, providing a more detailed understanding of potential causal relationships underlying the investigated phenomena (Vieta and De Prisco, 2024). These methodological refinements, including the analysis of drug therapies taken by patients, are essential to reduce biases and ensure that the findings are generalizable and scientifically robust (Ilzarbe and Vieta, 2023).

On the other hand, the present study has some strengths, primarily the inclusion of a healthy control group and the careful selection of matched participants based on the most relevant socio-demographic variables. This approach facilitates a comparison of results with fewer confounding factors, thereby enhancing the reliability of our findings. Another key strength of the study is the recruitment of a homogeneous sample of unipolar and bipolar patients during the acute depressive phase, unlike previous studies that included heterogeneous samples comprising patients in various phases of illness (e.g., depressive, manic, or euthymic states). Additionally, the participants in this study were representative of "real-world" inpatients and outpatients with UD and BD, a feature that strengthens the generalizability and external validity of the findings. Furthermore, our study utilized sensitive quick, and easy-to-administer cognitive screening tools, such as the SCIP and PDQ-D-5 tests, which could be readily adopted in everyday clinical practice. In contrast, much of the data available in the literature were derived either from less sensitive screening instruments, or from extensive neuropsychological test batteries which are lengthy and challenging to use in routine clinical settings.

In further advancements of research on the cognitive assessment of mood disorders, we hope to employ increasingly sensitive and granular subjective evaluation instruments, such as the Cognitive complaints in bipolar disorder rating assessment (COBRA), which is not yet available in an Italian adaptation (Miskowiak et al., 2018).

In conclusion, the findings of this study suggest the presence of clinically relevant cognitive symptoms in depressed patients with major depressive and bipolar disorders. Notably, the observed lack of correlation between subjective and objective cognitive performance in BD patients may point to a potential disconnect between perceived cognitive difficulties and measurable deficits. These results could inform the development of tailored interventions of these subjects during major depressive episodes. However, further longitudinal studies are needed to investigate the effects of pharmacological treatments and the trajectory of cognitive functioning over time, to better elucidate the complex relationship between cognitive impairments and mood disorders.

Statement of ethics

All subjects who present at our inpatient and outpatient service do sign a written informed consent (reviewed by our Ethics Committee) to have their socio-demographic and clinical data potentially used for teaching and research purposes (provided that these data are anonymously treated). The research was conducted in accordance with the Declaration of Helsinki in its most recent version (64thWMA General Assembly, Fortaleza, Brazil, October 2013).

Research data

The data that support the findings of this study are available from the corresponding authors upon reasonable request. The data are not openly available, due to confidentiality of data collected from hospital clinical charts.

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CRediT authorship contribution statement

Gianluca Rosso: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Conceptualization. **Giorgia Porceddu:** Writing – review & editing, Writing – original draft, Visualization, Investigation, Formal analysis, Data curation. **Caterina Portaluppi:** Writing – review & editing, Visualization, Investigation, Formal analysis, Data curation. **Camilla Garrone:** Writing – review & editing, Visualization, Data curation. **Gabriele Di Salvo:** Writing – review & editing, Visualization, Validation, Formal analysis. **Giuseppe Maina:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Gianluca Rosso reports a relationship with Angelini that includes: consulting or advisory and speaking and lecture fees. Gianluca Rosso reports a relationship with Janssen that includes: consulting or advisory and speaking and lecture fees. Gianluca Rosso reports a relationship with Lundbeck that includes: consulting or advisory and speaking and lecture fees. Gianluca Rosso reports a relationship with Otsuka that includes: consulting or advisory and speaking and lecture fees. Giuseppe Maina reports a relationship with Angelini that includes: consulting or advisory, funding grants, and speaking and lecture fees. Giuseppe Maina reports a relationship with Boehringer Ingelheim that includes: consulting or advisory, funding grants, and speaking and lecture fees. Giuseppe Maina reports a relationship with FB-Health that includes: consulting or advisory, funding grants, and speaking and lecture fees. Giuseppe Maina reports a relationship with Janssen that includes: consulting or advisory, funding grants, and speaking and lecture fees. Giuseppe Maina reports a relationship with Lundbeck that includes: consulting or advisory, funding grants, and speaking and lecture fees. Giuseppe Maina reports a relationship with Otsuka that includes: consulting or advisory, funding grants, and speaking and lecture fees. Giuseppe Maina reports a relationship with Innova Pharma that includes: consulting or advisory, funding grants, and speaking and lecture fees. Gianluca Di Salvo reports a relationship with Angelini that includes: speaking and lecture fees. Gianluca Di Salvo reports a relationship with Lundbeck that includes: speaking and lecture fees. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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