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Original Article

Facial emotion recognition and its relationship to subjective and functional outcomes in remitted patients with bipolar I disorder

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Objectives: Outcome in bipolar disorder (BD) is multidimensional and consists of clinical and psychosocial domains. Difficulties in affect recognition and in emotional experience are a hallmark of BD, but there is little research investigating the consequences of this deficit on the psychosocial status of patients who are in remission.

Methods: This cross-sectional study examined the relationship of facial affect recognition and treatment outcomes in terms of psychopathology, quality of life, and psychosocial functioning in remitted BD patients compared to healthy volunteers.

Results: Altogether, 47 outpatients meeting diagnostic criteria for bipolar I disorder according to DSM-IV and 45 healthy control subjects were included in the study. Patients were particularly impaired in the recognition of facial expressions depicting disgust and happiness. For patients, the most frequently observed misidentifications included disgusted faces misrecognized as angry expressions, fearful faces misrecognized as disgusted or surprised expressions, surprised faces misrecognized as fearful expressions, and sad faces misrecognized as fearful or angry expressions. Regarding emotional experience, *shame*, *guilt*, *sadness*, *fear*, *lifelessness*, *loneliness*, and *existential fear* were experienced more intensely by patients.

Conclusions: These findings demonstrate deficits in experiencing and recognizing emotions in BD patients who are in remission and underscore the relevance of these deficits in the psychosocial context.

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The ability to recognize facial emotional expressions is considered to be a fundamental skill for successful social interaction and has consistently been shown to be impaired in patients with bipolar disorder (BD), especially in those with bipolar I disorder (BD-I) (1). During depressed states patients exhibit a general deficit in the perception of emotion (2–5), their underlying negative mood being of special relevance in this context. Accordingly, they show a mood-congruent negative bias regarding affective perception and are mainly impaired in the recognition of positive emotions (4, 6–8). In this context, Sweeney and coworkers (9) have reported on a significant association between attributional styles and depression. In their meta-analysis, they showed that for negative events, attributions to

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internal, stable, and global causes were reliably and significantly associated with depression. Similarly, for positive events, attributions to external, instable, and specific causes were associated with depression.

Manic patients have been shown to recognize positive facial expressions without any difficulties as they may be attuned to happiness by virtue of the congruence between their internal mood states and the depicted emotion. On the other hand, they are said to be especially impaired in recognizing negative emotions, which could account for inappropriate behaviour (10).

Facial emotion recognition deficits were long believed to remit during euthymic states of the disorder, but a growing body of evidence suggests that BD patients in remission also suffer from these impairments (11). Accordingly, these deficits may represent a trait marker of BD.

Two early studies (10, 12) found no differences between euthymic BD patients and healthy control subjects with regard to facial emotion recognition, but patients performed significantly worse on a facial discrimination task than normal controls (12). In contrast, Yurgelun-Todd and coworkers (13) have reported deficits in the recognition of fear, and Harmer et al. (14) have found *enhanced* recognition of facial expressions of disgust in euthymic patients. Venn et al. (15) were not able to replicate Harmer's findings (15). Lastly, Roiser et al. (16) have recently shown that positive mood induction in euthymic patients with BD leads to biases in information processing and impairs decision-making behaviour.

The inconsistent findings reviewed above may be due to variations in sample size, the use of different facial expression recognition tasks and combining patients with BD-I and bipolar II disorder in one study. Since depression is associated with negative bias in perception, some differences may also arise if the patients, although clinically euthymic, are still experiencing low grade symptoms of depression. Likewise, medication has been shown to have an impact on the perception of facial expressions of emotion (17, 18). Therefore, the aim of the present study was to investigate facial emotion recognition in a reasonable sample of *remitted* patients with BD-I, and to extend previous findings by investigating the relationship between facial emotion recognition and treatment outcomes. In this context, the following questions were addressed.

(i) Do BD-I patients in remission differ from healthy controls with respect to their ability to recognize and experience emotions?
(ii) Is there a relationship between emotion recognition abilities and subjective and functional outcomes in BD-I patients?
(iii) Is there a relationship between sociodemographic variables and emotion recognition abilities in these patients?

Patients and methods

The study sample consisted of 47 outpatients meeting diagnostic criteria for BD-I according to DSM-IV and 45 healthy control subjects, between the ages of 18 and 60 years. Controls were free of any medication, which may interfere with task performance. Patients were recruited from the outpatient services of the Medical Universities of Innsbruck and Salzburg, while the healthy controls were recruited from the community and were chosen to match patients in age, sex, and education. All participants signed informed consent forms in accordance with the local ethical committees.

In patients, diagnosis was confirmed by using the German version of the Mini International Neuropsychiatric Interview (19). In order to ensure symptomatic remission, they had to have a score of ≤ 8 on both the Young Mania Rating Scale (YMRS) (20) and the Montgomery–Åsberg Depression Rating Scale (MADRS) (21). Healthy participants had to have a score of ≤ 63 on the Brief Symptom Inventory (BSI) (22) and to have no history of any psychiatric illness.

Exclusion criteria for both groups included any other axis I disorder (including substance abuse), neurological and developmental disorders, and any physical illness that may have affected the participants' cognitive performance.

Premorbid intelligence

Premorbid intelligence was measured by using the Mehrfachwahl–Wortschatz Test B (MWT-B) (23), a multiple choice vocabulary test. The items of the MWT-B consist of 37 lines, each comprising five words. One is an authentic word from the dictionary, while four are fictitious. The subject is asked to find the correct word and to underline it. Each word correctly recognized scores one point.

Facial emotion recognition test

Emotion recognition ability was assessed with the Facially Expressed Emotion Labeling (FEEL) test (24). This computer program displays portrait pictures of actors with the typical facial expression of one of the six basic emotions (anger, sadness,

disgust, fear, happiness, and surprise) for 300 msec each after the same faces have been shown with a neutral expression. Subjects then have to decide quickly and accurately which of the six emotions they have just seen by clicking on the appropriate label (forced-choice response format). For each one of the six emotions, seven pictures are displayed. In a training round the subjects see six example faces (one for each emotion) and get feedback on whether their decisions were correct or incorrect. This warm-up is designed to make the subjects familiar with the testing procedure. With 42 pictures being shown (six emotions with seven examples each) and 1 point given for each correctly labelled face, the FEEL score ranges from 0 to 42. In addition, we calculated misidentification scores for each of the six emotions.

Emotional experience

Emotional experience was assessed by using part 1 of the Questionnaire for the Assessment of Emotional Experience and Emotion Regulation (EER) (25), a factor-analytically constructed self report instrument. In this instrument, a wide range of different emotional experiences are covered by twenty experience scales, including clinically important emotions like lifelessness, diffuse anxiety, helplessness, or emptiness. EER scales have shown sufficient reliability and validity.

Quality of life

In patients, quality of life (QoL) was assessed with the World Health Organization Quality of Life-BREF (WHOQOL-BREF) (26) which consists of 26 questions, scored into four domains: physical health (7 items), psychological (6 items), social relationships (3 items), and environment (8 items). Each item is rated on a 5-point scale and the domain scores are transformed to lie between 0 and 100. Two items are global indicators of QoL and satisfaction with health, which are not included in the calculation of the domain scores.

Psychosocial functioning

Functional outcome was evaluated by assessing patients' partnership and employment status, and by assessing their living situation. The Global Assessment of Functioning Scale (GAF) (27) was used for assessing patients' overall level of functional status across psychological, social, and occupational domains via a single anchored measure. The GAF Scale is divided into 10 ranges of functioning. Each 10-point range contains a description with two components: symptom severity and functioning. A higher score indicates a better overall level of functioning.

Statistical analyses

For the comparison of BD patients and healthy control subjects with respect to sociodemographic variables the chi-square test and the Mann–Whitney *U*-test were used, depending on the variable type (categorical and non-normally distributed metric variables, respectively). The Mann–Whitney *U*-test was also employed to compare the two groups with regard to emotion recognition (FEEL-subscores for individual emotions and misidentifications) and emotional experience (EER), as most of the subscale scores were not distributed normally. In addition, analyses of covariance with adjustment for gender were performed as the two groups (patients and controls) showed a certain gender imbalance. Associations between subscales of the FEEL and the EER and patients' quality of life as well as symptomatic and functional outcomes were evaluated by non-parametric correlation analysis (Spearman rank correlation). All statistical tests were performed at a two-tailed significance level of $\alpha = 0.05$. In order to avoid an inflation of the type-one error due to multiple testing, Bonferroni-corrected p-values are reported along with the raw p-values.

Results

Sample characteristics

Demographic and clinical characteristics of the study sample are summarized in Table 1. Patients and control subjects were comparable with regard to age, sex, and education. However, they differed significantly with regard to their partnership and employment status, and with regard to their living situation.

Patients were symptomatically remitted as shown by mean ± standard deviation (SD) scores of 1.3 ± 1.5 on the YMRS and 3.0 ± 2.3 on the MADRS. Most patients received combined psychopharmacological treatments.

Emotion recognition abilities

An overview of patients' and control subjects' emotion recognition abilities, as assessed by the FEEL test, is given in Table 2. Patients were significantly impaired in the recognition of happiness and disgust. Within the patient group, recognition was best for expressions depicting

Table 1. Sample characteristics

	Bipolar disorder (n = 47)	Controls (n = 45)
Age, years, mean (SD)	42.2 (10.2)	39.9 (6.2)
Sex, female/male, %	38.3/61.7	53.3/46.7
Duration of illness, years, mean (SD)	12.9 (9.3)	
Time since discharge, months, mean (SD)	49.3 (54.6)	
Education, years, mean (SD)	12.8 (3.1)	12.8 (2.5)
MWT-B score, mean (SD)[a]	69.1 (25.0)	
MADRS score, mean (SD)	3.0 (2.3)	–
YMRS score, mean (SD)	1.3 (1.5)	–
Treatment, n (%)		
Mood stabilizer monotherapy	7 (14.9)	–
Antipsychotic monotherapy	0 (0.0)	–
Antidepressant monotherapy	0 (0.0)	–
Mood stabilizer + AP	17 (36.2)	–
Mood stabilizer + AD	8 (17.0)	–
AP + AD	1 (2.1)	–
Mood stabilizer + AP + AD	13 (27.7)	–
Concomitant medication, n (%)		
Benzodiazepines	1 (2.1)	–
Housing, n (%)[b]		
With original family	1 (2.1)	0 (0.0)
With own family	24 (51.1)	41 (91.1)
Alone	20 (42.6)	4 (8.9)
Other	2 (4.3)	0 (0.0)
Partnership status, n (%)[c]		
Single	19 (40.4)	12 (26.7)
Married/stable partnership	15 (31.9)	29 (64.4)
Divorced/separated	12 (25.5)	4 (8.9)
Widowed	1 (2.1)	0 (0.0)
Employment status, n (%)[b]		
Full-time employment	12 (25.5)	30 (66.7)
Part-time employment	9 (19.1)	10 (22.2)
Supported employment	1 (2.1)	0 (0.0)
Training	2 (4.3)	2 (4.4)
Housewife	1 (2.1)	3 (6.7)
Retired	17 (36.2)	0 (0.0)
Unemployed	4 (8.5)	0 (0.0)

MWT-B = Mehrfachwahl–Wortschatz Test B; MADRS = Montgomery–Åsberg Depression Rating Scale; YMRS = Young Mania Rating Scale; AP = antipsychotic; AD = antidepressant; SD = standard deviation.
[a]Possible scores range from 1 to 99; higher scores indicate better performance.
[b]$p < 0.001$ (chi-square test).
[c]$p = 0.012$ (chi-square test).

happiness followed by those depicting anger, surprise, sadness, disgust, and fear. For patients, the most frequently observed misidentifications included disgusted faces misrecognized as angry expressions (26.1%), fearful faces misrecognized as disgusted (15.8%) or surprised expressions (15.2%), surprised faces misrecognized as fearful expressions (14.0%), and sad faces misrecognized as fearful (11.2%) or angry expressions (10.9%).

There was one misidentification that was observed less often in healthy subjects than in patients, namely disgusted faces misrecognized as angry expressions (26.1% in patients versus 10.7% in control subjects) (Table 3).

Table 2. Emotion recognition abilities (percent correct answers) in bipolar disorder patients and control subjects according to the Facially Expressed Emotion Labeling (FEEL) test

	Bipolar disorder	Controls	Statistics[a]		
Emotion	Mean (SD)	Mean (SD)	*Z*	p-value	p-corrected[b]
Fear	64.1 (25.9)	69.8 (27.9)	0.81	n.s.	n.s.
Happiness	93.6 (9.8)	98.7 (4.1)	2.75	0.0060	0.0417
Surprise	81.5 (17.6)	87.0 (15.2)	0.34	n.s.	n.s.
Disgust	66.9 (28.1)	87.9 (20.7)	3.59	0.0003	0.0023
Sadness	67.8 (26.7)	79.0 (19.2)	1.59	n.s.	n.s.
Anger	90.0 (19.5)	92.1 (12.0)	0.40	n.s.	n.s.
Total score	77.3 (12.5)	85.8 (9.2)	3.40	0.0007	0.0047

n.s. = not significant ($p > 0.10$); SD = standard deviation.
[a]Mann–Whitney *U*-test.
[b]Bonferroni-corrected p-value (7 × uncorrected p-value).

Outcomes

Emotional experience, as assessed by the EER, is summarized in Table 4. *Shame*, *guilt*, *sadness*, *fear*, *lifelessness*, *loneliness*, and *existential fear* were experienced more intensely by patients.

An overview of patients' QoL, as assessed by the WHOQOL-BREF, is given in Table 5. Of the life domains assessed, *environment* received the highest satisfaction ratings, while *social relationships* had the lowest ratings. Patients' global QoL was generally good, which is reflected by a mean WHOQOL-BREF score of 64.6 on a scale from 0 (poorest QoL) to 100 (best QoL). Similarly, a mean ± SD GAF score of 83.1 ± 10.6 reflected a relatively high level of global functioning.

Association of emotion recognition abilities (FEEL) with symptomatic and functional outcomes, and QoL in BD patients

Overall, there were only a few significant correlations between emotion recognition abilities and both symptomatic and functional outcomes. Correct identification of happy faces was significantly associated with lower scores on the MADRS ($r = -0.44$, Bonferroni-corrected $p = 0.048$). No significant correlations were evident between FEEL subscores and the YMRS.

Correct recognition of expressions depicting fear and the FEEL total score as well as misattribution of anger to sad faces were positively associated with the patients' employment status, while the GAF score was positively correlated with correct recognition

Table 3. Misinterpretations on the Facially Expressed Emotion Labeling (FEEL) test (percentage scores): comparison of bipolar disorder patients versus healthy controls

	Bipolar disorder	Controls	Statistics[b]		
Misinterpretation[a]	Mean (SD)	Mean (SD)	*Z*	p-value	p-corrected[c]
Disgust as anger	26.1 (23.7)	10.5 (17.9)	3.27	0.0011	0.0065
Fear as surprise	15.2 (16.6)	17.1 (21.0)	0.54	n.s.	n.s.
Fear as disgust	15.8 (19.6)	11.1 (16.7)	1.79	0.074	n.s.
Surprise as fear	14.0 (17.0)	11.1 (13.9)	0.77	n.s.	n.s.
Sadness as fear	11.2 (13.0)	7.6 (10.8)	1.42	n.s	n.s
Sadness as anger	10.9 (15.3)	6.3 (9.4)	1.22	n.s.	n.s.

n.s. = not significant (p > 0.10); SD = standard deviation.
[a]The table is restricted to the six most frequently occurring misinterpretations.
[b]Mann–Whitney *U*-test.
[c]Bonferroni-corrected p-value (6 × uncorrected p-value).

Table 4. Experienced emotions (EER) in bipolar disorder patients and controls

	Bipolar disorder	Controls	Statistics[a]	
Emotion	Mean (SD)	Mean (SD)	*Z*	p-value
Interest	3.73 (1.35)	3.79 (0.94)	0.07	n.s.
Happiness	3.22 (1.41) ↓	3.78 (0.83)	2.14	0.032
Surprise	1.74 (1.33)	1.53 (1.06)	0.54	n.s.
Anger	1.74 (1.34)	1.27 (1.12)	1.73	0.083
Disgust	0.74 (0.94)	0.45 (0.72)	1.70	0.089
Disdain	0.89 (0.92) ↑	0.44 (0.54)	2.47	0.014
Shame	1.38 (1.08) ↑	0.52 (0.53)	4.35	<0.001
Guilt	1.45 (1.17) ↑	0.48 (0.66)	4.72	<0.001
Sadness	1.93 (1.51) ↑	1.07 (1.04)	2.94	0.003
Fear	1.35 (1.49) ↑	0.43 (0.58)	3.43	0.001
Lifelessness	1.25 (1.60) ↑	0.30 (0.59)	3.72	<0.001
Loneliness	1.33 (1.63) ↑	0.37 (0.73)	3.48	<0.001
Love/tenderness	3.12 (1.55) ↓	3.70 (0.93)	2.21	0.031
Jealousy	0.69 (0.99)	0.51 (0.75)	0.42	n.s.
Irritability	1.35 (1.23)	1.14 (0.91)	0.36	n.s.
Lack of self control	1.02 (1.24)	0.91 (0.97)	0.10	n.s.
Abandonment	0.98 (1.07)	1.17 (1.02)	1.20	n.s.
Impulsivity	1.36 (1.09)	1.30 (0.95)	0.10	n.s.
Diffuse fear	1.57 (1.40) ↑	0.93 (1.01)	2.47	0.014
Existential fear	1.16 (1.48) ↑	0.37 (0.60)	3.37	0.001

EER = Questionnaire for the Assessment of Emotional Experience and Emotion Regulation; n.s. = not significant (p > 0.10); SD = standard deviation; ↓ = significantly lower than in the control group; ↑ = significantly higher than in the control group.
[a]Mann–Whitney *U*-test.

Table 5. Quality of life scores of 47 bipolar disorder patients according to the World Health Organization Quality of Life-BREF (WHOQOL-BREF)[a]

Domain	Mean (SD)
Physical health	65.5 (17.5)
Psychological	63.7 (19.0)
Social relationships	63.0 (21.5)
Environment	74.3 (15.9)
Global quality of life	64.6 (22.0)

SD = standard deviation.
[a]Range: 0 (poorest quality of life) to 100 (best quality of life).

of happiness. However, these findings did not reach statistical significance after Bonferroni correction. Similarly, partnership (yes, no) was not significantly associated with emotion recognition.

Correct recognition of happiness (FEEL) correlated positively with most QoL domains ($r = 0.45$, Bonferroni-corrected $p = 0.045$ for both global and physical QoL; $r = 0.47$, corrected $p = 0.024$ for psychological QoL), whereas the other emotions showed only few correlations with patients' QoL.

Association of emotional experience (EER) with symptomatic and functional outcomes, and QoL in BD patients

The EER subscale happiness correlated negatively with the MADRS scale ($r = -0.47$, corrected $p = 0.026$; more experience of happiness went along with lower MADRS scores). Regarding functional outcomes, hardly any significant associations with the EER were observed. Specifically, we found no association between EER scores and employment status, living circumstances and partnership.

In contrast, emotion experience was fairly highly correlated with patients' QoL (see Table 6). Happiness correlated positively with all QoL domains and sadness correlated negatively with all domains except environmental QoL. Moreover, the experience of surprise was positively correlated with two QoL domains (psychological and social relations; corrected $p < 0.05$) and the experience of fear showed a negative correlation with global QoL, at a trend-level.

Discussion

The current study demonstrates that even during euthymic states of the disorder BD patients suffer from impaired emotion recognition abilities,

Table 6. Correlation of selected EER subscales with quality of life [World Health Organization Quality of Life-BREF (WHOQOL-BREF)] in bipolar disorder patients

	WHOQOL subscales				
EER emotion	Global QoL	Physical QoL	Psychological QoL	Social relations	Environmental QoL
Happiness					
r Spearman	0.539[b]	0.568[b]	0.690[b]	0.575[b]	0.645[b]
p-raw	0.000	0.000	0.000	0.000	0.000
p-corrected[a]	0.002	0.001	< 0.001	0.001	0.001
Surprise					
r Spearman	0.187	0.243	0.460[c]	0.493[c]	0.353
p-raw	n.s.	n.s.	0.001	0.001	0.017
p-corrected[a]	n.s.	n.s.	0.039	0.018	n.s.
Anger					
r Spearman	0.080	0.034	−0.019	−0.148	−0.013
p-raw	n.s.	n.s.	n.s.	n.s.	n.s.
p-corrected[a]	n.s.	n.s.	n.s.	n.s.	n.s.
Disgust					
r Spearman	−0.143	−0.166	−0.011	−0.062	0.030
p-raw	n.s.	n.s.	n.s.	n.s.	n.s.
p-corrected[a]	n.s.	n.s.	n.s.	n.s.	n.s.
Sadness					
r Spearman	−0.573[b]	−0.539[b]	−0.680[b]	−0.731[b]	−0.419
p-raw	0.000	0.000	0.000	0.000	0.004
p-corrected[a]	0.001	0.002	< 0.001	< 0.001	0.099
Fear					
r Spearman	−0.421	−0.313	−0.402	−0.251	−0.370
p-raw	0.003	0.034	0.005	0.093	0.011
p-corrected[a]	0.096	n.s.	n.s.	n.s.	n.s.

EER = Questionnaire for the Assessment of Emotional Experience and Emotion Regulation; QoL = quality of life; n.s. = not significant ($p > 0.10$).
[a]Bonferroni-corrected p-value (30 × uncorrected p-value).
[b]$p < 0.01$ Bonferroni-corrected.
[c]$p < 0.05$ Bonferroni-corrected.

especially for facial expressions depicting disgust and happiness. These findings are consistent with previous studies reporting on impairments of facial emotion perception during both manic (10, 28, 29) and depressed states (2–9) but also when patients are in remission (13, 30). In addition, our study demonstrates that correct facial emotion recognition is associated with emotional experience and QoL, and patients experienced negative emotions more intensely. In addition, they reported dissatisfaction especially on the social relationships domain of the WHOQOL-BREF. This corroborates previous findings indicating that the appreciation of facial emotional expressions is essential for successful social functioning (31). Accordingly, it is not surprising that patients and control subjects differed significantly with regard to their partnership, employment status and living situation, which corresponds to the findings of other studies (32–35). For example, Sierra et al. (34) have shown that BD patients experience lower functioning and well-being even in the stable phase of the disorder.

Obviously, deficits in the recognition of emotions are unlikely to be the sole reason for functional impairments. Next to residual symptoms of BD (36) the psychosocial consequences of behavioural disturbances during manic episodes as well as those following depressive states need to be considered here as well. In this context, the mean duration of illness of approximately 13 years in our sample is likely to have contributed to psychosocial impairment. This also emphasizes the necessity to offer continuous medical and psychological care even when patients are in remission.

To the best of our knowledge, this is the first study that reports on misinterpretations of facial emotions. Patients, for instance, misidentified disgusted faces as angry expressions more often than controls. This finding is contradictory to that of Harmer et al. (14), who described enhanced recognition of disgust in bipolar illness. However, the two studies are not easily comparable as they differ in terms of sample size, age and years of education of study participants, and Harmer and co-workers do not report on illness duration.

The patients investigated in the current study were impaired in the recognition of disgust and happiness, and we detected a frequent misidentification of disgust as anger. Clearly, this is impor-

tant in interpersonal relationships, and the vis-à-vis may feel uncomfortable or even menaced if a person does not react suitably to such emotions. In addition, the personal experience of happiness (assessed by the EER) was positively associated with all QoL domains. Similarly, sadness correlated negatively with all domains except environmental QoL. This, as well as other findings which make good clinical sense, such as the fact that the EER subscale happiness correlated negatively with the score on the MADRS, provides indirect indicators that the instruments chosen for this study are valid and reliable.

The current study also has some limitations. First, due to the broad array of applied treatments, we were not able to account for a potential influence of medication. Especially adverse events such as sedation or subtle motor side effects may have impacted upon the reported results. As all patients were symptomatically remitted we can at least rule out efficacy differences between the different drugs. However, when interpreting our results one clearly has to take into account a potential influence of antidepressants and antipsychotics which are known to impair the recognition of facial expressions (17, 18). Second, time of remission was not specifically defined and registered. As the MADRS and YMRS remission criteria were applied cross-sectionally we do not really know when patients had first met these criteria. Therefore, patients may have experienced different durations of clinical stability, potentially affecting course and psychosocial outcomes. Third, our results slightly changed after Bonferroni correction. However, the majority of the important results were retained even after Bonferroni correction while a number of minor findings did not withstand the correction. Accordingly, further research is needed with a larger sample size. Lastly, although we have found substantial correlations between different outcome measures, a cross-sectional study does not allow for causal conclusions. It will therefore be critical to generate longitudinal data to determine how the associations of these determinants of subjective and functional outcomes interact and change over time. Nevertheless, our findings complement the increasing concerns in the field that BD patients, even when in symptomatic remission, are in need of continuous psychosocial support.

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