traditional trait-state dichotomy, but rather as a composite of changes related to the *trait* of having a bipolar disorder and *state* changes related to the strain imposed by environmental factors and repeated mood episodes.

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Key words: biomarker – bipolar disorder – brain-derived neurotrophic factor

Brain-derived neurotrophic factor in mood disorders: reply to Kapczinski et al.'s comment

To the Editor:

We thank Dr. Kapczinski and his colleagues (1) for their comment which raises some intriguing issues on the role of brain-derived neurotrophic factor (BDNF) in mood disorders. First of all, since in our original paper (2) we did not provide the mean levels of serum BDNF and several researchers requested those data for possible meta-analyses, we include here a table showing mean ± SD values for serum BDNF levels in both patients and healthy controls.

Our initial suggestion that decreased circulating BDNF in patients with mood disorders might not be related to specific psychiatric morbidity was based on three major points: (i) in our patients with comorbid Axis I psychiatric disorders serum BDNF concentrations did not significantly differ from those without any psychiatric comorbidity (2); (ii) in patients with anorexia nervosa or bulimia nervosa, reduced serum BDNF levels were not affected by comorbid mood disorders, either current or lifetime (3, 4); and (iii) decreased BDNF values have also been detected in patients

Mean ± SD serum brain-derived neurotrophic factor (BDNF) levels (ng/mL) in healthy controls, in euthymic and depressed patients with unipolar depression (UD), and in euthymic patients with bipolar disorder (BP) I or BP II

	Healthy controls	Euthymic patients with UD	Depressed patients with UD	Euthymic patients with BP I	Euthymic patients with BP II
Drug-treated + drug-free patients	42.5 ± 12.5	29.4 ± 11.9[a]	29.0 ± 15.9[b]	27.9 ± 15.3[b]	27.9 ± 14.7[b]
Drug-free patients		30.0 ± 12.5[a]	26.7 ± 18.0[b]	23.0 ± 14.0[c]	24.9 ± 13.7[a]

[a]$p < 0.02$; [b]$p < 0.05$; [c]$p < 0.005$ versus healthy controls (post hoc Tukey's test).

with anxiety disorders (5) and schizophrenia (6). Therefore, we proposed that decreased BDNF could be a biological background common to different psychiatric disorders. Recently, Dr. Kapczinski and colleagues reported that serum BDNF levels were lower in bipolar disorder patients who suffered traumatic experiences (7) and in those who experienced multiple affective episodes as compared to first episode patients (data submitted for review), and proposed that reduced BDNF in mood disorders could be the expression of a composite of changes related to the 'state' of having a mood disorder and of 'trait' changes imposed by environmental factors. We agree with this idea, which seems further strengthened by the recent demonstration that women with recurrent major depression who suffered childhood physical neglect exhibit even lower serum BDNF concentrations (8). Studies need to be conducted to determine whether Dr. Kapczinski and colleagues' hypothesis applies to mood disorders only or may also be extended to other psychiatric conditions characterized by impaired BDNF production.

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Key words: BDNF – bipolar disorders – depression