

A New Approach to Emotional Dysregulation in Bipolar Disorder

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Bipolar disorder (BD) is a mental disorder characterized by periods of mania and depression that, even during asymptomatic states (i.e., euthymia), involves a mood dysregulation [1]. Mood dysregulation has been included as a new clinical entity for BD in the last publication of the Diagnostic and Statistical Manual of Mental Disorders [2]. However, the nosologic relationship between BD and mood dysregulation is still an unsolved issue [3].

At the theoretical level, cognitive vulnerability models [4] assume that the dysfunction for inhibiting mood-congruent stimuli represent an important component of emotion dysregulation in BD. In particular, negative biases in depression or positive biases in mania may evoke extreme emotional responses that require more effortful inhibitory control [5]. However, this extrapolation to BD of Beck's Cognitive Theory of Depression (i.e., biases towards happy stimuli in mania and sad stimuli in depression; [6] has not always been supported at empirical level.

To understand the emotion dysregulation entailed in these BD periods, it is fundamental to examine whether or not patients are voluntarily exercising control over the emotional information processing [5]. To our knowledge, only one eye-tracking study has examined the inhibitory attention control of emotional stimuli comparing BD patients in their manic, depressive, and euthymic periods [7]. Applied an emotional antisaccade experiment with "happy", "sad", and "neutral" faces to BD patients. In antisaccade blocks, participants were required to inhibit the automatic prosaccade and voluntarily generating an antisaccade to the mirror position. Results showed that while manic BD patients committed more antisaccade errors when the target face was a happy one, depressed BD patients committed more antisaccade errors when the target face was a sad one. No differences were found in euthymic BD patients or healthy individuals. Thus, [7] findings suggest that BD patients had more difficulties for voluntarily controlling their attention towards mood-congruent stimuli during symptomatic states.

Alternatively, the attentional biases towards emotional information in BD have also been studied in more ecological scenarios, such as the free-viewing task without restricted instructions. In the [8] experiment, BD patients were simultaneously viewed with four complex scenes with different emotional valence (happy, neutral, sad, threatening) for 20s while their eye movements were registered. BD patients, regardless of their episode, showed greater attention to threatening pictures than healthy individuals. In addition, depressed BD patients showed less attention to happy images than healthy participants. These differences were observed in the overall allocation of attention (i.e., percent fixation time and percent fixations) but not in earlier attentional capture (i.e., first-pass duration and location of the initial fixation). While these data from [8] are relevant to determine the interplay of the attentional biases in the different episodes of BD, there was a shortcoming: the simultaneous presence of multiple emotional stimuli impedes to know the effect on attention of each emotional stimulus. To assess separately the effect of each emotional stimulus, [9] presented simultaneously a target scene (happy, neutral, and threatening) together with a neutral control scene for 3s in a free-viewing task. Manic BD patients showed greater allocation of attention (i.e., number of total fixations) on happy images than neutral ones. Importantly, unlike healthy individuals,

BD patients (regardless of their episode) showed greater attention to threatening both in capture attention (i.e., number of first-pass fixations) and in overall allocation (i.e., number of total fixations). Taken together [8,9] findings strongly suggest that BD patients when freely attend to emotional stimuli show a bias towards threat-related information, even in early states of information processing. According to [10], threatening information may be emotionally relevant due to BD patients are usually characterized by psychotic and paranoid traits.

To sum up, emotion dysregulation in BD are characterized by: i) attentional biases towards happy and sad information depending on their clinical state (i.e., mania and depression, respectively) during voluntarily controlled task; and ii) an attentional biases towards threatening information even in asymptomatic episodes during free-viewing task together with an attentional bias away from happy stimuli in bipolar depression.

Traditional cognitive theories on bipolar disorder [6] should be re-formulated in order to a better understanding of the psychological mechanism underlying the mood dysregulation in BD. The cognitive model about unipolar depression cannot be directly extrapolated to BD for three reasons: a) unlike unipolar depression, an anhedonic lack of sensitivity to positive stimuli is more salient than a preference by negative stimuli in BD [8]; b) cognitive theories do not keep in mind the influence of threatening schemata in BD, which are present during free-viewing processing [8,9]; and c) unlike unipolar depression, the mood-congruent bias can also occur in the earliest stages of processing [7,9]. In addition, characterizing the components of attentional bias in BD is not only crucial for improving theoretical paradigms, but it is also essential for specifying treatment targets based on attention training, which have been showed effective in other mental disorders [11].

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