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Autobiographical memory and its association with neuropsychological function in bipolar disorder

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Abstract

Objective: The aim of this study was to investigate the overgeneralization of autobiographical memory (AM) in bipolar disorder (BD) and assess its association with multiple cognitive domains.
Method: Twenty-eight clinically stable bipolar I patients and an equal number of age- and gender-matched healthy controls (HC) were included. All participants were examined using the autobiographical memory test (AMT) and the neuropsychological battery including the general intelligence, attention, verbal memory, verbal fluency, visual memory, and executive functions domain. Demographic, clinical, and test variables were compared between BD and HC groups. Correlation analyses of AMT scores with cognitive functions were performed within each group, controlling for demographic and clinical variables.
Results: Total and negative scores of AMT were significantly lower in BD patients compared to HC individuals. AMT scores were significantly correlated with WAIS similarities, WCST perseverative errors, and WCST categories completed in BD, whereas AMT scores were correlated with verbal memory and verbal fluency in HC.
Conclusion: Our findings suggest that overgeneral AM is a characteristic of BD and is related to executive function. Future studies should investigate the benefit of additional treatment focusing on overgeneral AM in BD.

1. Introduction

Autobiographical memory (AM) is a transitory but stable mental construction in a self-memory system [1]. AM is important for the temporospatial retrieving of previously experienced life events as well as integrating imagery, narrative, and emotion with personal history [2–5], making one's sense of self [1,4,6], problem-solving in a social context [7–9], and executive functioning such as planning, inhibition, and flexibility [10–14].

In patients with major depressive disorder (MDD), overgeneralized AM was sustained after recovery from depression [15] and predicted the maintenance of a depressive episode [16]. Compared to healthy controls (HC) and individuals with unipolar depression, patients with bipolar disorder (BD) were presented more overgeneral AM [3,17]. Mansell and Lam [3] suggested these BD patients use the "manic defense" mechanism to prevent worrying about life stress. The overgeneralization of AM might play a role in the aggravation or persistence of affective symptoms in BD, especially for negative memories [3].

Several reviews and meta-analyses of cognitive dysfunction in BD [18–24] showed that specific cognitive functions, particularly executive function and verbal (or visual) memory, are still impaired in the euthymic state. A recent longitudinal study demonstrated that cognitive dysfunction in BD persisted in all cognitive domains after the acute phase and executive function continuously worsened [25]. Cognitive impairment in BD might contribute to the deterioration of a course of illness,

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poorer functional outcomes [19,20,24,26–29], and even affect lability [30].

Reduced AM specificity is associated with impaired problem-solving in unipolar depression [8], and AM is considered as a structure of episodic and semantic memory [1,5,13]. This suggests AM would be associated with a particular cognitive domain in BD. Indeed, the relationship between AM and cognitive function has been demonstrated in conditions such as MDD [8], schizophrenia [31], eating disorders [12], dementia of the Alzheimer type [10], and traumatic brain injury [11]. However, to our knowledge, the studies on AM in BD have been limited to only several published works [3,17,32–34], and no studies have investigated the association between AM in BD and the neuropsychological function for multiple cognitive domains.

The purpose of the present study was to examine overgeneral AM in relation to BD and to investigate the relationship between AM and neuropsychological function in BD. We investigated: 1) whether AM overgeneralization is greater in BD patients than HC individuals and 2) the association of AM with various cognitive domains in BD patients.

2. Methods

2.1. Subjects

Twenty-eight bipolar I patients between the ages of 20 and 50 years were recruited from in- and out-patient clinics at Severance Mental Health Hospital. All patients were clinically stable enough to take both the autobiographical memory test (AMT) and the two-hour comprehensive neuropsychological battery test for this study. Each of patients met the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition for bipolar I disorder and were briefly interviewed using the Mini-International Neuropsychiatric Interview [35] by two expert psychiatrists. All patients were medicated at the commencement of the study. The residual manic symptom was assessed by the Young Mania Rating Scale (YRMS) [36] and depressive symptom by the Montgomery–Åsberg Depression Rating Scale (MADRS) [37]. We excluded patients with any medical or other psychiatric comorbidities, mental retardation, or history of head trauma. Moreover, color-blind individuals were excluded because of the Stroop Color–Word Test [38] included in the neuropsychological battery. The control group was composed of twenty-eight healthy age- and gender-matched volunteers without any neurological or psychiatric history, who were recruited through a website advertisement. Demographic and clinical data from the BD and HC group are presented in Table 1. Patients with BD were similar in age to those in the HC group. Also, two groups were not significantly different in sex, education, and employment status. YMRS and MADRS scores of BD patients show that patients were in relatively stable mood.

This study was approved by the Institutional Review Board of Severance Mental Health Hospital and conducted in accordance with the Declaration of Helsinki. All subjects participated after they had given a written informed consent.

2.2. Autobiographical memory test

The AMT, a word-cuing technique originally developed by Williams and Broadbent [39], was used to assess overgenerality of AM (the concept direction reversal for AM specificity). We adapted the AMT to Korean culture, so that the pooling cue-words from three different sources, as reported in a previous publication [40], were performed as follows: 1) words used by Williams and Broadbent [39] (pleasant words: happy, safe, interested, successful, and surprised; and unpleasant words: sorry, angry, clumsy, hurt, and lonely); 2) words relevant to patients with BD

Table 1
Demographic and clinical characteristics of bipolar disorder (BD) patients and healthy controls (HC) (mean ± SD).

	BD (n = 28)	HC (n = 28)	t or χ^2	P
Age (years)	36.68 ± 8.17	32.11 ± 9.56	1.924	0.060
Sex, male, n (%)	15 (53.6)	15 (53.6)	0.000	1.000
Education (years)	13.57 ± 1.99	14.43 ± 1.99	−1.612	0.113
Currently employed, n (%)	10 (35.7)	13 (46.4)	0.664	0.415
Duration of illness (years)	11.07 ± 8.80	–		
Number of mood episodes				
Total episodes	5.11 ± 2.95	–		
Manic episodes	3.25 ± 2.07	–		
Depressive episodes	1.86 ± 1.82	–		
YMRS score	6.00 ± 6.14	0.25 ± 0.93	4.899	<0.001
MADRS score	3.68 ± 2.67	0.25 ± 0.59	6.643	<0.001
Medications (mg)				
Lithium (n = 15)	940.00 ± 222.97	–		
Divalproex sodium (n = 15)	936.67 ± 380.07	–		
Antipsychotics[a] (n = 24)	339.67 ± 292.15	–		

YMRS, Young Mania Rating Scale; MADRS, Montgomery–Åsberg Depression Rating Scale.
[a] Chlorpromazine equivalent dose.