Emotion regulation and Residual Depression Predict Psychosocial Functioning in Bipolar Disorder: Preliminary Study*

Regulación de las emociones y la depresión residual predicen el funcionamiento psicosocial en el trastorno bipolar: estudio preliminar

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Rodrigo Becerra **
Kate Cruise ***
Craig Harms ****
Alfred Allan *****
Darryl Bassett ******
Institución Edith Cowan University, Australia
Sean Hood *******
University of Western Australia, Perth WA, Australia
Greg Murray ********
School of Psychology, Swinburne University of Technology, VIC, Australia.

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Abstract

This study explores the predictive value of various clinical, neuropsychological, functional, and emotion regulation processes for recovery in Bipolar Disorder. Clinical and demographic information was collected for 27 euthymic or residually depressed BD participants. Seventy one percent of the sample reported some degree of impairment in psychosocial functioning. Both residual depression and problems with emotion regulation were identified as significant predictors of poor psychosocial functioning. In addition, to residual depression, the results of the current study introduce a variable of emotion dysregulation to account for poor psychosocial functioning among BD populations. Improving emotion regulation strategies, in particular, concentration and task accomplishment during negative emotional states could have important consequences for improving overall psychosocial functioning among this population, helping to reduce both the economic burden and high costs to personal wellbeing associated with BD.

Keywords

Bipolar Disorders; psychosocial functioning; depression; emotion regulation

Resumen

Este estudio explora el valor predictivo de los diversos procesos de regulación clínicos, neuropsicológicos, funcionales y emocionales para la recuperación en el Trastorno Bipolar. La información clínica y demográfica se recogió de 27 participantes de TB eutímicos o residualmente deprimidos. Setenta y uno por ciento de la muestra reportó algún grado de deterioro en el funcionamiento psicosocial. Tanto la depresión residual y problemas con la regulación de las emociones fueron identificados como predictores significativos de mal funcionamiento psicosocial. Además de la depresión residual, los resultados del presente estudio introducen una variable de disregulación emocional para dar cuenta del pobre funcionamiento psicosocial en las poblaciones de TB. La mejora de las estrategias de regulación emocional, en particular, la concentración y la realización de tareas durante los estados emocionales negativos podrían tener consecuencias importantes para mejorar el funcionamiento psicosocial global en esta población ayudando a reducir tanto la carga económica y los altos costos para el bienestar personal asociado con TB.

Palabras clave

Trastornos bipolares; funcionamiento psicosocial; depresión; regulación emocional

* Research paper

** Senior Lecturer. Director of Psychopathology Research Group at Edith Cowan University. Correo electrónico: r.becerra@ecu.edu.au

*** Research Assistant at Edith Cowan University. Correo electrónico: skcruise@bigpond.com

**** Lecturer at Edith Cowan University. Correo electrónico: c.harms@ecu.edu.au

***** Professor at Edith Cowan University. Correo electrónico: a.allan@ecu.edu.au

****** Psychiatrist in private practice. Professor at the School of Psychiatry & Clinical Neurosciences (M521), University of Western Australia. Correo electrónico: dbassett@iinet.net.au

******* Professor at School of Psychiatry & Clinical Neurosciences (M521), University of Western Australia. Correo electrónico: sean.hood@uwa.edu.au

******** Professor at School of Psychology, Swinburne University of Technology, VIC, Australia. Correo electronico: gwm@swin.edu.au

Introduction

Bipolar Disorder (BD) is a complex mood disorder, characterised by markedly fluctuating affect (American Psychiatric Association, 2000). The natural course of BD is characterised by risk of recurrent mood episodes (Treuer & Tohen, 2010) and impairment in psychosocial functioning, defined as a *person's ability to perform activities of daily living and to engage in meaningful interpersonal relationships* (Michalak & Murray; 2010, Rosa et al, 2010). Research indicates that between 30-60% of patients with BD experience poor psychosocial functioning (Maqueen, Young & Joffe, 2001; Rosa et al, 2009). Symptomatic recovery and functional recovery in BD are empirically separable. For example, Tohen et al. (2000) found that of 219 patients presenting withfirst episode psychotic features (BD and Major Depressive Disorder), syndromal recovery (reduction in mood symptoms) was attained by 84%, 92% and 97% at 6, 12 and 24 months post-hospitalization respectively. However, the corresponding proportion for functional recovery at these time points was only 30%, 32% and 38%. Marked differences in symptomatic versus psychosocial recovery underscore the importance of understanding factors that influence the latter outcome.

Psychosocial and functional impairments are strongly associated with depressive symptoms in both unipolar (Kennedy, Foy, Sherazi, McDonough & McKeon, 2007) and bipolar depression (Altshler et al., 2006). Psychosocial impairments exist even during states of remission (Rosa et al., 2007; 2009; 2010), with specific impairments demonstrated for occupational and cognitive functioning (Altshler et al., 2006), autonomy (Rosa et al., 2007), and interpersonal relationships (Altshuler et al., 2006). Residual depressive symptoms have an independent effect on psychosocial function, and depression prone patients with even mild residual depression have been shown to be less likely to achieve functional recovery (Wingo, Baldessarini, Holtzheimer & Harvey, 2010a). Although emerging evidence points toward cognitive function (e.g., attention, memory, problem solving) as a potential predictor of psychosocial functioning (e.g., Dickerson et al., 2010) research conducted by Wingo et al. (2010a; Wingo, Baldessarini, Compton & Harvey, 2010b) has highlighted the important mediating effect of depression, finding that the association between cognitive variables and functional recovery was no longer significant after adjustments were made for depressive symptoms.

Depression vulnerability is thought to be related to deficits in emotion regulation. For example, prior depressive episodes have been associated with higher levels of self-reported emotion regulation difficulties, more frequent use of dysfunctional regulation strategies (e.g., self-blame, rumination, catastrophising), and less frequent use of functional regulation strategies (e.g., putting things into perspective) (Ehring, Fischer, Schnülle, Bösterling & Tuschen-Caffier, 2008). BD is characterised by markedly fluctuating affect and is presumed to involve some difficulties in emotion regulation (Mercer & Becerra, 2013). However, little is known about the specific emotion regulation profile associated with BD. Research conducted by our laboratory has indicated that whilst BD patients demonstrate greater overall emotion dysregulation compared to healthy controls, specific deficits were shown for control of impulsive behaviour, concentration and task accomplishment during negative states and access to appropriate emotion regulation strategies (Becerra et al., 2013). To the best of the authors' knowledge, no studies to date have investigated the relationship between emotion regulation and psychosocial functioning in BD. The primary aim of the current preliminary study is therefore to investigate the relationship between emotion regulation and psychosocial functioning in BD, taking into account potential mediating effects of residual depression and cognitive function cited in the literature.

Method

Participants

Twenty-four participants with BD (16 Females) were recruited (*Mean age* = 44.67 years, *SD*=12.61 years). Participants were diagnosed as BD I (N=18)

or BD II (N=6) via the International Classification of Diseases version 10 (ICD-10). All participants were assessed as being within the normal to mild range for depressive symptoms via the Hamilton Depression Ratings Scale (Ham-D scores 0-13) (Hamilton, 1980) and not currently experiencing a manic or hypomanic episode (Young Mania Rating Scale; YMRS scores <5) (Young, Biggs, Ziegler & Myer, 1978).

Medication

Ninety two percent of participants were taking psychotropic medications at the time of the assessment. Fifty four per cent were taking at least one mood stabilizer (21% lithium and 37% sodium valproate, with a smaller number either carbamazepine [4%] or lamotrigine [12%]). Thirty three percent were taking at least one antipsychotic medication (notably Quetiapine but also Olanzapine, and Ariporazol). Fifty eight percent were taking at least one antidepressant (SSRI: Sertraline, Paroxetine, Fluoxetine, Escitalopram; SNRI: Pristique, Duloxetine; Tricyclic: Amozapine, Imipramine, Clomipramine; Atypical: Venlafaxine; and Melonoergic: Valdoxan). Finally, 12% were taking a Benzodiazepine (Lorazepam and Clonazepam).

Materials

The *Difficulties in Emotion Regulation Scale (DERS)* (Gratz & Roemer, 2004) assesses difficulties in emotion regulation via six subscales: i) *non acceptance of emotions;* ii) *difficulties in engaging in goal directed behaviour when distressed;*; iii) *impulse control difficulties;* iv) *Lack of emotional awareness;* v) *Limited access to emotion regulation strategies;* and vii) *lack of emotional clarity.* Higher scores indicate greater difficulties with emotion regulation. Responses range from 1 to 5, where 1 is *almost never (0-10%)* 2 is *sometimes (11-35%)* 3 is *(about half the time 36-65%)* 4 is *most of the time (66-90%)* and 5 is *almost always (91-100%).*

The *Functional Assessment Short Test (FAST)* (Rosa et al., 2007) is a 24-item interviewer-administered instrument, assessing impairment in six areas of functioning: *autonomy*; *occupational functioning*; *cognitive functioning*; *financial issues*; *interpersonal relationships*; and *leisure time*. Responses range from 0 (no difficulty) to 4 (severe difficulty). Higher scores indicate greater impairment (Rosa et al., 2009).

The *Hamilton Depression Rating Scale (Ham-D)* (Hamilton, 1980) is a semi-structured, clinician administered interview assessing depressive symptom severity across 17 domains: depressed mood, suicide, insomnia, work interests, retardation, agitation, anxiety, somatic symptoms, somatic symptoms general, libido, hypochondriasis, weight loss, and insight. Scores of 0 to 7 (normal range); 8 to 13 (mild depressive symptoms); 14 to18 (moderate depressive symptoms); 19 to 22 (severe depressive symptoms); and scores equal to, or greater than 23 (very severe levels of depression).

The *Young Mania Rating Scale (YMRS)* (Young et al., 1978) is also a semi-structured, clinician administered interview assessing severity of abnormality across several clinical domains. Scores < 5 indicate euthymic mood.

Neuropsychological Assessment

Executive function, defined as the ability to plan, organise, and regulate goal directed behaviour (Lezak, 1995) has been consistently associated with psychosocial outcomes in BD (Dickerson et al., 2010). Here, five components of executive function: working memory, verbal fluency, cognitive flexibility, set shifting, and inhibition were assessed using the following measures: i) the *WAIS-IV Digit Span (backward)* subtest to provide a measure of working memory; ii) the *Controlled Oral Word Association Test (COWAT)*, which requires the recall of words beginning with the letter F, A, and S in a one minute period, to provide a measure of verbal fluency; iii) the computerised version of the *Wisconsin Card Sorting Test (WCST)* provided a measure of cognitive flexibility, set shifting and inhibition (perseverative errors); iv) *Trail Making Test-B (TMT-B)* provided a measure of cognitive flexibility.

Results

While analyses lacked the required sample size to meet the requirements for statistical power for the regression analyses, these analyses were undertaken because the current research was exploratory in nature, recruiting participants to research associated with bipolar disorders has been generally difficult to do, and results of the present study may present new directions for future researchers.

Demographic variables

Demographic are outlined in Table 1. The majority of the sample were female, and equal proportions were either single (single never married or single divorced/separated) or in a relationship (married or living in a defacto relationship). Three quarters of the sample (75%) had completed some form of higher education after completing secondary school (e.g., undergraduate, post-graduate, diploma, or trade certificate). However, over half the sample were unemployed (58%). Of those currently employed, only 30% were employed full time.

Clinical variables

Clinical variables are outlined in Table 2. The majority of the sample reported a family history of psychiatric illness (see Table 2). The number of comorbid psychiatric conditions ranged from zero to four (M=1.13, SD= 1.15). Anxiety disorders (phobia, panic, generalised anxiety) were the most common comorbid condition, followed by Post-Traumatic Stress Disorder (PTSD). The majority of the sample (71%) reported being hospitalised for BD related reasons. Of those who had been hospitalised, the percentage of admissions for both psychotic (46%) and manic episodes (46%) was greater than that of depressive episodes (38%). However, the mean number of lifetime depressive episodes was substantially higher (M =58.09, SD=153.92) than the mean number of manic (M = 15.91, SD= 21.23) and psychotic episodes (M=1.96, SD= 2.33). Participants reported experiencing their first depressive episode at a younger age (M= 18.57 years, SD = 7.90 years) compared to their first manic episode (M= 25.75 years, SD= 14.25 years), with an average difference of 7.26 years (SD= 12.77) between the onset of first depressive and first manic episodes.

Table 1.
Summary of demographic characteristics of the sample

Demographic variable	N	%
Sex		
Male	8	33
Female	16	67
Marital status		
Single	8	33
Separated/divorced	4	17
Married/Defacto relationship	12	50
Education		
Did not complete year 10	2	8
Completed year 10	1	4
Completed year 11-12	3	13
Tertiary education	6	25
Post graduate qualification	5	21
Diploma	5	21
Trade certificate	1	4
Other	1	4

Source: own work

Table 2.
Summary of clinical characteristics of the sample

Clinical variable	N	%
Diagnosis		
BDI	18	75
BDII	6	25
Comorbidity		
Anxiety (phobia, panic, generalised anxiety)	8	30
Post Traumatic Stress Disorder (PTSD)	7	26
Psychotic Disorder	3	11
Obsessive Compulsive Disorder (OCD)	2	7
Attention Deficit Hyperactivity Disorder (ADHD)	2	7
Substance Use Disorder (SUD)	2	7
Personality Disorder	1	4
Eating Disorder	1	4
Other	1	4
Family history of psychiatric illness		
Yes	21	88
No	3	12

Source: own work

Mean duration of illness was 12.11 years (*SD* =8.10 years).

At the time of testing, participants were assessed as being within the normal to mild range for depressive symptoms via the Hamilton Depression Ratings Scale (Ham-D scores 0-13) (Hamilton, 1980); and the overall sample mean for residual depressive symptoms was also within the normal range (*M*=6.13, *SD*=4.29). All participants were also not currently experiencing a manic or hypomanic episode (YMRS scores <5, Young et al., 1978).

Descriptive statistics: Psychosocial functioning and deficits in emotion regulation

The majority (71%) of the sample reported some degree of psychosocial dysfunction (defined as a total FAST score >11, Rosa et al., 2009). The mean score for the sample for psychosocial functioning was 24.86 (*SD* =18.31). Greatest mean deficits were observed for the domain of occupational functioning, followed by interpersonal relationships and leisure time (see Figure 1). The mean score for the sample for general deficits in emotion regulation was 89.45 (*SD*=28.43). With regards to emotion dysregulation, greater deficits were observed for *strategies,* followed by *goals,* and *awareness* (see Figure 2). No significant correlations were reported between psychosocial function and any measure of executive function.

Prediction of psychosocial functioning on the basis of residual depression, and deficits in emotion regulation

As expected, significant and positive correlations were observed between overall psychosocial functioning and residual depression (r= 0.683) and between psychosocial functioning and a global deficit in emotion regulation (r= 0.748) (ps< 0.001).

A global deficit in emotion regulation and residual depression symptoms accounted for the majority of the variance (78%) in overall psychosocial functioning, R^2Change= 0.777; F (2.20)= 34.78, p< 0.001. A global deficit in emotion regulation and residual depression symptoms were identified

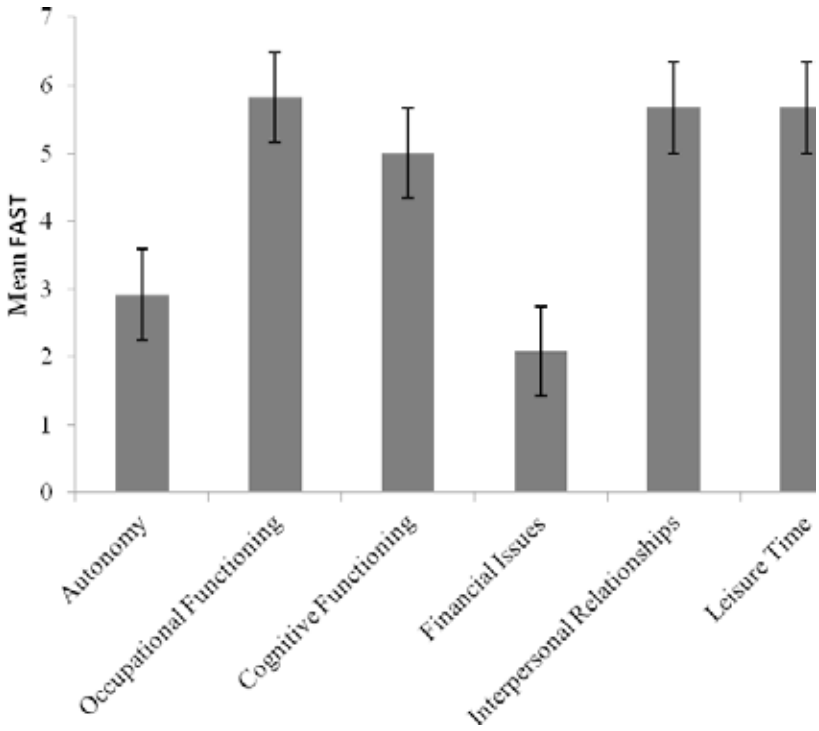

Figure 1. Mean FAST scores across the six sub-domains of psychosocial function
Source: own work

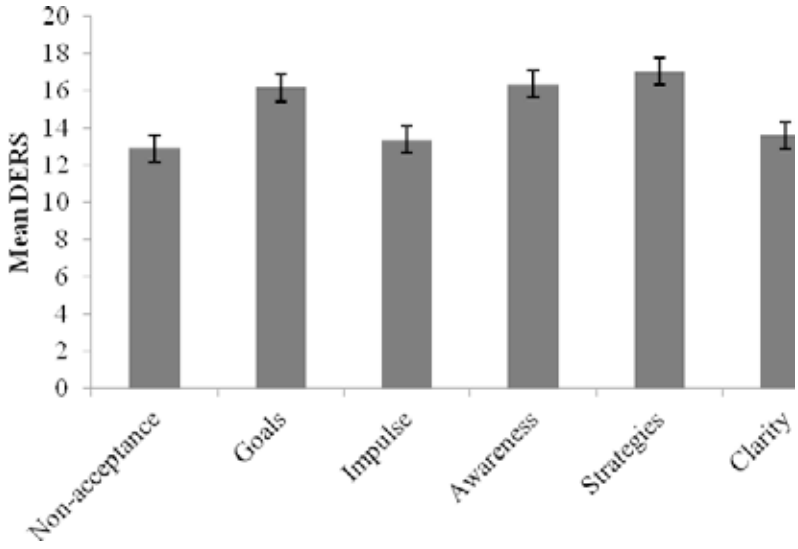

Figure 2. Mean DERS scores across the six sub-domains of emotion dysregulation
Source: own work

as significant predictors of overall psychosocial functioning, and (as evidenced by the size of the standardised beta coefficients: see Table 3), the independent effects of overall emotion regulation and residual depression symptoms on the psychosocial functioning of the participants were both large (according to Cohen's criteria) and relatively similar in magnitude.

Table 3.
Regression analyses examining the contribution of a general deficit in emotion regulation and residual depressed mood for the prediction of psychosocial function

Predictors	B	SE (B)	β	Sig	CI Upper	CI Lower
Psychosocial function						
Model 1 Residual Depression (Ham-D total)	2.37	0.498	0.554	4.75**	1.33	3.41
General Emotion Regulation Deficits (DERS total)	0.316	0.075	0.490	4.21**	0.159	0.472

Source: own work

Further exploration of the six subcomponents of emotion regulation indicated the overall model was significant F (6.16)= 4.71, R^2 Change= 0.639, p= 0.006. Evaluation of the standardised Beta values (see Table 4) indicated that the DERS subscale *Goals* was the only scale that trended towards significance (p= 0.077). The *Goals* subscale was therefore selected for entry into a further standard regression equation, and made a significant contribution to the prediction of psychosocial functioning, F (1.21)=13.09, R^2 change= 0.384, p= 0.002, accounting for 38% of the variance.

Discussion

Over 70% of the sample reported some impairment with their psychosocial functioning. Both residual depression and problems with emotion regulation were most strongly associated with poor psychosocial functioning. Further investigation of the specific emotion regulation processes indicated that dysregulation of emotional processes concerning *Goals* (difficulties with concentration and accomplishing tasks whilst experiencing negative emotions) was the best predictor of poor psychosocial functioning. Limitations associated with the small sample size restricted further inferential exploration of the specific subcomponents of psychosocial functioning. However, inspection of the descriptive statistics indicated that the participants involved in the current study reported the greatest mean impairments for *occupational functioning.* It could therefore be argued that difficulties with concentration and task accomplishment during negative emotional states would logically have a substantial impact on an individual's occupational functioning. The current study therefore provides a platform for further investigation into the subcomponents of psychosocial functioning and their relationships with emotion regulation processes.

To the best of the author's knowledge, the current research is the first of its kind to investigate the predictive relationship between emotion regulation processes and psychosocial functioning in BD. Previous research investigating the effects of mild residual depression on psychosocial functioning in

Table 4.
Standard regression analyses examining the contribution of each Difficulties in Emotion Regulation (DERS) subscale to the prediction of psychosocial function

Predictors	B	SE (B)	β	Sig	CI Upper	CI Lower
Psychosocial function						
Model 1 DERS Non-Acceptance	0.149	0.798	0.043	0.187	-1.54	1.84
DERS Goals	1.54	0.814	0.473	1.89	-.185	3.26
DERS Impulse	0.833	0.975	0.270	0.855	-1.23	2.90
DERS Awareness	1.27	0.751	0.384	1.70	-0.318	2.87
DERS Strategies	-1.12	0.931	-0.419	-1.20	-3.09	0.858
DERS Clarity	0.873	0.856	0.273	1.02	-0.943	2.69

Source: own work

BD is also limited. Hence, the significant predictive relationship between mild residual depressive symptoms and poor psychosocial functioning demonstrated in the current research makes a further substantial contribution to the field of functional recovery in BD.

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