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Influence of personality and neuropsychological ability on social functioning and self-management in bipolar disorder

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ABSTRACT

A majority of bipolar patients (BD) show functional difficulties even in remission. In recent years cognitive functions and personality characteristics have been associated with occupational and psychosocial outcomes, but findings are not consistent. We assessed personality and cognitive functioning through a range of tests in BD and control participants. Three cognitive domains-verbal memory, facial-executive, and spatial memory-were extracted by principal component analysis. These factors and selected personality dimensions were included in hierarchical regression analysis to predict psychosocial functioning and the use of self-management strategies while controlling for mood status. The best determinants of good psychosocial functioning were good verbal memory and high self-directedness. The use of self-management techniques was associated with a low level of harm-avoidance. Our findings indicate that strategies to improve memory and self-directedness may be useful for increasing functioning in individuals with bipolar disorder.

1. Introduction

Bipolar disorder (BD) is a highly heritable (Kieseppa et al., 2005) mood disorder that is categorised by severe mood swings ranging from extreme euphoria or irritability to severe depression. The life-time prevalence of BD in New Zealand is 1.7% with an additional 2.1% of the population classified as having a broader bipolar spectrum disorder (Browne et al., 2006). Findings consistently show reduced occupational, education, and psychosocial function outside the symptomatic phases which affects 30–60% of all BPD patients (MacQueen et al., 2001) and appears to be independent of bipolar subtype (Judd et al., 2005). These impairments affect patients' ability to remain employed, pursue educational goals and to comply with treatment plans (Tohen et al., 1990; Coryell et al., 1993).

Several factors have been associated with functional difficulties. Especially the existence of subsyndromal depressive symptoms but not manic symptoms seems to negatively impact on functioning (Judd et al., 2005). An early age of onset (Tohen et al., 2000; Carlson et al., 2002) and a history of psychotic symptoms (Rosen et al., 1983; Harrow et al., 1990, 2000) have also been related to impaired functioning, although findings are not consistent (MacQueen et al., 1997). Functional decline appears to begin with illness onset (Conus et al., 2006) and current treatments seem to improve functional outcome only marginally (Harvey et al., 2010). A wide range of outcome measures, such as the Global Assessment of Functioning, the social adjustment scale (SAS), the life functioning scale, and measures of occupational function have been employed to assess psychosocial functioning. None of these scales addresses the efficient use of self-management strategies in BD patients, although such strategies have been shown to be of benefit in improving and maintaining functioning (Perry et al., 1999; Miklowitz, 2008).

In recent years cognitive impairment has also been linked to psychosocial function in BD. Difficulties in cognition have frequently been reported both during episodes and when being euthymic (Savitz et al., 2005). Although medication status and residual mood symptoms are likely to contribute to these difficulties, it is unlikely that they can account fully for the deficits described (Thompson et al., 2005). Areas affected are varied and contain neurocognitions such as executive function, verbal learning and memory, attention, psychomotor speed (Robinson et al., 2006; Torres et al., 2007; Ryan et al., 2013; Van Rheenen and Rossell, 2014), social cognition (Cusi et al., 2012), and emotional processing (Lembke and Ketter, 2002), but findings are not consistent (Coffman et al., 1990). Not all cognitive difficulties observed in individuals with BD have been linked to psychosocial function. For example, while impairment in verbal memory and executive function are associated most commonly with lower psychosocial function (Martinez-Aran et al., 2004b; Bonnín et al., 2010, 2014), findings are inconsistent (Martinez-Aran et al., 2002; Lee et al., 2013). Emotional processing has been reported as impaired in BD

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(Lembke and Ketter, 2002). Biased emotional processing can affect social interactions negatively because emotional cues such as facial expressions are misinterpreted. It is thus likely that difficulties with facial recognition impact negatively on psychosocial function. Only one study (Harmer et al., 2002) correlated facial recognition performance with a functional outcome measure. The authors found no connection, but in their study BD participants' social functioning was comparable to the control group. Some abilities, like spatial memory have not yet been tested in regards to psychosocial functioning and for others only limited findings exist.

Another factor that may impact on social function is personality. Very few studies examined this relationship but findings indicate a connection between neuroticism and social functioning (Heerlein et al., 1998; Pope et al., 2007). Personality profiles in BD have been explored in several studies and some personality dimensions have even been suggested as a phenotype for BP (Savitz and Ramesar, 2006). Cloninger's Temperament and Character Inventory – revised (Cloninger, 1999) has frequently been used as a measure of personality. Findings using this measurement confirmed that individuals with BD seem to have a different personality structure than healthy controls, although not all studies support this view (Nery et al., 2008). Low self-directedness (SD) and increased harm avoidance (HA) have been most commonly reported (Young et al., 1995; Osher et al., 1996; Engstrom et al., 2004; Evans et al., 2005; Nowakowska et al., 2005; Sayin et al., 2007; Loftus et al., 2008). Furthermore, personality has been shown to impact on cognitive abilities, such as executive functions and verbal fluency (Backman et al., 2005; Boeker et al., 2006).

The first aim of the current study was to investigate the impact of cognitive abilities and personality on social functioning as measured with the SAS, which assesses several aspects of occupational and social life. Instead of comparing performance in individual tests we used the cognitive test battery and extracted underlying cognitive domains by principal component analysis to avoid multiple testing issues. These components and selected personality dimensions were then used to predict psychosocial functioning. BD participants may show normal performance in some cognitive domains. To evaluate this possibility neuropsychological tests scores were compared to scores of healthy controls. The second aim was to assess the association of cognitive domains and personality to the use of self-management techniques in BD patients only, which have been reported as being helpful in preventing relapse (Suto et al., 2010). Our first hypothesis was that euthymic individuals with BD will show poorer performance on all cognitive tests, lower SD and higher HA compared to healthy control participants. Our second hypothesis is that cognitive domains and personality will be associated with psychosocial functioning as measured with the SAS. Lastly, our third hypothesis is that cognitive domains and personality will be associated with the use of self-management skills in BD participants.

2. Methods

2.1. Participants

In total 36 adults with BD (9 males, mean age 40.8 ± 11.6) and 40 control participants (11 males, mean age 36.2 ± 11.3) were recruited for the study. Twenty-eight participants of the BD group suffered from BD-I (9 males, mean age 42.3 ± 11.5) and eight from BD-II (no males, mean age 35.3 ± 10.5). Ethical approval was received from the Upper South Canterbury (New Zealand) Ethics Committee. BD participants were recruited by advertising in the community, within mental health outpatient clinics, through residential mental health services and mental illness support organisations. Control participants were recruited through radio advertisement, newspaper, and advertisement in the community. Exclusion criteria for this group were any current or past mood disorders or any family history of mood disorder. Screening questions to assess mood disorders were taken from the Mini International Neuropsychiatric Interview (MINI, Sheehan et al., 1998). The demographic data is displayed in Table 1.

Table 1
Demographic data, mood and medication status for all participants.

	BD Participants $n=36$	Healthy controls $n=40$
Age (years), mean (SD)	40.8 (11.6)	36.2 (11.3)
Males *n* (%)	9 (25.0)	11 (27.5)
Mood status: *n* (%)		
Euthymic	19 (53)	40 (100)
Depression:		
Mild symptoms	11 (30)	
Moderate symptoms	5 (14)	
Mixed symptoms:	1 (3)	
Medication: *n*		
Antidepressants	16	
Lithium	11	
Anticonvulsants	10	
Atypical antipsychotics	12	
Antipsychotics	6	
Sleep medication	5	
Benzodiazepines	4	

Note.
BD=Bipolar disorder
SD=Standard deviation

For all BD participants diagnosis was conducted with a modified version of the Structured Clinical Interview for DSM-IV (SCID, First et al., 1995). In addition, we used the Young Rating Scale for Mania (Y-MRS; Young et al., 1978) and the Montgomery and Asberg Depression Rating Scale (MADRS; Montgomery and Asberg, 1979) to establish mood state in the BD participants. To evaluate scores on these measures we followed previous categorisations (Snaith et al., 1986; McElroy et al., 2010). Y-MRS scores ranged from 1 to 14, with most participants considered euthymic having scores equal or below 7. Only one participant scored in the mild range, this person had also mild depressive symptoms and was therefore classified as having mixed symptomology. For the purpose of analysis this person was categorised in regards to its MADRS score. For the MADRS the range was 1–34. Eleven participants had mild depressive symptoms (MADRS score: 7–19) and five had moderate symptoms (MADRS score: 20–34). The remaining participants were euthymic (MADRS score: <6). The average age of onset was 18.2 years of age (range: 4 – 41 years) and the mean duration of illness was 22.5 years (range: 3–44 years). Twenty-two of the 36 BD participants had experienced psychosis. There was a range of current co-morbidities: alcohol abuse (1), cannabis dependence (1), opioid dependence (1), panic disorder (1), social phobia (1), eating disorder (1), and Asperger's syndrome (1).

The types of medication taken are displayed in Table 1. Most participants were using a mixture of medication. Overall, 16 participants used antidepressants, 11 lithium, 10 anticonvulsants, 12 atypical antipsychotics, 6 typical antipsychotics, 5 sleep medication, and 4 benzodiazepine.

2.2. Materials

2.2.1. Assessment of functional outcome

2.2.1.1. Social adjustment scale. The SAS scale (Weissman and Bothwell, 1976) is a self-report measure of social functioning that provides detailed information. It allows some flexibility and can be used with a wide variety of people, including psychotic patients.