



Cognitive regulation of negative affect in schizophrenia and bipolar disorder



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ABSTRACT

Schizophrenia (SZ) and bipolar disorder (BD) exhibit common cognitive deficits that may impede the capacity for self-regulating affect. We examined the use of particular cognitive strategies for regulating negative affect in SZ and BD, and their associations with levels of mood symptomatology. Participants were 126 SZ, 97 BD, and 81 healthy controls (HC) who completed the Cognitive Emotion Regulation Questionnaire (CERQ), the Depression Anxiety Stress Scales (DASS) and the Hypomanic Personality Scale (HPS). Patients with SZ and BD reported more frequent rumination, catastrophising and self-blame, and less use of putting into perspective, relative to HC. Additionally, SZ patients were more likely to engage in other-blame, compared to HC. The most consistent predictors of symptomatology for SZ were self-blame and catastrophising, while for BD were rumination and reduced positive reappraisal. These findings demonstrate maladaptive use of cognitive strategies to self-regulate negative affect in SZ and BD, resembling those reported previously for unipolar depression. The ineffective use of adaptive cognitive reframing strategies in both patient groups may reflect the impact of their shared cognitive deficits, and requires further investigation. Remediation of cognitive capacities contributing to ineffective self-regulation may facilitate reduced mood symptomatology in SZ and BD.

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1. Introduction

Schizophrenia (SZ) and bipolar disorder (BD) share some genetic vulnerability (Lichtenstein et al., 2009) as well as neuropsychological dysfunction in some cognitive domains (namely, attention, memory, and executive function) (Reichenberg et al., 2009; Bora et al., 2010). These cognitive deficits appear to be related to abnormal structure and function of prefrontal, limbic, and striatal networks known to subserve regulation of affect and motivated behaviour (Green et al., 2007). Differential disturbances in these functional brain networks (Morris et al., 2012) may underpin the disparate manifestations of dysregulated affect that distinguish these disorders: while BD is typically characterised by oscillating mood states (mania, depression)

and heightened emotional reactivity (Malhi et al., 2004a, 2004b), emotion dysregulation in SZ manifests in blunted (flat) or inappropriate affect, reflecting a lack of context-appropriate emotional expressivity (Gur et al., 2006), and disjunction between reported emotional experience and expression (Ellgring and Smith, 1998; Aghevli et al., 2003). Despite these opposing clinical manifestations of dysregulated emotional expression in the context of shared cognitive disturbances, few studies have examined cognitive strategies for emotion regulation in SZ and BD. Understanding the role of cognitive biases in emotion regulation may highlight underlying cognitive skills that could be targeted for remediation to improve the capacity for effective emotion regulation in these groups.

Emotion regulation refers to a range of voluntary and involuntary processes used to modulate the occurrence, intensity, and duration of internal feeling states and physiological processes that occur in response to external events and, optimally, in accord with one's goals (Thompson, 1994; Gross, 1998; Eisenberg, 2000). Effective emotion regulation is an important factor in determining mental health and wellbeing, and may entail conscious or unconscious processes in attempts to up- or down-regulate

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subjective emotional feelings and behaviours (Gross and Munoz, 1995; Sloan and Kring, 2007). Common strategies for self-regulation include attempts to actively suppress emotional behaviours and physiological responses, or cognitively control the type and extent of emotional responses via techniques to re-frame the meaning of the event (such as cognitive reappraisal, refocusing attention) (Gross, 1998; Ochsner and Gross, 2005). One recent study of cognitive reappraisal in individuals with a history of psychosis revealed less frequent use of this regulatory strategy relative to non-patient controls (Livingstone et al., 2009), but did not investigate other cognitive regulatory strategies previously associated with depression and anxiety (rumination, catastrophising, self- vs. other blame). In this study we therefore focus specifically on a range of *cognitive strategies* that are commonly used to regulate emotional feelings and expression, with consideration of the potential for known cognitive deficits in SZ and BD to impede effective regulation of emotion and behaviour. For example, deficits in executive control may limit the capacity to engage in cognitive reappraisal (requiring the generation and maintenance of alternative explanations for events) (Green and Malhi, 2006), consistent with the association between inhibitory deficits and excessive rumination in depression (Joorman and Gotlib, 2010).

We chose the Cognitive Emotion Regulation Questionnaire (CERQ) to index the extent to which a range of adaptive and maladaptive cognitive strategies are employed to regulate emotion in response to threatening or stressful life-events (Garnefski et al., 2001). Previous research using this scale has shown increased use of maladaptive strategies (in particular, rumination, self-blame and catastrophising), coupled with decreased use of adaptive cognitive reframing strategies (such as positive reappraisal), in association with both clinical and subclinical levels of depression and anxiety symptoms (Garnefski et al., 2001, 2002, 2005; Garnefski and Kraaij, 2006). Similarly, rumination has been consistently implicated as an important predictor of depression and hypomania in BD (Van Der Gucht et al., 2009; Green et al., 2011) and in ostensibly healthy adolescents (Thomas and Bentall, 2002; Knowles et al., 2005). For SZ, it has been proposed that excessive suppression (i.e., increased down-regulation of behavioural manifestations of emotion) could account for affective blunting (Kring and Werner, 2004). However, direct evidence has not supported this proposal (Henry et al., 2007, 2008), and instead suggests that SZ patients may be limited in their ability to amplify (express) emotions, representing a dysfunction in emotional 'up-regulation' rather than excessive down-regulation (Henry et al., 2007). Yet, this study examined the propensity to regulate positive affect (i.e., happiness) only, and no study has directly addressed the broader range of cognitive strategies used in schizophrenia during attempts to voluntarily control subjective levels of negative emotion. This is despite the overtly dysregulated affect evident in emotional blunting (Henry et al., 2007) and the role of anxiety as implicated in models of paranoia (Green and Phillips, 2004), in which SZ patients with paranoid ideation and persecutory delusions in particular show a cognitive style involving a heightened vigilance for threat, followed by overt avoidance of threatening stimuli (Phillips et al., 2003; Green et al., 2004). Further, paranoia has been consistently associated with the use of an external 'personalising' attributional style of 'blaming others' for negative events, rather than acknowledging other potential situational or own contribution to the causes of negative life events (Bentall et al., 2001).

1.1. Aims of the study

This study tested the following hypotheses: first, that both SZ and BD groups would report greater frequency of use of

maladaptive cognitive strategies for emotion regulation as previously associated with depression (i.e., self-blame, rumination, catastrophising), including a propensity to under-use adaptive cognitive reframing strategies (e.g. positive reappraisal) in comparison to the HC group; it was specifically predicted that the two clinical groups would show subtle differences in the use of maladaptive strategies: we expected that SZ would demonstrate increased use of other-blame on the basis of previous evidence for external-personal attributional style in SZ patients with paranoid features, while BD would show greater employment of rumination and self-blame, based on previous findings in depressed and BD samples. Our second aim was to determine the utility of these cognitive strategies in predicting levels of depression, anxiety, stress, and propensity for (hypo)mania in these groups; we hypothesised that greater use of maladaptive cognitive strategies and less use of cognitive reframing strategies would be associated with higher levels of mood disturbance in both patient groups.

2. Methods

Study procedures were approved by the Human Research Ethics Committees of the University of New South Wales (HREC UNSW Protocol no. 07067) and the South Eastern Sydney Illawarra Area Health Service (SESIAHS Protocol no. 08/192).

2.1. Participants

The sample comprised 126 participants with a DSM-IV diagnosis of schizophrenia (SZ), 97 participants with a DSM-IV diagnosis of bipolar I disorder (BD), and 81 healthy controls (HC) with no personal history of a DSM-IV Axis 1 disorder (except anxiety disorders), and no history of psychosis in their first-degree biological relatives. Exclusion criteria included inability to communicate sufficiently in English, current neurological disorder, a diagnosis of substance abuse or dependence in the past 6 months, and/or having been treated with electroconvulsive therapy (ECT) in the previous 6 months. The SZ participants were recruited from the Australian Schizophrenia Research Bank (ASRB), with diagnoses confirmed using the OPCRIT algorithm (McGuffin and Farmer, 1991) applied to interviewer ratings on the Diagnostic Interview for Psychosis (Castle et al., 2006), and consisted of 73 males (57.9%) and 53 females (42.1%), aged 26–67 years ($M=45.46$, $S.D.=10.96$). The group of BD participants were recruited predominantly from the Bipolar Disorder Family Study (Mitchell et al., 2009) and the Sydney Bipolar Disorder Clinic (Mitchell et al., 2009), with Best Estimate Diagnoses (BED) of BD-I (for whom a history of mania is a requirement for diagnosis) confirmed by a psychiatrist (PBM), based on all available data from the Diagnostic Interview for Genetic Studies (DIGS) (Nurnberger et al., 1994), the Family Interview for Genetic Studies (FIGS), and medical records. The BD group comprised 36 males (34.9%) and 61 females (59.2%), aged 24–70 years ($M=51.26$, $S.D.=12.10$). The HC subjects were recruited from a number of sources, including advertisements in the local community and newspaper, and the ASRB, and consisted of 37 males (45.7%) and 44 females (54.3%), aged 23–69 years ($M=44.65$, $S.D.=12.86$). There were missing data on less than 10% of items for one HC participant and 31 clinical participants; missing data were replaced with the group median for each item.

2.2. Materials

2.2.1. Cognitive emotion regulation questionnaire (CERQ)

The CERQ measures various types of cognitive strategies employed to regulate emotion in response to the experience of threatening or stressful life events (Garnefski et al., 2001). The CERQ is a 36-item questionnaire, consisting of 9 conceptually distinct subscales (4 items each), each pertaining to a particular type of regulatory strategy. A person's tendency to engage in each strategy is measured on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). Individual subscale scores are obtained by summing the scores for each strategy (ranging from 4 to 20); the higher the subscale score, the more often the cognitive strategy is used. The four maladaptive subscales of the CERQ include: self-blame (thoughts of blaming yourself for what you have experienced), other-blame (thoughts of blaming another person for what you have experienced), rumination (thinking about feelings and thoughts associated with the negative event), and catastrophising (thoughts that over-emphasize the significance and extent of the experience). The five positive subscales include: putting into perspective (thoughts that minimise the seriousness of the event relative to other life events), positive refocusing (distracting oneself from thinking about the event by focusing on positive thoughts or issues), positive reappraisal (reframing the event in a positive light), acceptance (accepting the experience and resigning

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