



Fear of Relapse as Mediator in the Association between Current Mood State and Dampening of Positive Affect in a Bipolar Population

Chantal Buijs (5907667)

Master's Thesis Clinical Psychology (201500819)

Faculty of Social Sciences, Utrecht University

Commissioned by Altrecht Bipolair

Supervisors: E. J. Regeer & V. F. J. Glas

Academic Supervisor: B. A. M. Neyrinck

November 2021

Word count: 4926

Abstract

Background: Bipolar disorder (BD) is a severe mood disorder, characterized by recurrent episodes of disrupted emotional functioning. So far, research has mainly focused on the regulation of negative emotions. As the use of maladaptive emotion regulation strategies can lead to further dysregulation of a patient's mood, it is important to gain more insight in psychological factors that may relate to the regulation of positive emotions in BD.

Objective: The present study aimed to investigate the possible mediating role of fear of relapse in the association between current mood symptoms and dampening responses to positive affect (PA) among patients with BD.

Methods: The sample consisted of 95 patients who were diagnosed with BD-I, BD-II, BD-NOS (Not Otherwise Specified) and substance induced BD. As part of the intake procedure, participants completed a set of questionnaires to measure current (hypo)manic symptoms, current depressive symptoms, fear of relapse and dampening of PA.

Results: Although no significant association was found between current (hypo)manic symptoms and dampening of PA, current depressive symptoms were positively associated with dampening of PA. Current mood symptoms were positively related to fear of relapse and an indirect effect was found of (hypo)manic symptoms on dampening of PA via fear of relapse.

Conclusion: This study improves our understanding of the psychological factors that contribute to the use of ER strategies in patients with BD. Fear of relapse can be taken into account in treatment interventions as a possible underlying motive for the use of dampening responses to PA. Adaptive ER strategies and the functional relevance of positive emotions may be addressed in interventions to support maintaining an emotional balance. Further research may sharpen the operationalisation of fear of relapse and longitudinal research is recommended.

Keywords: bipolar disorder, fear of relapse, current mood state, emotion regulation, response to positive affect

Fear of Relapse as Mediator in the Association between Current Mood State and Dampening of Positive Affect in a Bipolar Population

Bipolar, or manic-depressive, disorder (BD) is a mood disorder which is characterized by extreme fluctuations in mood and activity. These fluctuations include periods of persistently elevated mood (i.e. (hypo)mania), depressed mood, and mixed mood states with symptoms of both mania and depression (American Psychiatric Association, 2014). Because of its early onset, severity and chronicity, BD is a disabling disorder that causes substantial psychological and financial burden and has a great impact on daily functioning and quality of life (Ferrari et al., 2016; He et al., 2020). The contribution of psychological factors to the course of BD is increasingly recognized, in particular emotion regulation strategies, as BD is characterized by recurrent episodes of disrupted emotional functioning (Fletcher et al., 2013). So far, research has mainly focused on the regulation of negative emotions (Gruber et al., 2012). However, given the bipolar nature of BD, it is important to gain insight in the use of positive emotion regulation strategies as well, as the use of maladaptive strategies can lead to worsening of BD symptoms (Carl et al., 2013; Koenders et al., 2020). Considering that BD is a chronic illness, patients are likely to be preoccupied with and fearful of relapse of mania and depression (Granek et al., 2016; Gumley et al., 2003; Russell & Browne, 2005). Therefore, the present study aims to investigate the possible relation between fear of relapse and emotion regulation strategies that patients with BD use in response to positive emotions. Findings of this study may provide guidance in the approach of fear of relapse and emotion regulation strategies in treatment.

Emotion Regulation in BD

Emotion regulation (ER) is defined as “the processes by which individuals influence which emotions they have, when they have them, and how they experience and express their emotions” (Gross, 1998, p. 275). These processes may be automatic as well as conscious (mal)adaptive

strategies that are used to cope with an affective state. Since an affective state can either be negative or positive, ER strategies are categorized into responses to negative affect (NA) and responses to positive affect (PA; Feldman et al., 2008). Concerning the latter, Feldman and colleagues (2008) categorized PA strategies into positive rumination and dampening responses to PA. Positive rumination is defined as a focus on cognitions about positive life occurrences and affective experiences. While this strategy enhances positive mood, dampening suppresses positive affect by reflecting on the current positive mood in a negative manner (e.g. thinking “This is too good to be true”; Gilbert et al., 2013; Quoidbach et al., 2010).

Several studies have shown that patients with BD tend to use strategies to consciously intensify (i.e. upregulate) PA as well as to consciously reduce (i.e. downregulate) the intensity of PA. In comparison to healthy controls, patients with BD utilize more dampening and positive rumination responses to PA (Feldman et al., 2008; Gilbert et al., 2013; Johnson et al., 2008). Hanssen and colleagues (2018) found that manic symptoms were positively associated with positive rumination about PA, while depressive symptoms were positively associated with dampening of PA and negatively associated with positive rumination. This suggests that the type of ER strategy that is used in response to PA is influenced by the current mood state, i.e. patients in a current (hypo)manic mood tend to upregulate PA, whereas patients in a current depressive mood tend to downregulate PA. However, other studies found that patients in a (hypo)manic mood state also tend to downregulate PA (Edge et al., 2013; Fletcher et al., 2013; Gilbert et al., 2013), suggesting that there exists heterogeneity in response to PA among patients who experience current (hypo)manic symptoms (Koenders et al., 2020). Possibly, an additional psychological factor may influence the use of ER strategies.

Fear of Relapse

A possible explanation for the heterogeneity in response to PA is that patients with BD often are aware that positive experiences (e.g. a great success or achievement) can trigger a manic

episode (Edge et al., 2013). Understandably, patients report being constantly anxious about the possibility of relapse (Granek et al., 2016), as a relapse has great emotional impact and is often unpredictable (Lobban et al., 2011; Gitlin et al., 1995). The Cognitive Model of Relapse states that, in patients with schizophrenia, early cues of relapse can induce negative beliefs about this relapse, increasing fear and the use of maladaptive coping responses, such as avoidance (Gumley et al., 2003). Considering the clinical similarities between acute mania in BD and schizophrenia (e.g. psychotic symptoms and disorganized or associative thoughts; American Psychiatric Association, 2014), it is suggested that early signs of manic symptoms may lead to similar fearful and catastrophic cognitions, such as “I am going to relapse into another episode and end up hospitalized”. With respect to depressive symptoms, depressive individuals have a preoccupation with certain changes in internal state, such as mood fluctuations or feelings of incompetence, and are susceptible to interpreting these changes as uncontrollable (Joormann & Stanton, 2016; Lobban et al., 2013; Mansell et al., 2007). Consequently, this may lead to negative expectations and fear of relapsing into another depressive episode. Thus, both current (hypo)manic and depressive symptoms can elicit fear of relapse in patients with BD.

Role of Fear of Relapse in Emotion Regulation

Some patients with BD develop strategies to attempt to prevent manic and depressive relapse (Russell & Browne, 2005). Efforts to cope with the fear of a possible relapse differ between the current mood states. For current (hypo)manic mood symptoms, it is suggested that this fear may lead to excessive dampening of PA, as patients believe that giving in to positive emotions may increase the likelihood of relapsing into a manic episode (Edge et al., 2013; Gumley et al., 2003). However, the potential role of fear of relapse in the use of dampening as an ER strategy is less clear for depressive symptoms. Research findings show a consensus on ER strategies that are used among depressive individuals; while there is a tendency to dampen PA, there is no tendency to use positive rumination strategies in response to PA. Self-criticism and feelings

of worthlessness can explain the inadequacy to use positive rumination strategies, as depressed individuals often experience difficulty allowing positive emotions and cognitions (e.g. thinking “I do not deserve this”; Stinckens et al., 2013). Moreover, as sustained NA and relative absence of PA are characteristic for clinical depression (Clark & Watson, 1991; Joormann & Stanton, 2016), it is more likely that depressive individuals dampen PA regardless of a certain fear of relapse. Hence, there is no clear evidence that a fear of relapse relates to dampening responses of PA in patients with current depressive symptoms.

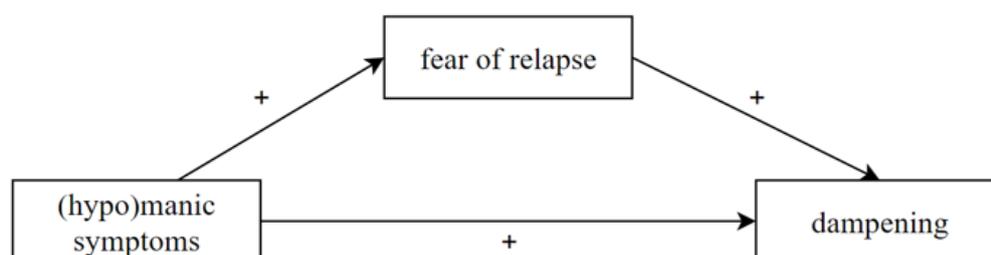
The Present Study

At this moment, there is limited knowledge about the role of fear of relapse in the use of ER strategies, as this has not yet been studied in a population with BD. The present study aims to investigate the influence of fear of relapse on the association between current BD symptoms and dampening of PA in a clinical sample of patients with BD. Literature shows that patients with BD tend to use more dampening responses to PA compared to healthy controls (Feldman et al., 2008; Gilbert et al., 2013; Johnson et al., 2008) and early mood symptoms may evoke fear of relapsing into another episode as these trigger negative beliefs (Granek et al., 2016; Gumley et al., 2003; Joormann & Stanton, 2016; Lobban et al., 2013). Additionally, as for manic symptoms, literature suggests that patients with a high level of fear of relapse more often use dampening responses to PA in order to cope with these fearful beliefs (Edge et al., 2013; Gumley et al., 2003). Based on the literature described above, it is hypothesized that there is a positive association between current (hypo)manic symptoms and dampening responses to PA (hypothesis 1a; Fletcher et al., 2013) and that there is a positive association between current depressive symptoms and dampening responses to PA (hypothesis 1b; Feldman et al., 2008; Hanssen et al., 2018). In addition, we expect a positive association between current (hypo)manic symptoms and fear of relapse (hypothesis 2a) and a positive association between current depressive symptoms and fear of relapse (hypothesis 2b). Finally, fear of relapse is

expected to mediate the association between current (hypo)manic symptoms and dampening of PA (hypothesis 3a, Figure 1), but not expected to mediate the association between current depressive symptoms and dampening of PA (hypothesis 3b).

Figure 1

Schematic representation of the mediating effect of fear of relapse on the association between (hypo)manic symptoms and dampening of PA.



Methods

Participants and procedure

Participants were outpatients of Altrecht department Bipolar ('Altrecht Bipolair'), a specialized mental health care organisation in the Netherlands. The data were collected for the purpose of the intake procedure at Altrecht between 2015 and 2021. The total sample of the present study consisted of 55 female and 40 male participants ($N = 95$) from age 19 to 65 ($M = 38.42$, $SD = 12.82$). Sixty-four participants (67.37%) were diagnosed with BD type I, 24 participants (25.26%) were diagnosed with BD type II, 5 participants (5.26%) were diagnosed with BD Not Otherwise Specified (NOS), and 2 participants (2.11%) were diagnosed with substance induced BD. Participants with other main clinical diagnoses (e.g. Schizoaffective Disorder and Major Depressive Disorder) or whose diagnosis was not registered in the database were excluded from the study. As part of the procedure, a Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First et al., 1996) or Mini-International Neuropsychiatric Interview (M.I.N.I.; Van Vliet et al., 2000) was conducted among the participants and demographic data

(age and gender) were gathered. Additionally, participants were asked to complete a set of online questionnaires, including the ‘Questionnaire for Bipolar Illnesses’, ‘Quick Inventory of Depressive Symptomatology – Self Rating’, ‘Altman Self-Rating Mania Scale-NL’, ‘Response to Positive Affect Questionnaire’, and ‘Fear of Recurrence Scale’ (see below for a detailed description). Informed consent was obtained from all participants; participation was voluntary and could be terminated at any time. There was no compensation for participation. The review committee of the Medical Ethical Committee of the VU University Medical Center (VUmc) assessed this research exempted from the Medical Research Involving Human Subjects Act (WMO).

Measures

Current (hypo)manic symptoms. The Dutch version of the Altman Self-Rating Mania Scale (ASRM-NL; Altman et al., 1997; Renes & Kupka, 2009) was used to assess the presence and severity of manic symptoms in the prior seven days. This self-report questionnaire consists of five items on a four-point Likert scale from 0 (‘not present’, e.g. “I do not feel happier or more cheerful than usual”) to 4 (‘present in severe degree’, e.g. “I feel happier or more cheerful than usual most of the time”). Total scores are calculated by summing up the scores on each item, ranging from 0 to 20, with a higher total score indicating a higher degree of (hypo)manic symptoms. Assessment of the questionnaire showed high test-retest reliability and an acceptable internal consistency (Altman et al., 1997; Kraiss et al., 2019; Nunnally & Bernstein, 1994). The present study found a Cronbach’s alpha of .86.

Current depressive symptoms. The Quick Inventory of Depressive Symptomatology – Self Rating (QIDS-SR; Rush et al., 2003), translated to Dutch by Altrecht, was used as a measure for the current depressive symptoms. The QIDS-SR consists of 16 items to assess the severity of depressive symptoms in the prior seven days. The responses are translated into the nine

DSM-IV symptom criterion domains, such as concentration, sleep disturbance and sad mood. Response options are presented on a four-point Likert scale from 0 to 3, with a higher score indicating a higher degree of depressive symptoms (e.g. ranging from “I see myself as equally worthwhile and deserving as other people” to “I think almost constantly about major and minor defects in myself”). Total scores are calculated by the sum of the item scores, ranging from 0 to 42. Although the Dutch translation has not been validated, Rush and colleagues (2003) showed that the QIDS-SR had a high concurrent validity and excellent internal consistency. All domains had medium to high item-total correlations with the total score. The present study found a Cronbach’s alpha of .79.

Response to positive affect. The Dutch version of the Response to Positive Affect Questionnaire (RPA-NL; Feldman et al., 2008; Raes et al., 2009) was used to measure self-reported levels of dampening and rumination in response to positive affect. The RPA consists of 17 items on a four-point Likert scale from 1 (‘almost never’) to 4 (‘almost always’). Three strategies related to the regulation of positive affect are divided into subscales: ‘dampening’, ‘self-focused positive rumination’, and ‘emotion-focused positive rumination’. In the interest of the present study only the subscale ‘dampening’ (e.g. “My streak of luck is going to end soon”) was used, which was shown to have acceptable internal consistency ($\alpha = .80$, Raes et al., 2009). The present study found a Cronbach’s alpha of .76 for the subscale ‘dampening’.

Fear of relapse. The Dutch translation of the Fear of Recurrence Scale (FORSE-NL; Demacker et al., 2017; Gumley & Schwannauer, 2006) was used as a measure for the fear of relapse. It consists of 23 items, divided into three subscales: ‘Fear of relapse’ (e.g. “I have been remembering previous episodes of being unwell”), ‘Intrusiveness’ of thoughts and memories of relapse (e.g. “I have been worrying about my thoughts”), and ‘Awareness’ (e.g. “I have paid close attention to how my mind is working”). Responses are rated on a four-point Likert scale from 1 (‘disagree’) to 4 (‘strongly agree’). Total scores are calculated by summing up the scores

on each item from all subscales, ranging from 23 to 94. Gumley and colleagues (2015) found good to excellent internal reliability, test-retest reliability and construct validity. The present study found a Cronbach's alpha of .92 for the total scale.

Statistical analyses

Data were processed by using RStudio version 1.2.5042 and analysed by using Statistical Package for Social Science (SPSS) Version 26. Prior to analysing the data, all used measures' internal consistencies (Cronbach's alpha), descriptive statistics and intercorrelations were computed. Subsequently, assumptions of normality, linearity, multicollinearity and homoscedasticity were examined. Shapiro-Wilk tests, histograms and scatterplots were performed. The required sample size was calculated by using the program G*Power (Faul et al., 2009). Cohen (1992) proposes a .20 probability that no genuine effect will be found. Therefore, the current study aims to achieve a power of .80 (Field, 2018). In order to achieve a power of .80 and an alpha of .05, a sample of 84 participants is required for the correlational analysis and a sample of 72 participants is required for the mediation analysis.

Pearson correlations were performed to test general hypotheses 1 and 2. Additionally, independent samples t-tests were performed to investigate possible associations between the studied variables and demographic characteristics, specifically age and gender. In case of significant associations, we will control for age and gender in all further analyses. In order to test the main hypothesis 3, the mediating effect of fear of relapse on the association between current mood symptoms and dampening responses to PA was analysed by performing a PROCESS macro mediation analysis. More specifically, two mediation models were tested, one using current (hypo)manic symptoms and the other using current depressive symptoms as a predictor variable.

Results

Preliminary analyses

First, statistical assumptions were examined. Scatterplots showed that assumptions of linearity and homoscedasticity were met for the Pearson correlations. However, based on the Shapiro-Wilk test, the assumption of normality had not been met for current (hypo)manic symptoms ($W = .67, p < .001$), current depressive symptoms ($W = .94, p < .001$), fear of relapse ($W = .97, p = .05$), and dampening ($W = .93, p < .001$). Bootstrapping in the primary analyses was used to correct for this violation, as standard significance tests may be affected by the violation of normality, while bootstrap CIs remain unaffected (Field, 2018). As for the mediation analysis, additional diagnostics showed that multicollinearity was not a concern ($VIF_{QIDS} = 1.45$ and $VIF_{ASRM} = 1.04$). Since scatterplots and P-plots showed normality and homoscedasticity of residuals, the assumption of linearity was met as well.

Furthermore, we investigated whether age and gender showed a significant relationship with the studied variables. Independent sample t-tests showed no significant gender differences for the studied variables; $t(95)$ values between -1.71 and $.10$, and corresponding p -values between $.09$ and $.92$. Additionally, age did not correlate with the studied variables; r values between $-.12$ and $.15$, and corresponding p -values between $.14$ and $.67$. Therefore, no correction for gender and age was made in the primary analyses.

Primary analyses

Correlational analyses with 5000 bootstrap samples (95% CIs) were performed to test hypotheses 1 and 2. The results are shown in Table 1. No significant association was found between current (hypo)manic symptoms and dampening ($r = .14, p = .18$). Although this rejects hypothesis 1a, a significant positive association was found between current depressive symptoms and dampening ($r = .43, p < .001$), confirming hypothesis 1b. Confirming hypothesis 2a, we found a significant positive association between current (hypo)manic symptoms and fear

of relapse (bootstrap 95% CI [.01, .36]). Note that the correlation ($r = .19$) had a p -value of .06, indicating marginal significance. However, due to the violation of normality, it is more prudent to interpret the bootstrap CIs, as these are more robust (Field, 2018). Furthermore, confirming hypothesis 2b, we found a significant positive association between current depressive symptoms and fear of relapse ($r = .56, p < .001$, bootstrap 95% CI [.41, .69]).

Table 1

Descriptives and Pearson correlation analyses with confidence intervals.

| Variable | <i>M</i> | <i>SD</i> | 1 | 2 | 3 | 4 |
|-------------------------|----------|-----------|--------------------------------|----------------------|---------------------|---|
| 1. (Hypo)manic symptoms | 1.57 | 2.63 | - | | | |
| 2. Depressive symptoms | 8.12 | 5.59 | .003 [-.20, .23] | - | | |
| 3. Fear of relapse | 47.12 | 13.94 | .19 ⁺ [.01, .36] | .56*** [.41, .69] | - | |
| 4. Dampening of PA | 12.12 | 3.54 | .14 [-.10, .36] | .43*** [.24, .59] | .30** [.10, .50] | - |

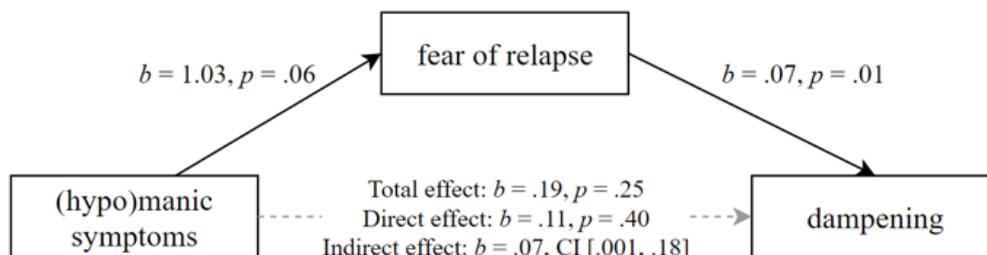
Note. Bootstrap 95% CIs are presented in brackets. *** $p < .001$; ** $p < .01$; * $p < .05$;

⁺ marginal significant at $p < .10$ (two-tailed).

Subsequently, a PROCESS macro mediation analysis with 5000 bootstrap samples (95% CIs) was performed to examine the mediating effect of fear of relapse on the association between current (hypo)manic symptoms and dampening (hypothesis 3a). Since both the total effect ($b = .19, p = .25$) and the direct effect ($b = .11, p = .40$) were not significant, we cannot strictly confirm hypothesis 3a. However, the indirect effect of current (hypo)manic symptoms on dampening was significant, $b = .07, CI [.001, .18]$. The results are shown in Figure 2.

Figure 2

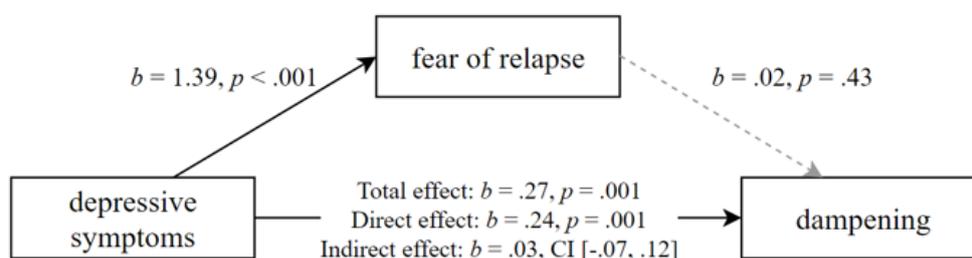
Mediation model of fear of relapse as mediator between current (hypo)manic symptoms and dampening.



In a similar vein, the mediating effect of fear of relapse on the association between current depressive symptoms and dampening was examined (hypothesis 3b). The mediation analysis showed a significant positive total effect ($b = .27, p = .001$) and a significant positive direct effect ($b = .24, p = .001$) of current depressive symptoms on dampening. However, the indirect effect of current depressive symptoms on dampening was not significant, $b = .03, CI [-.07, .12]$. This confirms hypothesis 3b, as fear of relapse was not expected to mediate between current depressive symptoms and dampening. The results are shown in Figure 3.

Figure 3

Mediation model of fear of relapse as mediator between current depressive symptoms and dampening.



Discussion

Patients with Bipolar Disorder have been shown to be prone to excessive up- and downregulation of emotions (Carl et al., 2013; Edge et al., 2013; Gilbert et al., 2013; Koenders

et al., 2020). In the case of downregulation, several studies found that current (hypo)manic as well as depressive symptoms are related to dampening responses of PA (Feldman et al., 2008; Fletcher et al., 2013; Gilbert et al., 2013; Hanssen et al., 2018). Literature suggests that early mood symptoms may trigger negative beliefs about relapse, consequently eliciting fear of a relapse into another episode (Granek et al., 2016; Gumley et al., 2003; Lobban et al., 2013). For current (hypo)manic mood symptoms, it is suggested that this fear may lead to excessive dampening of PA (Edge et al., 2013), whereas for current depressive symptoms it is suggested that dampening of PA is characteristic for the mood state, rather than a conscious effort out of fear of relapse (Joormann & Stanton, 2016). The aim of the present study was to investigate the association between BD symptoms and dampening of PA and the possible mediating effect of fear of relapse in this association.

In contrast to hypothesis 1a, findings showed no significant association between current (hypo)manic symptoms and dampening of PA whereas previous research found a positive association between these variables (Edge et al., 2013; Fletcher et al., 2013). While this was an important motivation for the present study – as it implied the possible influence of an additional psychological factor (i.e. fear of relapse) on the use of ER strategies – the findings do not confirm this association. On the other hand, Hanssen and colleagues (2018) showed that (hypo)manic symptoms were positively associated with positive ruminative responses to PA, indicating a typical pattern of upregulating the (hypo)manic mood. Therefore, further research may also include positive rumination to explore the effect of current mood symptoms on ER strategies in a broader context.

Moreover, corresponding to the literature and hypothesis 1b, a positive association was found between current depressive symptoms and dampening of PA. This confirms that patients in a current depressive mood tend to downregulate PA (Hanssen et al., 2018). In general, hypothesis 1a and 1b imply that the ER strategy that is used is associated with a current mood

state. As mood symptoms in BD are not stable over illness course, the ER strategy that is used in response to PA is therefore likely to be unstable over time as well. However, longitudinal research is needed to confirm this.

Furthermore, this study aimed to investigate fear of relapse and its association with current mood symptoms in patients with BD. Corresponding to hypotheses 2a and 2b, results showed that both current (hypo)manic and depressive symptoms were positively associated with fear of relapse. This supports the assumption that both current (hypo)manic and depressive symptoms may elicit fear of relapse in patients with BD, although causality cannot be confirmed. It is well known that patients with BD report being constantly anxious about relapse (Granek et al., 2016). This suggests that patients recognize early signs of mood dysregulation and develop negative cognitions about relapse, in line with the Cognitive Model of Relapse for (hypo)manic symptoms (Gumley et al., 2003). For depressive symptoms, this connection may be viewed as that patients experience a certain preoccupation with changes in internal state that may be interpreted as uncontrollable (Joormann & Stanton, 2016; Lobban et al., 2013; Mansell et al., 2007).

In addition, in contrast to hypothesis 3a, the mediation analysis showed no significant total effect of current (hypo)manic symptoms on dampening of PA. Nevertheless, a significant indirect effect of current (hypo)manic symptoms on dampening of PA through fear of relapse was found, thereby partly confirming our hypothesis (Rucker et al., 2011). This suggests that, on its own, (hypo)manic symptoms are not associated with dampening responses to PA. However, results showed that current (hypo)manic symptoms are associated with a higher fear of relapse, which in turn is associated with higher levels of dampening of PA.

Finally, as expected, no mediating effect of fear of relapse on the association between current depressive symptoms and dampening of PA was found (hypothesis 3b), although the total effect was significant in this case (Clark & Watson, 1991; Joormann & Stanton, 2016).

This suggests that a high fear of relapse for current depressive symptoms reflects the tendency of patients with depressive symptoms to be preoccupied with changes in internal state instead of a conscious cognitive dampening strategy, which seems to be the case for current (hypo)manic symptoms (Edge et al., 2013; Joormann & Stanton, 2016; Lobban et al., 2013).

Limitations

This study was the first to investigate the role of fear of relapse on the use of ER strategies in a clinical BD sample. Our results show that fear of relapse merits further consideration as a possible psychological factor or process that influences the use of ER strategies in patients with BD. However, there are some general limitations of the data and instruments that may have affected the interpretability of the results. First of all, the data of the ASRM-NL questionnaire was highly skewed as few people scored high on (hypo)manic symptoms, resulting in many observations at the lower end of the scale. This may explain the unexpected insignificant association between (hypo)manic symptoms and dampening, in contrast to previous research findings (Edge et al., 2013; Fletcher et al., 2013). Furthermore, although all measures used in this study were self-report questionnaires, this aspect could be particularly of interest for the ASRM-NL. Patients in a manic episode often show little self-awareness, which could bias the reliability of the scores (Ghaemi & Rosenquist, 2004). To address these limitations, the use of a structured clinical interview and a more in-depth questionnaire that explores the symptoms of a manic episode are recommended.

Furthermore, based on the Cognitive Model of Relapse (Gumley et al., 2003), this study implicitly assumed that fear of relapse was directly related to the current symptoms that patients experienced. That is, patients who experience current (hypo)manic symptoms have a fear of relapse into a manic episode and vice versa for current depressive symptoms. However, this does not necessarily have to be the case, as an individual experiencing manic symptoms may also have a fear of relapsing into a depressive episode. In the end, someone who is fearful of a

manic episode may have different ER strategies than someone who is fearful of a depressive episode (Russell & Browne, 2005), possibly regardless of their current mood state. Therefore, it would be beneficial to clearly distinguish between a fear of manic and a fear of depressive relapse in a new questionnaire specifically designed for patients with BD.

In addition, it is important to take the cross-sectional design of this study into account, which limits conclusions regarding directionality. For example, it is unknown whether a greater level of current BD symptoms predicts greater fear of relapse over time or vice versa. In order to investigate a temporal relation between the studied variables and to make a causal inference, longitudinal research is recommended (Wang & Cheng, 2020).

Clinical implications

In spite of these limitations, there are important clinical implications. The present study emphasizes the importance of considering fear of relapse in treatment interventions, since this relates to different utilisation of ER strategies for (hypo)manic symptoms. Before we can fully understand its clinical relevance, it is important to understand whether dampening of PA is maladaptive or adaptive as an ER strategy for people with BD. Intuitively, dampening of PA may seem adaptive when a patient shows early signs of a manic episode, as a patient may prevent another episode by recognizing early warning signs and altering the ER strategy accordingly (e.g. applying more dampening responses to PA when experiencing manic symptoms and more positive rumination responses to PA when experiencing depressive symptoms; Edge et al., 2013). Paradoxically, dampening of PA on its own is associated with a decreased self-reported quality of life, as it may maladaptively intensify emotions in the long run and lead to further dysregulation of the patient's mood (Carl et al., 2013; Gilbert et al., 2013; Kraiss et al., 2019; Van Rheenen et al., 2015; Quoidbach et al., 2010). In addition, dampening PA out of fear of negative (future) consequences is associated with lower self-esteem, greater rumination and more severe depressive symptoms (e.g. "My streak of luck is

going to end soon, I'd better be careful"; Feldman et al., 2008; Quoidbach et al., 2010). Taken together, in patients with BD, dampening of PA does not appear to be an adaptive ER strategy for both (hypo)manic and depressive symptoms (Gilbert et al., 2013; Van Rheenen et al., 2015).

Cognitive reappraisal, on the other hand, has been shown to be an effective strategy for people with BD to regulate both positive and negative emotions. This strategy is defined as reinterpreting an emotional-eliciting situation in a manner that adaptively modifies its emotional impact (Gruber et al., 2014). Nevertheless, adaptive ER requires insight and context sensitivity (Carl et al., 2013). Therefore, as is the case for any treatment, therapists should be aware of individual differences between patients (e.g. illness history and (anxious) personality traits; Colom et al., 2006; Fletcher et al., 2013; Gruber et al., 2011; Popovic et al., 2014; Qiu et al., 2017). This stresses the importance of psychoeducation on the function of positive emotions and training in adaptive ER strategies, tailored to the individual context. In order to manage a healthy emotional balance, adaptive ER may include an explorational process described as integrative ER (IER): the capacity to understand and be accepting towards one's own emotions, as well as being able to carry out goal directed behaviours when distressed (Van Rheenen et al., 2015; Roth et al., 2019). Appliance of IER is associated with increased well-being and may help the individual cope with future emotional events.

Summary and conclusion

The present study was the first to investigate the role of fear of relapse in the use of ER strategies in a clinical sample of patients with BD. Results suggested that patients with BD may develop a higher fear of relapse when experiencing more severe current mood symptoms. Specifically, more severe current (hypo)manic symptoms were associated with a higher fear of relapse, which in turn was associated with higher levels of dampening of PA. Since dampening responses to PA can have a negative impact on one's self-esteem, mood, and quality of life, treatment interventions can take fear of relapse into account as a possible underlying motive.

Furthermore, the functional relevance of positive emotions and training in adaptive ER strategies, such as cognitive reappraisal, can be addressed in (psychoeducational) interventions. Future research may focus on the operationalisation of manic symptoms and fear of relapse, and longitudinal research is recommended to gain more insight into the causal role of fear of relapse. The results of this study indicate that fear of relapse is an important construct to take into account in treatment interventions of BD and that awareness of dampening responses to PA as a maladaptive ER strategy may be useful.

References

- Altman, E. G., Hedeker, D., Peterson, J. L., & Davis, J. M. (1997). The Altman Self-Rating Mania Scale. *Biological Psychiatry*, *42*, 948-955. [https://doi.org/10.1016/S0006-3223\(96\)00548-3](https://doi.org/10.1016/S0006-3223(96)00548-3)
- American Psychiatric Association (2014). *Beknopt overzicht van de criteria (DSM-5). Nederlandse vertaling van de Desk Reference tot he Diagnostic Criteria from DSM-5*. Boom.
- Carl, J. R., Soskin, D. P., Kerns, C., & Barlow, D. H. (2013). Positive emotion regulation in emotional disorders: A theoretical review. *Clinical psychology review*, *33*(3), 343-360. <https://doi.org/10.1016/j.cpr.2013.01.003>
- Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: psychometric evidence and taxonomic implications. *Journal of abnormal psychology*, *100*(3), 316.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155-159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Colom, F., Vieta, E., Daban, C., Pacchiarotti, I., & Sánchez-Moreno, J. (2006). Clinical and therapeutic implications of predominant polarity in bipolar disorder. *Journal of Affective Disorders*, *93*, 13-17. <https://doi.org/10.1016/j.jad.2006.01.032>
- Demacker, S. M. A., Cath, D. C, Regeer, E. J, & Staring, A. B. P. (2017). *Angst voor terugval (FORSE)*. Retrieved from <https://www.gedachtenuitpluizen.nl/meetinstrumenten/psychopathologie/>
- Edge, M. D., Miller, C. J., Muhtadie, L., Johnson, S. L., Carver, C. S., Marquinez, N., & Gotlib, I. H. (2013). People with bipolar I disorder report avoiding rewarding activities and dampening positive emotion. *Journal of Affective Disorders*, *146*(3), 407-413. <https://doi.org/10.1016/j.jad.2012.07.027>

- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior research methods*, *41*(4), 1149-1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Feldman, G. C., Joormann, J. & Johnson, S. L. (2008). *Responses to Positive Affect: A Self Report Measure of Rumination and Dampening*. *Cognitive Therapy and Research*, *32*(4), 507-525.
- Ferrari, A. J., Stockings, E., Khoo, J. P., Erskine, H. E., Degenhardt, L., Vos, T., & Whiteford, H. A. (2016). The prevalence and burden of bipolar disorder: findings from the Global Burden of Disease Study 2013. *Bipolar disorders*, *18*(5), 440-450. <https://doi.org/10.1111/bdi.12423>
- Field, A. (2018). *Discovering Statistics using IBM SPSS Statistics (5th edition)*. Sage Publications Ltd.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1996). *Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) Research version*. Biometric Research.
- Fletcher, K., Parker, G., & Manicavasagar, V. (2013). The role of psychological factors in bipolar disorder: prospective relationships between cognitive style, coping style and symptom expression. *Acta neuropsychiatrica*, *26*(2), 81-95. <https://doi.org/10.1017/neu.2013.41>
- Ghaemi, S. N., & Rosenquist, K. J. (2004). Is insight in mania state-dependent?: a meta-analysis. *The Journal of nervous and mental disease*, *192*(11), 771-775.
- Gilbert, K. E., Nolen-Hoeksema, S., & Gruber, J. (2013). Positive emotion dysregulation across mood disorders: How amplifying versus dampening predicts emotional reactivity and illness course. *Behaviour research and therapy*, *51*(11), 736-741. <https://doi.org/10.1016/j.brat.2013.08.004>

- Gitlin, M. J., Swendsen, J., Heller, T. L., & Hammen, C. (1995). Relapse and impairment in bipolar disorder. *The American journal of psychiatry*, *152*(11), 1635–1640.
<https://doi.org/10.1176/ajp.152.11.1635>
- Granek, L., Danan, D., Bersudsky, Y., & Osher, Y. (2016). Living with bipolar disorder: the impact on patients, spouses, and their marital relationship. *Bipolar disorders*, *18*(2), 192-199. <https://doi.org/10.1111/bdi.12370>
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of general psychology*, *2*(3), 271-299. <https://doi.org/10.1037/1089-2680.2.3.271>
- Gruber, J., Eidelman, P., Johnson, S. L., Smith, B., & Harvey, A. G. (2011). Hooked on a Feeling: Rumination About Positive and Negative Emotion in Inter-Episode Bipolar Disorder. *Journal of Abnormal Psychology*, *120*(4), 956-961.
<https://doi.org/10.1037/a0023667>
- Gruber, J., Harvey, A. G., & Gross, J. J. (2012). When trying is not enough: Emotion regulation and the effort–success gap in bipolar disorder. *Emotion*, *12*(5), 997-1003.
<https://doi.org/10.1037/a0026822>
- Gruber, J., Hay, A. C., & Gross, J. J. (2014). Rethinking emotion: Cognitive reappraisal is an effective positive and negative emotion regulation strategy in bipolar disorder. *Emotion*, *14*(2), 388-396. <https://doi.org/10.1037/a0035249>
- Gumley, A. I., MacBeth, A., Reilly, J. D., O'Grady, M., White, R. G., McLeod, H., Schwannauer, M., & Power, K. G. (2015). Fear of recurrence: results of a randomized trial of relapse detection in schizophrenia. *British Journal of Clinical Psychology*, *54*(1), 49-62. <https://doi.org/10.1111/bjc.12060>
- Gumley, A. I., O'Grady, M., McNay, L., Reilly, J., Power, K., & Norrie, J. (2003). Early intervention for relapse in schizophrenia: results of a 12-month randomized controlled

trial of cognitive behavioural therapy. *Psychological medicine*, 33(3), 419-431.

<https://doi.org/10.1017/S0033291703007323>

Gumley, A. I., & Schwannauer, M. (2006). *The Fear of Recurrence Scale (FORSE) Questionnaire. Appendix I. Staying well after psychosis: A cognitive interpersonal approach to recovery and relapse prevention*. John Wiley & Sons, Ltd.

Hanssen, I., Regeer, E. J., Schut, D., & Boelen, P. A. (2018). Ruminative and dampening responses to positive affect in bipolar disorder and major depressive disorder. *Comprehensive psychiatry*, 85, 72-77.

<https://doi.org/10.1016/j.comppsy.2018.06.009>

He, H., Hu, C., Ren, Z., Bai, L., Gao, F., & Lyu, J. (2020). Trends in the incidence and DALYs of bipolar disorder at global, regional, and national levels: Results from the global burden of Disease Study 2017. *Journal of psychiatric research*, 125, 96-105.

<https://doi.org/10.1016/j.jpsychires.2020.03.015>

Johnson, S. L., McKenzie, G., & McMurrich, S. (2008). Ruminative responses to negative and positive affect among students diagnosed with bipolar disorder and major depressive disorder. *Cognitive Therapy and Research*, 32(5), 702-713.

<https://doi.org/10.1007/s10608-007-9158-6>

Joormann, J., & Stanton, C. H. (2016). Examining emotion regulation in depression: A review and future directions. *Behaviour Research and Therapy*, 86, 35-49.

<https://doi.org/10.1016/j.brat.2016.07.007>

Koenders, M. A., Dodd, A. L., Karl, A., Green, M. J., Elzinga, B. M., & Wright, K. (2020). Understanding bipolar disorder within a biopsychosocial emotion dysregulation framework. *Journal of Affective Disorders Reports*, 2, 1-14.

<https://doi.org/10.1016/j.jadr.2020.100031>

- Kraiss, J. T., Ten Klooster, P. M., Chrispijn, M., Stevens, A. W., Kupka, R. W., & Bohlmeijer, E. T. (2019). Psychometric properties and utility of the Responses to Positive Affect questionnaire (RPA) in a sample of people with bipolar disorder. *Journal of clinical psychology, 75*(10), 1850-1865. <https://doi.org/10.1002/jclp.22819>
- Lobban, F., Solis-Trapala, I., Symes, W., Morriss, R., & ERP Group. (2011). Early warning signs checklists for relapse in bipolar depression and mania: utility, reliability and validity. *Journal of affective disorders, 133*(3), 413-422. <https://doi.org/10.1016/j.jad.2011.04.026>
- Lobban, F., Solis-Trapala, I., Tyler, E., Chandler, C., & Morriss, R. K. (2013). The role of beliefs about mood swings in determining outcome in bipolar disorder. *Cognitive therapy and research, 37*(1), 51-60. <https://doi.org/10.1007/s10608-012-9452-9>
- Mansell, W., Morrison, A. P., Reid, G., Lowens, I., & Tai, S. (2007). The interpretation of, and responses to, changes in internal states: an integrative cognitive model of mood swings and bipolar disorders. *Behavioural and Cognitive psychotherapy, 35*(5), 515-539. <https://doi.org/10.1017/S1352465807003827>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory (3rd ed.)*. McGrawHill.
- Popovic, D., Torrent, C., Goikolea, J. M., Cruz, N., Sánchez-Moreno, J., Gonzalez-Pinto, A., & Vieta, E. (2014). Clinical implication of predominant polarity and the polarity index in bipolar disorder: a naturalistic study. *Acta Psychiatrica Scandinavica, 129*(5), 366-374. <https://doi.org/10.1111/acps.12179>
- Raes, F., Daems, K., Feldman, G. C., Johnson, S. L., & Van Gucht, D. (2009). A psychometric evaluation of the Dutch version of the responses to positive affect questionnaire. *Psychologica Belgica, 49*(4), 293. <http://dx.doi.org/10.5334/pb-49-4-293>

- Renes, J. W., & Kupka, R. W. (2009). *Nederlandse vertaling Altman Self-Rating Mania Scale (ASRM-NL)*. Retrieved from <https://www.kenniscentrumbipolairestoornissen.nl/wp-content/uploads/2006/09/Altman-Self-Rating-Mania-Scale-ASRM-NL.pdf>
- Roth, G., Vansteenkiste, M., & Ryan, R. M. (2019). Integrative emotion regulation: Process and development from a self-determination theory perspective. *Development and psychopathology*, *31*(3), 945-956. <https://doi.org/10.1017/S0954579419000403>
- Rucker, D. D., Preacher, K. J., Tormala, Z. L., Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass*, *5*(6), 359-371. <https://doi.org/10.1111/j.1751-9004.2011.00355.x>
- Rush, A. J., Trivedi, M. H., Ibrahim, H. M., Carmody, T. J., Arnow, B., Klein, D. N., Markowitz, J. C., Ninan, P. T., Kornstein, S., Manber, R., Thase, M. E., Kocsis, J. H., & Keller, M. B. (2003). The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), clinician rating (QIDS-C), and self-report (QIDS-SR): a psychometric evaluation in patients with chronic major depression. *Biological psychiatry*, *54*(5), 573-583. [https://doi.org/10.1016/S0006-3223\(02\)01866-8](https://doi.org/10.1016/S0006-3223(02)01866-8)
- Russell, S. J., & Browne, J. L. (2005). Staying well with bipolar disorder. *Australian & New Zealand Journal of Psychiatry*, *39*(3), 187-193. <https://doi.org/10.1080/j.1440-1614.2005.01542.x>
- Stinckens, N., Lietaer, G., & Leijssen, M. (2013). Working with the inner critic: Process features and pathways to change. *Person-centered & Experiential psychotherapies*, *12*(1), 59-78. <https://doi.org/10.1080/14779757.2013.767747>
- Van Rheenen, T. E., Murray, G., & Rossell, S. L. (2015). Emotion regulation in bipolar disorder: profile and utility in predicting trait mania and depression propensity. *Psychiatry research*, *225*(3), 425-432. <https://doi.org/10.1016/j.psychres.2014.12.001>

Van Vliet, I. M., Leroy, H., & Van Megen, H. J. G. M. (2000). M.I.N.I. Plus: M.I.N.I. Internationaal Neuropsychiatrisch Interview. Nederlandse Versie 5.0.0.

Wang, X., & Cheng, Z. (2020). Cross-sectional studies: strengths, weaknesses, and recommendations. *Chest*, *158*(1), 65-71. <https://doi.org/10.1016/j.chest.2020.03.012>

Qiu, F., Akiskal, H. S., Kelsoe, J. R., & Greenwood, T. A. (2017). Factor analysis of temperament and personality traits in bipolar patients: Correlates with comorbidity and disorder severity. *Journal of affective disorders*, *207*, 282-290. <https://doi.org/10.1016/j.jad.2016.08.031>

Quoidbach, J., Berry, E. V., Hansenne, M., & Mikolajczak, M. (2010). Positive emotion regulation and well-being: Comparing the impact of eight savoring and dampening strategies. *Personality and Individual Differences*, *49*(5), 368– 373. <https://doi.org/10.1016/j.paid.2010.03.048>